Index

absolute risk difference (ARD), 115
Academia.edu, 27
Academic Clinical Fellowship (ACF), 1–2
Academic Clinical Lectureships (ACL), 2
academic trainee research, 1
accuracy in epidemiological research, 131–132, 132f, 133
adult-onset disease, 220–221
actiology of epidemiological research, 122–123, 130–131
Age-Period-Cohort models, 140
age-standardisation, 121
agreement studies, 134
allocation concealment, 78
American College of Obstetricians and Gynaecologists, 205
American Fertility Society (mAFS), 251
American Society of Clinical Oncology (ASCO), 24, 25
Amyotrophic Lateral Sclerosis (ALS) charity, 25
analysis of variance (ANOVA), 115
analytic epidemiology, 119
animal research and alternatives
Animals (Scientific Procedures) Act, 84, 85–86
benign gynaecology, 247
ethical review process, 85
introduction, 83–85
overview, 217–218
public information on, 86–87
The Three Rs, 84, 85
Animals (Scientific Procedures) Act (1986), 84, 85–86
Animals in Science Committee, 85
Animals Procedures Committee, 85
Annual Academic Meeting at the Royal College of Obstetricians and Gynaecologists, 179
annual appraisal presentations, 199
antenatal corticosteroids (ACS), 204
anti-hypertensive medication, 227
antibiotic use trials, 205–206
antioxidant benefits, 204
Appraisal of Guidelines Research and Evaluation (AGREE), 50
Assisted Reproductive Technology (ART), 247
Association of Medical Research Charities (AMRC), 237
Atmospheric-Pressure Chemical Ionisation (APCI), 99, 100
attributable fraction, 130
attrition bias, 242
audits. See also clinical audit for quality improvement defined, 53
epidemiology and, 211–212
fetal medicine research, 211–212
ideal standard in, 58
medical research papers vs., 190–191
minimum standard in, 58
in writing for publication, 193
‘Author pays’ journals, 192–193
backing up computer data, 200
base rate problem, 133
basic science research, 255–256
Bayesian trials, 74
benchmarking in audits, 58
benign gynaecology
acupuncture for endometriosis, 248
animal research, 247
best-practice guidelines, 242–245, 244t
bias risk assessment, 241–242
cell-based research, 245, 246t
clinical appraisal, 239–241
clinical research, 237–239, 238t, 240t
clinical trials, 238–239, 240t
Cochrane reviews, 242
conclusion, 252
dysmenorrhoea, 251
endometriosis, 247
epigene
tics research, 247
ethical considerations, 235
fibroids, 248–250, 249t
ge
tics research, 246
immunohistochemistry, 245, 246f
implication for research, 248
introduction, 235
laboratory research, 245–247
longitudinal studies, 238
menorrhagia, 250–251
meta-analysis, 242, 243f
ovulation suppression, 248t, 248
proteomics research, 247
qualitative research, 238
quality of evidence, 241f, 241
research funding, 237
research process, 236t, 236
systematic literature reviews, 242
tissue-based research, 245–246
best-practice guidelines, 242–245, 244t
bias
attrition bias, 242
detection bias, 242
epidemiological research, 126, 127t
performance bias, 241
reporting bias, 242
risk assessment, 241–242
selection bias, 241
in statistics, 113
bibliographic databases, 31, 33–34
binary variables, 111
bioinformatics, 101
biological plausibility, 123
biomedical research. See animal research and alternatives
block randomisation, 78
blogging by doctors, 28
body language during presentations, 186
Bolam test, 144
Boyd Group, 85
broadsheet papers, 39
Caesarean section, 230
Caldicott Principles, 59
Canadian Cancer Society, 25
Cancer Research UK, 257
candidate genes, 90
capillary electrophoresis, 99, 100
career development research, 4
case-control studies, 124f, 124–125t, 229–230
case-crossover design, 125–126
case-fatality rate, 137
case-only designs, 125–126
case reports, 193–194
case-time-control design, 126
categorical variables, 111
cell-based research, 245, 246t
censoring in epidemiological research, 135–136
central tendency and variation, 112
Centre for Disease Control and Prevention, 23
cerebral palsy (CP), 206
Certificate Holders, 86
Certificate of Completion of Training (CCT), 3
cervical cancer, 258
charity funding sources, 178
chemical ionisation (CI), 100
CHERRIES survey, 191
Chief Scientist Office for Scotland, 159
Chinese herbal medicine, 248
CHIPS trial, 227
chorionic villus sampling (CVS), 214–215
chromosomal abnormalities, 88
CIOMS guideline, 146
circulatory redistribution (‘brain sparing’), 208
CLASP trial, 72
