

Index

- Accessory cholera enterotoxin (Ace) 142
- Accessory Colonization Factor (ACF) 131
- Activated sludge 308, 315
- Adhesins 125
- Aerobic systems 308, 314
- Algae 319, 320
 - Anabaena* sp. 217, 219
 - blooms 267
 - blue-green 216, 217, 219, 320
 - Chlorella* 320, 321
 - Euglena* 320, 321
 - green 215
 - Laminaria longicruris* 207
 - Lemna minor* 209, 211
- Alkalinity 264, 267, 268
- Altitude, role of 35, 36
- Altona 49
- Amino acids 77
- Amoebae 244, 303
 - Acanthamoeba palestinensis* 244
 - Acanthamoeba polyphaga* 245
 - Amoeba discoides* 244
 - Naegleria gruberi* 245
- Anabaena* sp., 217, 218, 219
- Anaerobic digesters 308
- Angola 263
- Animal models of cholera 128
- Anti-diarrhoeal/anti-secretory agents 80
- Antibiotics 78, 88
 - resistance to 80
- Antibody
 - secreting cells (ASCs) 104, 105
 - serum vibriocidal 158
- Antigens
 - lipopolysaccharide O-antigen 108, 109, 110
 - outer membrane proteins (OMPs) 111
 - pili/fimbrial 113
 - protective surface of *V. cholerae* O1 158
- Arcot 20
- Attached growth 302
- Australia 200
- Bangladesh 12, 189, 201, 261, 271
- Behavioural factors 257
- Belgium 20
- Bengal 34, 261
- Bethlem Hospital 42
- Black blood 54, 58
- Bleeding 55, 57
- Bombay 30
- Brandy 57
- Breast-feeding 276
- Brixton 42
- Broad Street 42, 45, 47
- Budd, Dr William 31, 42
- Calcutta 11
- Canada 21
- Carriers 191, 342
 - animals 191
 - humans 191
- Causative mechanisms of cholera 255, 256
- Chemotaxis 218
- Chesapeake Bay 199
- Chitinase 203
- Chlorination 297
- Chlorophyll 319

- Cholera
 as a protective agent upon
 convalescent patients 96
 bacteria as causative agents 50
 carriers 191, 342
 causation of 29, 32, 50, 255
 cots 85
 diffusion of incidence 274
 disease 19
 disease distributions 255
 early approaches to management
 58
 ecology 187, 333, 343
 endemicity of 190
 epidemics 7, 189
 epidemiology 188–202, 333–47
 geocology 260
 geography 255–94
 history 18–53, 54–74, 187, 192
 management of 54
 mode of communication 37
 monitoring of 283
 pathogenesis 125
 pathology 37
 protection following clinical
 disease 96
 regulation 146, 148, 149
 rehydration 60, 68, 74
 seasonality 189, 270
 theories of 32
 toxin 14, 97, 99, 100, 101, 102, 104,
 105, 106, 107, 111, 114
 toxin B subunit (CTB) 100, 101,
 102, 107, 108, 114
 vaccine development 125
- Cholera ships 28
 Devonshire 28
 HMS *Dreadnought* 26, 28, 33
 HMS *Grampus* 33
 Iphigenia 28
- Cholera-fungus controversy 34
- Climate, role of 29, 34
- Clinical management 81
- Cockles 236
- Colonization factors 129
 Accessory Colonization Factor
 (ACF) 131
- Comma-shaped bacillus 50
- Commission of the European
 Community 297
- Constantinople 30
- Copepods 203, 205, 231
- Core-encoded pilus 132
- Crabs 199, 205, 234, 237
 blue crabs 241
 ctx operon 140
- Cuba 21
- CVD 103-HgR 160, 162
 efficacy 164
 field trials of 165
 immunogenicity in populations in
 industrialised countries 163
 immunogenicity in populations in
 less-developed countries 163
 safety 161
- CVD 111 167
- CVD 112 168
- Cyanobacteria 216, 217, 219, 320
- Cytolysin 143
- Czechoslovakia 12
- Dams 262
- Debt 280
- Deficiency theory 32
- Dehydration, assessment of 82
- Dhaka 11
- Diarrhoea watery (secretory) 54
- Diet 84
 composition of 75
- Diffusion of incidence of cholera 275
- Disinfection of wastewater 316
- Displaced people 264, 277
 forceably displaced people 277
 population displacement 277
 refugees/refugee camps 277, 279
- DNA repair 344
- Dormancy 261, 283
- Dutch East India Company 19
 history 18
 theories 21
- E. coli* 300
- Ecology 187, 333, 343
 aquatic 301
 models 335
 structure phenomenon 278
 systems 257
- Education 259
- Eighteenth Century 19
- El Tor biotype 8, 51, 130, 132, 143,
 211, 239, 276, 315, 319, 335
- Electricity as a cause of cholera 32
- Endemicity 190
 areas 8
 foci 228
- England 23

