

Index

A

- ABSSSI. *See* Acute bacterial skin and skin structure infections (ABSSSI)
- Academics, 11
- Actinonin, 170
- Acute bacterial skin and skin structure infections (ABSSSI), 4, 171
- Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI), 4–5
- Aminoglycosides, 3, 174
- Analogues, 168
- Animal, mice, 107
- Animal models
- Monte Carlo, 59
 - pharmacokinetic/pharmacodynamic (PK/PD), 59
- Antibiotic stress, 22
- Antibiotic resistance, 1, 32–34
- Antibiotic resistome, 15, 17
- Antibiotics
- amikacin, 157
 - aminoglycosides, 158, 159
 - antibacterial, 160
 - azithromycin, 156
 - β -lactams, 158, 159
 - carbapenem, 158
 - ceftazidime, 157
 - chloramphenicol, 159
 - chloramphenicol, 158
 - ciprofloxacin, 157
 - erythromycin, 159
 - ethambutol, 155
 - ethidium bromide, 155, 159
 - fluoroquinolone, 155, 156, 158, 159
 - gentamicin, 157
 - imipenem, 156–160
 - isoniazid, 155
 - levofloxacin, 158
 - macrolide, 155, 156, 158
 - meropenem, 157
 - methicillin, 159
 - metronidazole, 156
 - minocycline, 155, 159, 160
 - piperacillin, 157
 - piperacillin-tazobactam, 155
 - quinolone, 155, 156
 - streptomycin, 155
 - telithromycin, 155, 156
 - tetracycline, 154, 155, 157–160
 - tetraphenylphosphonium, 155
 - tigecycline, 153, 160–161
 - tobramycin, 157
 - trimethoprim, 159
 - trime-thoprim, 154
- Antifungal resistance
- amphotericin B, 54
 - azole, 55
 - echinocandins, 55
- Antimicrobia, 157
- Antimicrobial resistance
- carbapenemases (CREs), 46
 - extended-spectrum beta lactamase (ESBL), 46
 - methicillin-resistant *Staphylococcus aureus* (MRSA), 45
 - penicillin-resistant *Streptococcus pneumoniae* (PRSP), 45
 - vancomycin-resistant *Enterococci* (VRE), 45
- Arms race, 149
- evolutionary, 139, 146–147

- ATP synthase, 93
 Atypical RTI pathogens, 170
 Avibactam, 173
 Aztreonam, 173
- B**
 Bacteraemia, 7
 Bacteria
 bacilli, 107
 Campylobacter jejuni, 105
 Campylobacter spp., 106
 Chlamydia spp., 106
 Clostridium spp., 106
 endospores, 101
 Enterococcus spp., 105
 Escherichia coli, 101
 gram-negative, 105
 gram-positive, 105
 Helicobacter pylori, 105
 Mycobacterium tuberculosis, 105
 myxospores, 101
 Pseudomonas aeruginosa, 105
 Salmonella, 105
 Salmonella spp., 106
 S. enteritidis, 105
 S. flexneri, 105
 Shigella sonnei, 105
 Shigella spp., 106
 Staphylococcus aureus, 101
 tubercle bacilli, 108
 VBNC, 112
 V. cholerae, 105
 Vibrio spp., 105
 Vibrio vulnificus, 105
 Yersinia spp., 106
 Bacterial challenge, 11
 Bacterial resistance, 32–34
 Bas 30072, 10
 BC-3781, 169
 Beta-lactams, 3
 methicillin/oxacillin, 48
 penicillin, 48
 Bicyclolide, 169
 Bioaccumulation, 144
 Biofilm, 122, 124–126
 Biothreat pathogens, 169
 β -lactamase inhibitor, 172
 β -lactamases, 20, 24
 Blood cultures, 10
 British Society for Antimicrobial
 Chemotherapy (BSAC), 8, 39
- C**
Candida albicans, 124
 CAP. *See* Community-acquired pneumonia
 (CAP)
 Carbapenem, 174
 Carbapenemases
 etrapenem, 51
 imipenem, 52
 meropenem, 52
 NDM-1, 51
 Ceftaroline, 173
 Ceftazidime, 10, 176
 Ceftriaxone (CXA-101), 176
 Centers for Disease Control and Prevention
 (CDC), 2
 Cephalosporin, 172
cfr resistance, 171
 Chromosomal genes, 91
 Ciprofloxacin, 22, 130, 173
 Classes, 168
 Clinical trials, 2
 Clofazimine, 90
Clostridium difficile
 fidaxomicin, 50
 metronidazole, 50
 vancomycin, 50
 Combination antibacterials
 CBR-2092, 58
 CSA-13, 58
 EDP-420, 58
 Community-acquired pneumonia (CAP), 170
 Community-acquired respiratory tract
 infection., 169
 Companies, 11
 Co-selection, 141, 142, 144
 Co-selects, 147–149
 Critical path, 6
- D**
 Dalbavancin, 171
 Danish Integrated Antimicrobial Resistance
 Monitoring and Research Programme
 (DANMAP 2009), 35, 36
 Dapsone, 90
 Daptomycin, 2
 Delafloxacin, 172
 Development
 carbapenem, 57
 cefdinir, 57
 ceftaroline, 57
 colistin, 56