clinical audit for quality improvement
audit cycle, 55–56, 56f
background, 53
benchmarking, 58
data analysis, 60
data collection, 58–59
data management, 59–60
enablers and barriers, 61
evidence and, 54
making improvements, 60–61
patient reported outcomes, 55
preparation for, 56
process measures, 54
research vs., 53
results, 60
review criteria, 57f, 57f–58
structural measures, 54
summary, 61–62
sustaining improvements, 61
target level performance, 58
clinical epidemiology, 119
Clinical Governance Advice, 202
critical life table, 135
clinical outcomes in audits, 54–55
clinical practice, 49–50, 146–148
clinical records in audits, 59
clinical research
benign gynaecology, 237–239, 238t, 240f
fetal medicine research, 211
maternal medicine research, 226–227
trainees, 3–4
Clinical Research Network (CRN)
clinical specialties, 162
divisions and specialties, 159–161
engagement of, 163
overview, 150, 159, 161f
recruitment, reporting
and monitoring, 162–163
reproductive health and childhood
specialty, 161–162
Clinical Research Nurse Workforce, 150
clinical research specialty lead (CRSL), 160
Clinical Trial Authorisation (CTA), 217
clinical trial of an investigational
medicinal product (CTIMP), 190
clinical trials. See also randomised
tocontrolled trials
benign gynaecology, 238–239, 240f
gynaecological oncology, 256–257
information sources in literature
searches, 33
outcomes, 75–77
clinical trials that involve medicinal
products (CTIMPs), 146
Clinician Scientist Scheme funding
opportunities, 3
cluster randomized trial, 73–74
clustered data, 114
Cochrane Handbook for Systematic
Reviews of Interventions, 242
Cochrane Library, 36t, 36, 49, 204
Cochrane Systematic Reviews, 31, 242, 247, 248, 250
coding, in analysis, 68
coding, in data management, 107
coherence, defined, 123
collaborations for leadership in
applied health research and
care (CLAHRIC), 151
colonoscopy research case example, 65
Committee on Publication Ethics
(COPE), 195
comparative genomic hybridisation
(CHGH), 214, 220
competence in autonomous decisions,
146–147
computer literacy, 197–198
computer modelling system, 83
computer skills for social media
Academia.edu, 27
blogging by doctors, 28
closed vs. open platforms, 26
conclusion, 28
credible sources, 23
educational and professional
development, 24
globalised healthcare resources, 23
Google+, 27
health campaign tools, 24–25
hype over, 20
internet access equality concerns,
21–22
limitations of, 22
LinkedIn, 26–27
Mendeley platform, 27–28
minimising risks, 22
platform differences, 26f, 26
potential benefits, 20
privacy settings, 22
professional guidelines, 22
professionalism concerns, 20–21
public nature of, 22
reasons for use, 22–25, 23f
research impact, 25
ResearchGate, 27
scientific research availability, 24
scientific social media platforms, 27
social media defined, 20, 21f
support networks on, 23–24
time constraint concerns, 21, 22f
Twitter, 26
where to start, 25–28
counter skills in medical research
choosing operating system, 12–13, 13f
conclusion, 18–19
data storage, 15–16f, 16f
e-mail correspondence, 18
hardware requirements, 13
image manipulation software,
18, 19f
introduction, 12
literature searches, 14f, 14–15
online databases, 13–14f, 14f
plagiarism, 18
presentation software, 17–18f, 18f
spreadsheet software, 16, 17
statistical software, 16–17f, 17f
voice recognition software, 18
word processing, 15f, 15
writing
benchmarking, 58
clarity, 59
completeness, 59
policies, 58
publication guidelines, 58
registering, 58
summary, 57f, 57f–58
standardising, 58
structured reporting
audits, 59
clinical research, 59
psychiatric studies, 59
research reliability, 59
time constraint concerns, 21
training, 59
where to start, 25–28
writing
benchmarking, 58
clarity, 59
completeness, 59
policies, 58
publication guidelines, 58
registering, 58
summary, 57f, 57f–58
standardising, 58
structured reporting
audits, 59
clinical research, 59
psychiatric studies, 59
research reliability, 59
time constraint concerns, 21
training, 59
where to start, 25–28
writing
benchmarking, 58
clarity, 59
completeness, 59
policies, 58
publication guidelines, 58
registering, 58
summary, 57f, 57f–58
standardising, 58
structured reporting
audits, 59
clinical research, 59
psychiatric studies, 59
research reliability, 59
time constraint concerns, 21
training, 59
where to start, 25–28