- Enterotoxin 135, 157
 alternate mechanisms of action 137
 cAMP 137
 cellular response 137
 ctx operon 140
 enzymatic activity 135
 genetics 139
 structure 135
- Environment 192, 257, 259
 alkalinity changes 264, 267, 268
 aquatic 260, 265
 changed surface environment 264
 devegetation 265
 environmental hypothesis 192
 estuarine 267
 flooding 262, 268
 global environmental change 267
 localized environmental change 262
 locational vulnerability 275
 pH 267, 302, 313, 318
 population density, high 268
 salinity 264, 267, 268, 302
 sunlight 272, 303
 temperature 267, 272
- Environmental transitions 336
- Epidemics 8, 43, 44, 189
 see also Pandemics
- Epidemiology of cholera 7, 256, 333
 see also Cholera
- Evolution 301
- Excreta disposal 297
- Excreters 305
- Exeter 23, 24
- Faecal coliforms 298, 300, 317, 319, 324
- Faecal indicators 300
- Fauna 194, 230
 aquatic 203
 microhabitats 202, 228
- Fimbriae 113, 115
- First Pandemic 20
- Fish 232, 267
 Atlantic salmon 233
 climbing perch 242
 Crucian carp 242
 Dover sole 233, 242
 finless eel 242
 goatfish 236
 Hilsa ilisha 242
 loach 242
 murrel 242
 snakehead fish 242
 Tilapia 243
 turbot 233
- Fishermen 234
- Flooding 268
- Flora 194, 209, 214
 aquatic 206, 207, 212
- Foods 10
- Fourth Pandemic 21
- France 20
- Fungoid theory 32
- Ganges delta 20, 35, 203
- Gastric
 acid 260
 hypoacidity 276
- Geoecology 260
- Geographic Health Information Systems (GHIS) 284
 cross-sectional and spatio-temporal techniques 284
 global positioning systems (GPS) 285
 satellite imaging 285
- Geography of cholera 255–332
 ecology 270
 landscape epidemiology 256
 perspectives 258
- Global warming 267
- Glucose solutions 67
- Glucose-facilitated intestinal absorption 74
- Golden Square 42, 44
- Great Britain 20
- Gut-associated lymphoid tissue (GALT) 99
- Haemolysin 142–3
- Hamburg 23, 49
- Heat-stable enterotoxin (ST) 144
- History of cholera 18
- Holism 257
- Holland 20
- Human mobility 276
- Hybridomas 102, 109, 110
- Hygiene
 behaviour 257
 personal hygiene 259
- Hypochlorhydria 265
- Immunity
 antibacterial 157
 infection-derived 154