- dalbavancin, 57
- garenoxacin, 58
- iclaprim, 58
- penem, 57
- plazomicin, 58
- prulifloxacin, 58
- retapamulin, 57
- Diagnostics, 11
- Diaminopyrimidine, 171
- Diazabicyclic-octane, 175
- Dihydrofolate reductase, 171
- Diversity
 - genetic, 136
 - microbial, 136
- Domiciliary treatment, 89
- Dormancy mechanisms
 - β -lactam, 127
 - candidate persister genes, 126–127
 - persister induction, 129
 - phosphorylating elongation factor, 128
 - regulators, 126
 - TA modules, 127, 128
 - TisB role, 130
- Drug resistance and drug tolerance, 122–123, 125–126
- E**
- Early bactericidal activity (EBA), 92
- Economic barriers, 9
- EDP-420, 169
- Efficacy Working Party (EWP), 6
- Efflux, 22
 - multiresistant, 157
 - resistance, 153–157
- Efflux pumps, 3
- Enterobacteriaceae, 174
- Enterococcus faecium*, 35, 169
- Erm, 19
- Ertapenem, 4
- Erythromycin, 19
- Escherichia coli*, 34, 36
- ESKAPE, 4
- Ethambutol, 89
- European Antimicrobial Resistance network (EARS-NET), 8
- European Centre for Disease Prevention and Control (ECDC), 7
- European Federation of Pharmaceutical Industries and Associations (EFPIA), 7
- European Medicines Agency (EMA), 6–7
- Evidence base, 9
- Extended-spectrum beta-lactamases (ESBLs), 3
 - cephalosporins, 51
 - cephamycins, 51
- Extinction, 137
- F**
- Febrile neutropenia, 7
- Fluoroquinolones, 21, 130, 172
- Finafloxacin, 173
- Fitness
 - cost, 138, 147
 - decreased, 138
- Fluoroquinolones, 21, 130, 172
- fmt* mutants, 170
- Food and Drug Administration (FDA), 2
- G**
- Gemifloxacin, 4
- Generic, 9
- Gene transfer, horizontal, 136, 138
- GlaxoSmithKline, 9
- Governmental/Institutional Surveillance Programmes
 - Active Bacterial Core surveillance (ABCs), 37
 - Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS), 35
 - Danish Integrated Antimicrobial Resistance Monitoring and Research Programme (DANMAP 2009), 36
 - European Centre for Disease Prevention and Control (ECDC), 34
 - National Antimicrobial Resistance Monitoring System (NARMS), 36
 - Swedish Strategic Programme against Antibiotic Resistance (STRAMA), 35
- Governments, 11
- Gram-negative bacteria, 38
 - Burkholderia cepacia*, 75
 - Campylobacter jejuni*, 71, 80
 - Escherichia coli*, 70
 - Haemophilus*, 80
 - Helicobacter pylori*, 80
 - Klebsiella pneumoniae*, 70
 - N. denitrificans*, 80
 - Neisseria gonorrhoeae*, 80
 - Neisseria meningitidis*, 80
 - Pseudomonas*, 80
 - Pseudomonas aeruginosa*, 70, 80