### Index

- **consideration ground rule**, 154
- **consistency of association**, 123
- CONSORT Statement, 188–189, 189t, 231
- constructive criticism, 169
- continuous variables, 111, 116f, 116f–117
- copy number variants (CNV), 88
- copyright considerations, 37–38, 195
- Core Outcome Measures in Effectiveness Trial (COMET) initiative, 231, 239
- Core Outcomes in Women’s health (CROWN) initiative, 239
- cost outcomes, 55
- counterfactual definition, 122
- Coursera project, 17
- Cox regression models, 135–136
- CpG dinucleotides, 91f, 91, 93
- Criminal Records Bureau (CRB), 153
- Criteria of Causation, 123
- critical appraisal of medical literature checklists, 46–47
- critical questions, 41, 42t, 42–43f
- defined, 39
- diagnosis, 42f, 42
- forms of bias, 40
- formulating questions, 40–41
- further help with, 46–47
- harm, 43f
- help with patients, 44–45
- importance of, 39–40
- introduction, 39
- levels of evidence, 40t, 40f
- prognosis, 42f, 42
- reliability of studies on, 40
- results of, 44, 46t
- steps in, 43
- therapy, 42–43, 43f
- validity of, 44
- CRN Specialty Groups, 151–152
- cross validation, 136
- crossover trials, 73
- Daily Record of Severity of Problems (DRSP), 77
- data analysis
  - audits, 60
  - linkage analysis, 89–90
  - medical thesis, 199
- meta-analyses, 40t, 40
- obstetrics research, 206
- overview, 108–109
- preparation, 108
- qualitative research analysis, 67–69
- randomised controlled trials, 79
- data backup, 16
- data collection
  - audits, 58–59
- qualitative research, 68
- randomised controlled trials, 79
- statistics in medical research, 110
- data encryption, 16
- data management in audits, 59–60
- data management in medical research analysis overview, 108–109
- analysis preparation, 108
- backing up computer data, 200
- coding, 107
- conclusion, 109
- defined, 104
- electronic vs. paper data, 105
- introduction, 104
- management of, 105, 106f
- missing data, 106–107
- missing vs. unknown data, 107
- original data, 194
- presentations of, 184
- staff employment, 107–108
- storing backup data, 109
- Data Protection Act (1998), 59, 104–105
- data storage, 15–16f, 16f
- dead fetuses, 210–211
- deadlines in medical research, 10
- Declaration of Helsinki, 146
- dedication of medical thesis, 196
- delegation in time management, 10–11
- Department of Health, 55
- descriptive epidemiology, 119, 120
- desktop computers, 13
- detection bias, 242
- diagnosis in epidemiological research, 131
- Directly Allocated Costs, 175
- discrete variables, 111
- discriminatory power, 136f, 136–138, 137f, 138f
- discussion section of research paper, 194
- disease clusters, 139
- dissertation, degrees requiring, 4–5
- distribution of data, 111–112
- dizygotic twins, 89
- DNA methylation, 91f, 91, 92–93
- DNA sequencing, 88, 93, 97, 217
- Doppler observations, 212, 213
- dose/response sequence, 123
- drugs in fetal medicine research, 216–217
- dummy tables in trial data, 104
- dysmenorrhoea, 251
- ecological fallacy, 123
- economic evaluation of RCTs, 77
- effect modification in epidemiological research, 129
- Effective Care in Pregnancy and Childbirth, 203
- electron ionisation (El), 99, 100
- electronic data collection, 105
- electrospray ionisation (ESI), 99, 100
- email correspondence, 11, 18
- Electrospray Ionisation (ESI), 99, 100
- employment, 107
- endometrial ablation, 250–251
- endometrial cancer, 258
- Endometrial Tissue Bank, 245
- endometriosis
  - acupuncture for, 248
  - overview, 247
  - ovulation suppression, 248
  - Endometriosis
  - Endometriosis Phenome and Biobanking Harmonisation Project (EPHec), 246
- engagement, defined, 151
- England and Wales National Cancer Registry, 121
- enzyme-deficiency diseases, 219
- epidemiological research
  - accuracy/validity in, 131–133, 131–132t, 132f,
  - aetiological fractions, 130–131
  - aetiology of, 122–123
  - analytic epidemiology, 119
  - bias in, 126, 127f
  - branches of, 119–122
  - capture-recapture method, 138t, 138–139
  - case-control study, 124f, 125t, 126t
  - case-only designs, 125–126
  - censoring and withdrawal, 135–136
  - cohort study, 123, 124t, 125t
  - confounding, 127
  - descriptive epidemiology, 119, 120
  - diagnosis in, 131
  - discriminatory power, 136f, 136f–138, 137f, 138f
  - disease clusters, 139
  - effect modification, 129
  - establishing association, 123–127
  - 124t, 125t, 126t
  - excess fractions, 130
  - exposure and, 121, 122t
  - fetal medicine, 211–212
  - introduction, 119
  - key concepts, 119–120
  - matching in, 127
  - maternal medicine research, 218–229
  - morbidity and, 121
  - mortality and, 120–121, 121f
  - other topics in, 138–140
  - probability of disease, 132–133
  - prognosis, 134f, 134–135f
- electron ionisation (EI), 99, 100
- electronic data collection, 105
- electrospray ionisation (ESI), 99, 100
- email correspondence, 11, 18
- EMPIRE study, 228
- EndNote, 37
- endometrial ablation, 250–251
- endometrial cancer, 258
- Endometrial Tissue Bank, 245
- endometriosis
  - acupuncture for, 248
  - overview, 247
  - ovulation suppression, 248
  - Endometriosis
  - Endometriosis Phenome and Biobanking Harmonisation Project (EPHec), 246
- engagement, defined, 151
  - England and Wales National Cancer Registry, 121
  - enzyme-deficiency diseases, 219
  - epidemiological research
    - accuracy/validity in, 131–133, 131–132t, 132f,
    - aetiological fractions, 130–131
    - aetiology of, 122–123
    - analytic epidemiology, 119
    - bias in, 126, 127f
    - branches of, 119–122
    - capture-recapture method, 138t, 138–139
    - case-control study, 124f, 125t, 126t
    - case-only designs, 125–126
    - censoring and withdrawal, 135–136
    - cohort study, 123, 124t, 125t
    - confounding, 127
    - descriptive epidemiology, 119, 120
    - diagnosis in, 131
    - discriminatory power, 136f, 136f–138, 137f, 138f
    - disease clusters, 139
    - effect modification, 129
    - establishing association, 123–127
    - 124t, 125t, 126t
    - excess fractions, 130
    - exposure and, 121, 122t
    - fetal medicine, 211–212
    - introduction, 119
    - key concepts, 119–120
    - matching in, 127
    - maternal medicine research, 218–229
    - morbidity and, 121
    - mortality and, 120–121, 121f
    - other topics in, 138–140
    - probability of disease, 132–133
    - prognosis, 134f, 134–135f
Index

prognostic groups, 136–138f, 138
register databases, 122
Index

genetic research (cont.)
interpreting results of, 93–94
introduction, 88
linkage analysis, 89–90
molecular studies, 89–91
overview, 246
sample sizing, 90–91
somatic mutations, 89
Geneva Foundation for Medical Education and Research (GFMEF), 33–34, 34t,
genome-wide association screening (GWAS), 90, 94
genome-wide linkage screening (GWLS), 90
genomics, 97–98, See also -omic research
genotyping methods, 88–89
gift authorship, 195
goal setting in research, 8–9
gonadotropin-releasing hormone (GnRH), 247
Good Clinical Practice, 202
Google+, 27
Google Hangout, 27
Google Scholar, 13
goserelin use, 251

governance and good clinical practice competence, 146–147
consent form, 147–148
information giving, 147
overview, 146–148
research governance, 176–177
seeking/receiving consent, 147
voluntariness, 148

Grades of Recommendation, Assessment, Development and Evaluation (GRADE) Working Group, 49

Grading of Recommendations, Assessment, Development and Evaluations (GRADE), 241

grant budget justification, 174–175

Growth Restriction Intervention Trial (GRIT), 211

guideline dissemination and implementation, 50–51

Guideline for Clinical Research on New Chinese Medicine for Treatment of Pelvic Endometriosis, 248

gynaecological oncology

basic science research, 255–256
cervical cancer, 258
clinical trials, 256–257
conclusions, 258–259
current research focus, 257
endometrial cancer, 258
funding for, 257
ovarian cancer, 257–258

past, present, future of, 255
support for, 257
translational research, 256
types of research, 255
vulval cancer, 258

Gynecologic Oncology Group (GOG), 257

haematological malignancies, 94
haemopoietic stem cells (HSC), 218

Harnessing Online Peer Education (HOPE), 25

Health Act (2009), 53
Health and Social Care Act, 159, 191
Health and Social Care Public Health Agency Research and Development for Northern Ireland, 159

Health Research Authority (UK), 24, 147

Health Technology Assessment (HTA), 150
Healthcare Quality Improvement Partnership (HQIP), 53, 212

hiding and time management, 11
high-dimensional biology, See also -omic research

high-performance liquid chromatography, 99

high-quality biobanks, 101

Hill, Bradford, 123
human-based research, 83
Human Metabolome Database, 99
Human Papilloma virus (HPV), 258
Human Tissue Act (2004), 209, 210, 235

Human Tissue Authority (HTA), 209
Human Tissue Authority (HTA) Code of Practices, 210, 211
human tissue disposal, 209–210
hydrolotation, 251
hypertension in pregnancy, 228
hypothesis testing, 113

hypothetical construct, 122

Ice Bucket Challenge, 25

ideal standard in audits, 58
identical twins studies, 92
image manipulation software, 18, 19f
immunohistochemistry, 245, 246f

in utero fetal tissue, 210–211

in utero haemopoietic cell transplantation (IUHCT), 219

in utero transplantation (IUT), 219

in vitro research, 245, 256

individual patient survival, 134
industrial collaboration grant, 176
industry funding sources, 178
infertility trial, 77
information giving, 147

information in consent, 142, 144–146
information overload, 144
information sources in literature searches
appraising sites, 32–33
bibliographic databases, 31, 33–34
choosing sources, 31–32

Cochrane Library, 36t, 36

databases, 31, 33
appraising sites, 32

Evidence sources, 33

factors in consent, 142, 144

Google Scholar, 13

听完 rehabilitation, 25

hospital-based research, 83

human tissue disposal, 209–210

hydrolotation, 251

hypertension in pregnancy, 228

hypothesis testing, 113

hypothetical construct, 122

Ice Bucket Challenge, 25

ideal standard in audits, 58
identical twins studies, 92
image manipulation software, 18, 19f
immunohistochemistry, 245, 246f

in utero fetal tissue, 210–211

in utero haemopoietic cell transplantation (IUHCT), 219

in utero transplantation (IUT), 219

in vitro research, 245, 256

individual patient survival, 134
industrial collaboration grant, 176
industry funding sources, 178
infertility trial, 77
information giving, 147

information in consent, 142, 144–146
information overload, 144
information sources in literature searches
appraising sites, 32–33
bibliographic databases, 31, 33–34
choosing sources, 31–32

Cochrane Library, 36t, 36

databases, 31, 33
appraising sites, 32

Evidence sources, 33

factors in consent, 142, 144

Google Scholar, 13

听完 rehabilitation, 25

hospital-based research, 83

human tissue disposal, 209–210

hydrolotation, 251

hypertension in pregnancy, 228

hypothesis testing, 113

hypothetical construct, 122

Ice Bucket Challenge, 25

ideal standard in audits, 58
identical twins studies, 92
image manipulation software, 18, 19f
immunohistochemistry, 245, 246f

in utero fetal tissue, 210–211

in utero haemopoietic cell transplantation (IUHCT), 219

in utero transplantation (IUT), 219

in vitro research, 245, 256

individual patient survival, 134
industrial collaboration grant, 176
industry funding sources, 178
infertility trial, 77
information giving, 147

information in consent, 142, 144–146
information overload, 144
information sources in literature searches
appraising sites, 32–33
bibliographic databases, 31, 33–34
choosing sources, 31–32

Cochrane Library, 36t, 36

databases, 31, 33
appraising sites, 32

Evidence sources, 33

factors in consent, 142, 144

Google Scholar, 13

听完 rehabilitation, 25

hospital-based research, 83

human tissue disposal, 209–210

hydrolotation, 251

hypertension in pregnancy, 228

hypothesis testing, 113

hypothetical construct, 122

Ice Bucket Challenge, 25

ideal standard in audits, 58
identical twins studies, 92
image manipulation software, 18, 19f
immunohistochemistry, 245, 246f

in utero fetal tissue, 210–211

in utero haemopoietic cell transplantation (IUHCT), 219

in utero transplantation (IUT), 219

in vitro research, 245, 256

individual patient survival, 134
industrial collaboration grant, 176
industry funding sources, 178
infertility trial, 77
information giving, 147

information in consent, 142, 144–146
information overload, 144
information sources in literature searches
appraising sites, 32–33
bibliographic databases, 31, 33–34
choosing sources, 31–32

Cochrane Library, 36t, 36

databases, 31, 33
appraising sites, 32

Evidence sources, 33

factors in consent, 142, 144

Google Scholar, 13

听完 rehabilitation, 25

hospital-based research, 83

human tissue disposal, 209–210

hydrolotation, 251

hypertension in pregnancy, 228

hypothesis testing, 113

hypothetical construct, 122

Ice Bucket Challenge, 25

ideal standard in audits, 58
identical twins studies, 92
image manipulation software, 18, 19f
immunohistochemistry, 245, 246f