- Gram-negative bacteria (*cont.*)
Salmonella enterica, 70
Shigella, 70
- Gram-negative multidrug-resistant pathogens, 1
- Gram-positive bacteria, 38
- Gram-positive community-acquired pneumonia (CAP), 4
- Gram-positives, 169–172
- Greece, 4
- GSK1322322, 170
- GSK2251052, 175
- Guinea pigs, 88
- H**
- HAART 3, 90
- Haemophilus influenzae*, 39, 170
- Health Protection Agency (HPA), 4
- High-risk clones, 10
- hip* mutants, 121–125
- HIV, 90
- Hu/Coates models, 93
- Hybrid antibacterials, 168
- Hydrazinopyrimidine, 170
- I**
- Iclaprim, 171
- ICUs, 4
- Imipenem, 175
- Individual benefit, 4
- Industry/Pharmaceutical Surveillance Programmes
- British Society for Antimicrobial Chemotherapy (BSAC), 39
 - SENTRY Antimicrobial Surveillance, 38
 - Study for Monitoring Antimicrobial Resistance Trends (SMART), 38
 - Tigecycline Evaluation and Surveillance Trial (T.E.S.T.), 40
- Infection
- bacteremia, 100
 - chronic skin wounds, 102
 - dental plaques, 102
 - infective cystic fibrosis, 102
 - infective endocarditis, 102
 - osteomyelitis, 102
 - tuberculosis, 100
- Infection control, 11
- Institute of Medicine (IOM), 2
- Intra-abdominal infection, 174
- Intravenous, 169
- Intrinsic resistome, 25
- Isoniazid, 88
- J**
- JNJ-Q2, 173
- K**
- Ketolide, 169
- Klebsiella pneumoniae*, 34, 36
- KPC, 10
- L**
- Lab on a chip, 10
- Leprosy, 90
- Leucyl-tRNA synthase, 168, 174
- Levofloxacin, 173
- Linezolid, 173
- Lipoglycopeptide, 171
- Lipopolysaccharide (LPS)
- core saccharide, 68, 71
 - 3-deoxy-D-manno-oct-2-ulosonic acid, 71
 - L-glycero-D-manno-heptose, 71
 - lipid A, 68, 73, 77
 - O-antigen polysaccharide, 68
- M**
- Mass redundancies, 7
- MDR. *See* Multidrug-resistant (MDR)
- Medicine
- aminoglycosides, 109
 - amoxicillin, 109
 - ampicillin, 109
 - antibiotics, 100
 - antimicrobial agents, 100
 - dalbavancin, 110
 - daptomycin, 110
 - fluoroquinolone, 109
 - HT61, 110
 - isoniazid, 108
 - oritavancin, 110
 - penicillin, 103
 - pyrazinamide, 108
 - streptomycin, 109
 - telavancin, 110
 - vancomycin, 110
- Metallo- β -lactamase, 174
- Methicillin-resistant *Staphylococci* (MRSA), 4, 8
- MGE. *See* Mobile genetic elements (MGE)
- MK-7655, 175
- Mobile genetic elements (MGE), 136, 137
- Moraxella catarrhalis*, 39, 170
- Moxifloxacin, 173

- MRSA. *See* Methicillin-resistant *Staphylococci* (MRSA)
- Multidrug-resistant (MDR), 90, 169
- Multiresistance effect, 147, 148
- Mycobacterium leprae*, 90
- Mycobacterium tuberculosis*, 21, 125
- N**
- Nalidixic acid, 2
- Nanoparticles
- metal, 149
 - silver, 139, 140
 - silver nitrate, 140
 - titanium dioxide, 140
 - toxicity, 139
- Nanotechnology, 138
- Narrow-spectrum antibiotic, 10
- National Institutes of Health (NIH), 2
- National surveillance data, 2
- NDM-1-carrying enterobacteriaceae, 5
- Neisseria gonorrhoeae*
- cefixime, 53
 - ceftriaxone, 53
- New Delhi metallo-beta-lactamase (NDM-1), 3
- NIAID and public-private research efforts, 6
- Non-government organisation, 11
- Non-inferiority/superiority studies, 7
- Nonmultiplying persistence bacteria
- biofilm, 102
 - dormant, 105
 - persisters, 103
 - stationary-phase, 101
- Novexel 104, 10
- NXL104, 176
- O**
- Oral, 169
- Oritavancin, 171
- Orphan drug route, 3
- Oxazolidinone, 170
- Oxyimino-cephalosporin, 176
- P**
- p*-aminosalicylic acid (PAS), 88
- Panresistant gram-negative pathogens, 11
- Pathogenicity
- adhere to human tissues, 106
 - produce toxins, 106
- Peptide deformylase, 168
- Peptidoglycan
- β -lactam, 80
 - moenomycin, 80
 - transglycosylases, 80
 - transpeptidases, 80
- Persister cells
- biofilms, 125
 - dose-dependent killing, 122–123
 - drug resistance and drug tolerance, 122–123, 125–126
 - hip* mutants, 124–125
 - Mycobacterium tuberculosis*, 125
 - patients with cystic fibrosis (CF), 123–124
- Pfizer Wyeth, 9
- pH, 93
- Pharmacokinetic-pharmacodynamic (PK-PD) studies, 172
- Physiological state, 103
- exponential growth phase, 101
 - nonmultiplying persistent stage, 104
- Plasmids, 3, 91
- Plazomicin ACHN-490, 174
- Pleuromutilin, 169
- Pneumonia
- community-acquired, 176
 - hospital-acquired, 175
 - ventilator-associated, 175
- Polymyxin, 3
- Porin defects, alteration in cell wall, 3
- Post-antibiotic effect (PAE), 94
- Pseudomonas aeruginosa*, 8, 33, 123, 125, 175
- aminoglycoside, 52
 - biofilm, 53
 - peptides, 53
 - porin-mediated, 52
- Public health, 4
- Pyrazinamide, 89
- Pyrazinoic acid, 93
- Q**
- Quinolones, 3
- R**
- Radezolid, 170
- Rapid diagnostics, 3
- React, 7–8
- Regulatory guidelines, 9
- Research and development (R&D), 6
- Resistance
- antibiotic, 137, 138, 141–143
 - bacterial, 143, 144
 - biocoides, 149

Resistance (*cont.*)

- co-resistance, 141, 143
- cross, 141, 143
- development of, 143
- mercury, 137
- metal, 136, 141–143, 146, 149
- methicillin, 140
- microbial, 141
- multiple, 138, 142
- prevalence of, 143
- silver, 143, 144

Respiratory tract infection (RTI), 168

Resuscitation-promoting factors, 93

Rifampicin, 89

RNA, 3

RTI. *See* Respiratory tract infection (RTI)

S

Salmonella, 36

Salvarsan, 14

Sanofi-Aventis, 9

Scientific Advisory Group (SAG), 7

Selection, strong, 146

Skin and soft tissue infections (SSTI), 169

Solithromycin, 169

Speciation rates, 137

Staphylococci, 168

Staphylococcus aureus, 35, 37

- methicillin-resistant, 169

- methicillin-sensitive, 169

Stewardship

- cycle, 61

- restrict usage, 61

Strains, 90

Streptococcus pneumoniae, 34, 169

- macrolides, 49

- penicillin, 49

Streptococcus pyogenes, 170

Streptomycin, 88

Stress condition

- acidic and oxidative stress, 102

- altered pH, 103

- heat, 102

- nutrient limitation, 103

- osmolarity, 103

- osmotic challenge, 102

- shock, 102

- starvation, 105

Surveillance Data Link Network (SDLN)

Surveillance Programmes. *See* Governmental/Institutional Surveillance Programmes; Industry/Pharmaceutical Surveillance Programmes

Survival

- amplification, 46

- efflux, 46

- inactivation, 46

Sweden, 4

T

TATFAR, 7

Tazobactam, 176

TD1792, 169

Tetracyclines, 3

Textiles, 139

- antimicrobial, 144, 149

Therapeutic margin, 92

Thiacetazone, 91

Tigecycline, 4

TMC207, 93

Tolerance, 144, 145

Tolerant, 93

Torezolid, 171

Toxin/antitoxins, 121, 127–129

Transduction, 137

Transformation, 137

Ttorezolid, 171

U

Urinary tract infection, 173

US Congress, 8

V

Vancomycin, 19, 173

Vancomycin resistance

- plasmid-mediated, 48

- vanA, 48

- vanB, 48

- vanC, 48

- vancomycin, 48

W

WHO Global Strategy, 5

Wonder drugs, 2