in utero fetal tissue, 210–211

in utero haemopoietic cell transplantation (IUHCT), 219

in utero transplantation (IUT), 219

in vitro research, 245, 256

individual patient survival, 134
industrial collaboration grant, 176
industry funding sources, 178
infertility trial, 77
information giving, 147
James Lind Alliance (JLA), 150, 156
jargon ground rule, 154
Journal Citation Reports, 192
Kaplan-Meier plot, 137
Kermack-McKendrick theorem, 119
King’s College Questionnaire for Urinary Incontinence, 77
Korean Health Insurance Review and Assessment Service, 238
Laboratory Animals Science Association (LASA), 84
laboratory meeting presentations, 199
laboratory research
animal research, 217–218
benign gynaecology, 245–247
fetal medicine research, 217–221
fetal programming and adult-onset disease, 220–221
fetal stem cells and gene therapy, 218–220
maternal medicine research, 231
molecular biology, 220
trainee advice, 221–222
trophoblast and placenta, 218
laptops, 13, 15
legal use of information sources, 37–38
levonorgestrel-releasing intrauterine system (LNG-IUD), 247
linkage analysis in genetic research, 89–90
LinkedIn, 26–27
liquid chromatography/mass spectrometry (LC/MS), 99
literature reviewing, 198
literature searches, 14f, 14–15
live fetuses, 210
local trainee collaboratives, 165
logarithm of the odds (LOG) score, 90
low incidence outcomes, 202
MAGPIE trial, 231
malware programs, 15
Management of Asthma in School-age Children on Therapy (MASCOT), 172
Management of Myelomeningocele Study (MOMS), 215
masking in RCTs, 78
mass spectrometry (MS), 99, 100
matching in epidemiological research, 127
Maternal, Newborn and Infant Clinical Outcome Review Programme (MNI-CORP), 212
Maternal-Fetal Medicine Units (MFMU) Network, 232
maternal medicine research approach to, 226, 227t
challenges to, 226
clinical research, 226–227
epidemiological research, 228–229
ethics of, 232
harmonizing reporting, 231
laboratory research, 231
networks in, 232
observational research, 229–230
qualitative research, 230–231
randomised controlled trials, 227–228
scale of, 226
secondary research, 231
undertaking research, 232
maternal transabdominal monitoring, 213
matrix assisted laser desorption ionization (MALDI), 100
MBRRACE-UK, 212
A Measurement Tool to Assess Systematic Reviews (AMSTAR), 241
Medical Protection Society (MPS), 20
Medical Research Council (MRC) clinical trial registry, 190
funding from, 157, 237
gynaecological oncology, 257
misconduct information, 235
open access publication, 193
medical research papers
answering questions about, 186–187
audit and, 190–191
conclusions, 187
introduction, 183
oral presentations, 185
preparation of, 183
presentation of, 186
research meeting overview, 185–186
visual aids, 183–185
medical thesis
backing up computer data, 200
computer literacy, 197–198
dedication, 196
fine tuning of, 199
introduction, 196
literature reviewing, 198
other theses vs., 198
plan for, 198
preparation, 196–197
prior to starting, 196
putting it together, 200
referencing in, 200
results and statistical analysis, 199
summary, 200
university guidelines, 198
writing of, 199
medicinal products and RCTs, 190
Medicines and Healthcare products Regulatory Authority (MHRA), 217
Medicines Licensing Act (1968), 217
Medline database, 33–34
Mendeley platform, 27–28
meningomyelocele (MMC) repair, 215
Menopause Rating Scale, 77
menorrhagia, 250–251
Mental Capacity Act (2005), 147
mesenchymal stem cells (MSC), 218, 219
meta-analyses, 401, 40
metabolomics, 98–99.
See also -omic research
methods section of research paper, 194
microarray technology, 98
microRNA (mRNA), 93, 94, 97.
microspectrometry (LC/MS), 99
Microsoft Word program, 15
Microsoft Excel, 16, 17
Microarray Platform, 15
middle cerebral artery (MCA), 213
minimisation concept, 78
minimum standard in audits, 58
missing data, 106–107
MMedSc degree, 5
molecular studies, 89–91, 220
monitoring of recruitment, 162–163
monogenic (Mendelian) disorders, 89
monozygotic twins, 89
Montgomery v. Lanarkshire Health Board, 144
morbidity and epidemiological research, 121
mortality and epidemiological research, 120–121, 121f
multiple-arm parallel group, 73
multiple sclerosis (MS), 25
multiplex ligation-dependent probe amplification (MLPA), 88
myomectomy in fibroid treatment, 249t, 249–250
Nanostructure-Initiator Mass spectrometer, 100
National Advisory Group on Clinical Audit and Enquiries, 53
National Centre for the 3Rs (NCRs), 85
National Clinical Audit and Patient Outcomes Programme (NCAPOP), 53
National Confidential Enquiry into Perioperative Deaths (NCEP), 55
National Coordinating Centre for Public Involvement (NCCP), 157
National Health Service (NHS) research, 159, 175, 176
National Heavy Menstrual Bleeding (HMB) Audit, 55
National Institute for Health and Care Excellence (NICE), 1, 49, 228, 241, 242, 257

© in this web service Cambridge University Press
www.cambridge.org
Index

National Institute for Health Research (NIHR), 1, 11, 150, 151–152, 157, 159, 160f, 162, 193, 203, 232
National Institute for Social Care and Health Research for Wales, 159
National Library of Medicine (NLM), 13
National Neonatal Audit Programme, 58
National Perinatal Epidemiology Centre (NPEC), 212
National Perinatal Epidemiology Unit (NPEU), 212
National Quality Innovation Productability and Prevention (QIPP), 55
National Reporting and Learning Service (NRLS), 55
National Research Ethics Service (NRES), 152, 210
National Research Frameworks, 1
National Specialty Lead, 161
National UK Blog Award, 28
network devices, 13
networking at research meetings, 180–181
neural stem cells, 218
neuropsychological sensitivity, 84
NoMakeUpSelfies Campaign, 25
non-evidence-based practice, 202
non-invasive prenatal testing, 217
non-medical graduate research, 5
non-parametric statistics, 60, 113–114
normal distribution of data, 111
note reading during presentations, 186
nuclear magnetic resonance spectroscopy (NMRS), 99, 100
Null Hypothesis (H0), 113
Nurses’ Health Study, 238
observational research, 212–214, 229–230
obstetrics research
antenatal corticosteroids, 204
antibiotic use trials, 205–206
antioxidant benefits, 204
conclusions, 206
consenting in labour, 202, 203
example of, 201
generalisability lessons, 204–205
intra-partum trials, 201–203
introduction, 201
low incidence outcomes, 202
non-evidence-based practice, 202
second ary analysis, 206
systematic review, 203–204
odds ratio (OR), 115
omic research
bioinformatics, 101
capillary electrophoresis, 99, 100
clinical example of use, 102
conclusion, 102
gas chromatography, 99
genomics, 97–98
hierarchy of, 97–99
high-performance liquid chromatography, 99
high-quality biobanks, 101
introduction, 97
mass spectrometry, 99, 100
metabolomics, 98–99
microRNA, 97
nuclear magnetic resonance spectroscopy, 99, 100
overview, 99
protein microarrays, 100–101
proteomics research, 98, 247
reagents, 101
separation techniques, 99
systems biology, 101–102
transcriptomics, 98
one-to-one interviews, 66, 67f
online databases, 13–14, 14f
online resources, 16–17, 17f
open access, 192–193
Open Office program, 15
open source software, 12, 14, 15
optical character recognition (OCR), 59
optical mark readers (OMR), 59
optimum standard in audits, 58
ORACLE trial, 205–206
oral presentations at research meetings, 181
oral presentations of medical research papers, 185
original data, 194
osteogenesis imperfecta (OI), 219
Out of Programme (OOP) academic trainee, 2
Outcomes Frameworks, 55
outreach visits, 50
ovarian cancer, 257–258
OVID, 37
ovulation suppression, 248t, 248
paper data collection, 105
parametric statistics, 113–114
participation, defined, 151
password protection, 16
Patient Advice and Liaison Service (PALS), 152, 153
patient and public involvement (PPI) conflicts of interest, 154, 155t
defined, 150
funding medical research, 174
ground rules, 154
helpful links, 155
identifying helpful people, 153, 161
introduction, 11, 150
INdOvLE organization, 150–152, 153, 155
involving public in, 152–153
James Lind Alliance, 150, 156
parameters of, 152
recruitment and appointment guidelines, 153–154
role description within, 154
terms of reference, 154
troubleshooting, 154–155, 156t
patient confidentiality concerns, 21
patient identifiable data, 17
Patient Information Advisory Group, 191
patient preference trial, 74
patient reported outcomes (PROMS), 55
patient satisfaction, 77
pelvic floor dysfunction (PFD) case study, 68
People in Research, 157
Pericranial shaving in Lower Urinary Tract Obstruction (PLUTO), 215, 216
performance bias, 241
Personal Licence/Project Licence, 85
peripher al blood, 101
note reading during presentations, 186
nuclear magnetic resonance spectroscopy (NMRS), 99, 100
Null Hypothesis (H0), 113
Nurses’ Health Study, 238
observational research, 212–214, 229–230
obstetrics research
antenatal corticosteroids, 204
antibiotic use trials, 205–206
antioxidant benefits, 204
conclusions, 206
consenting in labour, 202, 203
example of, 201
generalisability lessons, 204–205
intra-partum trials, 201–203
introduction, 201
low incidence outcomes, 202
non-evidence-based practice, 202
secondary analysis, 206
systematic review, 203–204
odds ratio (OR), 115
omic research
bioinformatics, 101
capillary electrophoresis, 99, 100
clinical example of use, 102
conclusion, 102
gas chromatography, 99
genomics, 97–98
hierarchy of, 97–99
high-performance liquid chromatography, 99
high-quality biobanks, 101
introduction, 97
mass spectrometry, 99, 100
metabolomics, 98–99
microRNA, 97
nuclear magnetic resonance spectroscopy, 99, 100
overview, 99
protein microarrays, 100–101
proteomics research, 98, 247
reagents, 101
separation techniques, 99
systems biology, 101–102
transcriptomics, 98
one-to-one interviews, 66, 67f
online databases, 13–14, 14f
online resources, 16–17, 17f
open access, 192–193
Open Office program, 15
open source software, 12, 14, 15
optical character recognition (OCR), 59
optical mark readers (OMR), 59
optimum standard in audits, 58
ORACLE trial, 205–206
oral presentations at research meetings, 181
oral presentations of medical research papers, 185
original data, 194
osteogenesis imperfecta (OI), 219
Out of Programme (OOP) academic trainee, 2
Outcomes Frameworks, 55
outreach visits, 50
ovarian cancer, 257–258
OVID, 37
ovulation suppression, 248t, 248
paper data collection, 105
parametric statistics, 113–114
participation, defined, 151
password protection, 16
Patient Advice and Liaison Service (PALS), 152, 153
patient and public involvement (PPI) conflicts of interest, 154, 155t
defined, 150
funding medical research, 174
ground rules, 154
helpful links, 155
identifying helpful people, 153, 161
introduction, 11, 150
INdOvLE organization, 150–152, 153, 155
involving public in, 152–153
James Lind Alliance, 150, 156
parameters of, 152
recruitment and appointment guidelines, 153–154
role description within, 154
terms of reference, 154
troubleshooting, 154–155, 156t
patient confidentiality concerns, 21
patient identifiable data, 17
Patient Information Advisory Group, 191
patient preference trial, 74
patient reported outcomes (PROMS), 55
patient satisfaction, 77
pelvic floor dysfunction (PFD) case study, 68
People in Research, 157
Pericranial shaving in Lower Urinary Tract Obstruction (PLUTO), 215, 216
performance bias, 241
Personal Licence/Project Licence, 85
personally-driven time management, 166
pharmacogenomics, 98
Phase 0 trials, 71
Phase I trials, 71
Phase II trials, 71–72
Phase III trials, 72
Phase IV trials, 72
PICO clinical search question, 30t, 30t–31t, 31t
placenta laboratory research, 218
placental growth factor (PlGF), 230
plagiarism concerns, 195
plagiarism concerns, 195
Plain English Campaign, 157
planning for medical research, 8
planning for medical research, 8
Polkinghorne Committee, 209
Polkinghorne guidelines, 209, 210, 211
Poly (ADP-ribose) polymerase (PARP) inhibitors, 256
polymerase chain reaction (PCR), 89, 93, 214
polymorphism, 88, 94
Popper, Karl, 194
population, intervention, control, and outcomes (PICO), 236t, 236
portfolio and specialty support, 162
poster presentations at research meetings, 181
power calculations, 77–78
power in statistics, 113–114
Powerpoint program, 17–18
pragmatic trials, 72–73
predatory publishing, 193

© in this web service Cambridge University Press
www.cambridge.org
Index

predictive factors in epidemiological research, 134
preeclampsia studies, 93, 204, 230
preferred reporting items for systematic reviews and meta-analyses (PRISMA), 191
premature ovarian insufficiency (POI), 243
preparation of medical thesis, 196–197
presentation software, 17f
preterm infant, 201
printing/photocopying, 198
prioritisation in medical research, 9f
Priority Setting Partnerships (PSPs), 150
probability of disease, 132–133
process measures in audits, 54
professional practice standard, 144
professionalism concerns with social media, 20–21
progestogen use, 251
prognosis in epidemiological research, 134f, 134f–135f, 135f
prognostic index, 136f, 136f–138, 137f, 138f
programme grant, 176
project grant, 176
Project Licence Holder, 83, 85
Prospective Observational Trial to Optimise Paediatric Health in Intrauterine Growth Restriction (PORTO), 211
prospective registration, 189–190
PROSPERO (international prospective register of systematic reviews), 31
protein microarrays, 100–101
proteins. See –omic research
proteomics research, 98, 247
pseudo-anonymisation, 191
Public Involvement Impact Assessment Framework (PiiAF), 157
publication aims, 4–6
PubMed, 13, 189
QR codes, 12
qualitative research
analysis of, 67–69
benign gynaecology, 238
challenges, 69
colonoscopy case example, 65
collection, 70
definitions and purpose, 64–65
ethics in, 69
ethnography, 66–67
focus groups, 66
generalisability, 69–70
introduction, 64
key methods, 65–66
maternal medicine research, 230–231
one-to-one interviews, 66, 67t
pelvic floor dysfunction (PFD) case study, 68
types of questions, 65
vaginal prolapse case example, 69
Quality Accounts report, 53
Quality Adjusted Life-Year (QALY), 138
quality of life, 77, 138f, 138
quantitative fluorescence PCR (QF-PCR), 88
quantitative research, 107
quasi-randomized trial, 74
questionnaire surveys in audits, 59
R programming language, 17
randomised controlled trials (RCTs).
See also clinical trials
additional requirements for, 190
adhesions after gynaecological surgery, 251
analytic epidemiology, 119
Bayesian trials, 74
clinical outcomes, 75–77
cluster randomized trial, 73–74
concealment of allocation, 78
conclusion, 80
crossover trials, 73
data analysis, 79
data collection, 79
data management, 108
defining outcomes, 75, 76t
defining study population, 75
economic evaluation, 77
effectiveness of antenatal corticosteroids, 48
equivalence trials, 74
ethics of, 80
evidence based medicine, 48–49
exclusions, 79
factorial designs, 73t, 73
follow-up, 79
gynaecological oncology, 256–257
hypothesis testing, 113
interventions, 75
intra-partum trials, 201–203
introduction, 71
invasive fetal therapy, 208
levels of evidence, 40
masking, 78
maternal medicine research, 227–228
menorrhagia in women, 250
multiple-arm parallel group, 73
myectomy in fibroid treatment, 250
patient preference trial, 74
patient satisfaction, 77
performance of, 75
Phase 0 trials, 71
Phase II trials, 71–72
Phase III trials, 72
Phase IV trials, 72
pilot studies, 71
power and sample calculations, 77–78
pragmatic and explanatory trials, 72–73
presenting results, 79
quality of life, 77
quasi-randomized trial, 74
randomisation overview, 78
research governance, 80
statistics in medical research, 110
summary of, 123, 124t
systematic review, 49–50, 75
terminology, 71, 72t
trial designs, 73–75
two-arm parallel group, 73
rapidly fatal diseases, 120
RCOG Green-top Guidelines, 31, 57
RCOG standards, 57
reagents, 101
Receiver Operating Characteristic (ROC), 132f, 132, 230
reduction, refinement and replacement (‘The Three Rs’), 84, 85
redundant data, 104
redundant publication, 195
reference managers, 14, 37
referencing in medical thesis, 200
redundant publication, 195
reference managers, 14, 37
referencing in medical thesis, 200
register databases in epidemiological research, 122
registry-based research, 228–229
regulatory toxicology, 83
relative survival cure, 137
repeatability in epidemiological research, 133f, 133f–134f, 134t
reporting bias, 242
reporting guidelines, 191–192
reporting in recruitment, 162–163
reproductive health and childbirth (RH&C), 160, 161–162
Research Design Service (RDS), 11, 151, 157
Research Ethics Committee (REC), 145, 147, 210
research governance, 80
Research Institutes/Parks in Trusts, 4
research meetings
activities after meeting, 181–182
application for, 179–180
benefits, 181
choice of, 179
funding opportunities, 180
introduction, 179
networking at, 180–181
oral presentations, 181

© in this web service Cambridge University Press www.cambridge.org
Index

research meetings (cont.)
overview, 185–186
planning time at, 180
poster presentations, 181
preparation for, 181
summary, 182
research trainee responsibilities, 168
ResearchGate, 27
respect ground rule, 154
respiratory distress syndrome (RDS), 204
results section of research paper, 194
Reuter, Thomas, 192
ring-fencing time, 11
risk concept in epidemiological research, 119–120
risk ratio (RR), 115
Royal College of General Practitioners, 22
Royal College of Obstetrics & Gynaecology (RCOG), 201, 202, 205, 209–210, 228, 229, 242
sacro-coccygeal teratoma (SCT), 216
sample size calculations, 77–78
science, technology, engineer and medicine (STEM) careers, 24
scientific research availability on social media, 24
Scottish Intercollegiate Guidelines Network (SIGN), 57
Screening for Pregnancy Endpoints (SCOPE) study, 102
secondary analysis, 206
secondary research, 231
selection bias, 241
Serum, Urine and Ultrasound Screening Study (SUREUSS), 211
Service User Research Enterprise (SURE), 153
Shift.ms tool, 25
Shipman, Harold, 1
short-form health survey (SF-36), 77
short tandem repeats (STR), 88
sibling relative risk, 89
Sildenafil Therapy In Dismal prognosis of Early-onset intrauterine growth Restriction trial, 216
simple randomisation, 78
single nucleotide polymorphisms (SNPs), 88, 89, 93, 220
Soapbox Science, 24
social media, 181. See also computer skills for social media
Social Media Highway Code, 22
socio-demographic profiles, 66
Solomon technique, 216
somatic mutations, 89
space-time clustering, 139
spatial correlation, 139
spatio-temporal image correlation (STIC), 213
Special Interest Group in Reproductive Endocrinology, 243
specialist medical training
Academic Clinical Fellowship, 1–2
Academic Clinical Lectureships, 2
academic trainee research, 1
career progression after, 3
clinical trainee research, 3–4
conclusion, 6
content of research, 6
introduction, 1, 21
Out of Programme (OOP) academic trainee, 2
research aims, 4–6
types of research, 6
specificity, defined, 123
spelling/grammar checks, 15
sponsorship for research meetings, 181
spreadsheet software, 16, 17
standard deviation (SD), 112
standard error statistics, 113
Standardised Mortality Ratio, 125
statistical cure, 137
statistical modelling in epidemiological research, 127–129, 128f
statistical software, 16–17, 17f
statistics in medical research
association between continuous variables, 116f, 116f–117
bias in, 113
central tendency and variation, 112
clustered data, 114
comparing more than two means, 115
comparing more than two proportions, 115–116
comparing two means, 114
comparing two proportions, 115t, 115
concepts involved with, 113–114
confidence intervals, 113
confounding, 117f
exploring/checking data, 112
hypothosis testing, 113
introduction, 110
meta-analysis, 117
methods of analysis, 114–117
necessity of, 110
non-parametric/parametric statistics, 113–114
planning and performance of, 110–111
power, 113–114
risks and odds, 112
software for, 117–118
standard error, 113
summarising data, 111–112
types of data, 111f, 11f–112
uses for, 110
cell therapy, 208
STOPPIT trial, 72
stratification in epidemiological research, 127
stratified randomisation, 78
strength of association, 123
structural measures in audits, 54
studentships, 178
study design in funding medical research, 173–174
sudden infant death syndrome (SIDS) research, 50
supervised medical research
background, 165
choosing candidate, 166
choosing supervisor, 165–166
choosing the right project, 167
conclusions, 170
frequency and type, 169
future plans, 168
managing disagreements, 169–170
networking and support, 168
during project, 167–168
research trainee responsibilities, 168
starting a research project, 167
starting supervision process, 166–167
supervisor responsibilities, 168
supervisor/trainee expectations, 168–169
supervisor responsibilities in research, 168
surrogate outcomes, 138
systematic literature reviews, 40t, 40, 198, 203–204, 242
systems biology. See -omic research
tablet devices, 13, 15
tabloid papers, 39
Taiwanese National Health Insurance Database, 238
tasking with medical research, 9f, 9
taxpayer funding sources, 177
Term Breech Trial, 72, 204–205
test performance in epidemiological research, 132
theoretical epidemiology, 119
thecapeutic misconception, 146
time constraint concerns, 21, 22f
time management in medical research conclusion, 11
deadlines, 10
delegation, 10–11
e-mails, 11
hiding, 11

© in this web service Cambridge University Press www.cambridge.org
introduction, 8
planning for, 8
prioritisation in, 9f
resources utilization, 11
saving time, 10
setting goals, 8–9
tasking with, 9f, 9
timetabling in, 9
wasting time, 10
time sequence, 123
time series, 139–140
timetabling in medical research, 9
tissue-based research, 245–246
Tracheal Occlusion To Accelerate Lung Growth Trial (TOTAL), 215
trainee advice in laboratory research, 221–222
transcriptomics, 98
translational research, 256
transplacental drug therapy, 208
travel and exchange grant, 176
Trial of Randomised Umbilical and Fetal Flow in Europe (TRUFFLE), 211
TRIP database, 32, 33
trophoblast laboratory research, 218
Twin anaemia polycythaemia sequence (TAPS), 213
twin reversed arterial perfusion sequence (TRAP), 216
twin-to-twin-transfusion syndrome (TTTS), 213, 215, 216
Twitter, 26
two-arm parallel group, 73
UK Obstetric Surveillance System (UKOSS), 212
ulipristal acetate (UPA), 248–249
ultrasound observations, 212, 213
understanding animal research, 87
United Kingdom Ethics Committee Authority (UKECA), 210
United Kingdom Obstetric Surveillance System (UKOSS), 229
Universities Federation for Animal Welfare (UFAW), 83
university guidelines for medical thesis, 198
unknown data, 107
User Involvement in Voluntary Organisations Shared Learning Group, 155–156
vaginal prolapse case example, 69
valid consent, 142–143
validation, 136f, 136f–138, 137f, 138f
validity in epidemiological research, 131t–133, 132f, 132t
variable numbers of tandem repeats (VNTR), 88, 89
variables
association between continuous variables, 116f, 116f–117
binary variables, 111
categorical variables, 111
continuous variables, 111, 116f, 116f–117
discrete variables, 111
individual patient survival, 134
video in medical research presentations, 184–185
visual aids in medical research papers, 183–185
voice recognition software, 18
voluntariness, 142–143, 148
vulval cancer, 258
Walport Fellowship, 1
Web 2.0 technology, 20, 21f
Web of Science, 192
Wellcome Trust, 190, 193, 237
whole genome sequencing (WGS) technologies, 94
withdrawal in epidemiological research, 135–136
word processing, 15f, 15
World Endometriosis Research Foundation (WERF), 246
World Health Organization (WHO), 231, 239
World Medical Association, 189
writing for publication audits, 193
case reports, 193–194
choosing journals, 193
conclusion, 195
Equator network, 188
esteem measures, 193
ethics approval, 189
impact factor, 192
introduction, 188
medical thesis, 199
medicinal products and RCTs, 190
open access, 192–193
original data, 194
plagiarism concerns, 195
prospective registration, 189–190
reporting guidelines, 191–192
research vs. audit, 190–191
before submission, 194–195
types of research studies, 188–189, 189t