- Immunity (*contd*)
 intestinal 95, 96
 intestinal memory immune responses 104
 local 100, 108
 protective following natural infection 95, 99
- Immunity, cellular
 T-lymphocytes
 CD4 105–6
 CD8 105–6
 cytokines
 IL-4 106, 107
 IL-5 107
- Immunoglobulins
 colostrum 111
 coproantibody 99
 IgA 96, 97, 99, 102, 105, 107, 109, 111
 IgG 99, 100, 102, 107, 109, 111, 112
 IgM 99, 100, 105, 109
 polymeric IgA 100, 109
 secretory IgA (SIgA) 96, 97, 99, 100, 112
 serum immunoglobulins 97, 103, 100, 101, 112
- Immunological memory 104, 105
- India 196
- Indicator bacteria 315
- International Monetary Fund 280
- Intestinal memory immune responses 104
- Intravenous rehydration 60, 63, 64, 67, 69, 73
- Irrigation 298, 299
- Italy 21, 200
- Lagoons 317
- Lamina propria 98, 101
- Latta 61, 65, 66
- Lipopolysaccharide (LPS) 103, 107, 108, 111, 113
 O-antigen 108, 109, 110
- London Basin 36
- London 25
- M cells 99
- Macromolecular scavenging 344
- Macrophytes, marine 207
 freshwater 209, 210
- Madras 30
- Malaysia 201, 235
- Malnutrition 264, 280
- Management of cholera 54
 clinical 81
 early approaches to 58
- Mannose–fucose-resistant haemagglutinin 131
- Mannose-sensitive haemagglutinin 132
- Mecca 23
- Medical service 259
- Microcosm
 studies 323
 seawater 195
- Microhabitats of *V. cholerae* 202, 228
- Microphytes, marine 212
 association with bacteria 213
 freshwater 214
- Mines 41
- Monitoring cholera 283
 in physical environment 283
 surveillance 283
- Monoclonal antibodies 102, 106, 109
- Motility and flagella of *V. cholerae* 128
- Mozambique 263
 structural change in 280
- Mucosal immunoglobulin 101
- Mucus-dissolving enzymes 125
- Mussels 126
- New Cholera Toxin (NCT) 144
- New York 49
- Newcastle epidemic 44
- Nineteenth Century, early 20
 causation of cholera 29
- Nitrous oxide 56
- Non-culturable, viable 261
- Norway 20
- Nutrient intake during infection 81
- Opium 57
- Oral immunization 101, 102, 105, 106, 107, 109, 112, 115
- Oral rehydration solution (ORS) 76, 77, 87
- Oral rehydration therapy (ORT) 71, 47, 83, 87
 complications of 84
- Outer Membrane Proteins (OMPs)
 103, 111, 112, 113, 114, 115, 133
 antigens 111
- Oxfam Sanitation Units 309
- Oxygen 56
- Oysters 205, 238, 243

- Ozonic theory 32
- Pandemics 8, 9, 19, 188, 263
 spread 342
 strains 343, 345
- Pathogen indicators 295
- Pathology and mode of
 communication of cholera
 (historical) 37
- Peru 201, 261
- Peru-14 167
- Peyers patches (PPs) 97, 98, 99, 102,
 106, 107, 109, 163
- pH 267, 302, 313, 318
- Philippines 235
- Pilgrimages 22
- Pili
 antigens 113
 core-encoded pilus 132
 Toxin Corrugated Pilus (TCP)
 112, 125
tcpA 113, 130
- Plankton 230, 267
 phytoplankton 232, 303
 zooplankton 231, 242
- Plasma cells 97
- Ponds
 anaerobic 317, 318
 facultative 317, 318, 321
 macrophyte and reed beds 324
 maturation 317, 318, 321
- Population density, high 268
- Protozoa 321
- Pump, the 45
- Rainfall 271
 reduction 267
- Recombinant vaccine candidates 159
- Reed beds 324
- Regulation of virulence 146
in vivo regulation 149
 iron regulation 148
toxR regulon 146
- Rehydration
 complications of 84
 fluids 68
 intravenous 60, 63, 66, 67, 69, 71,
 72
 oral 71, 74, 75, 76, 77, 83, 84, 87
 rectal 61, 70
 route of administration 68
- Reservoirs 187, 191, 192, 202, 203,
 206, 212, 214, 260
 alkaline aquatic 263
 animals 191, 202, 203, 205, 230
 aquatic 265
 of *V. cholerae* 187, 191, 193
 wastewater as 301
- Resting phase 229
- Rice 77
- Risk reduction strategies 283
- Royal Free Hospital, The 26
- rRNA 300
- Rwanda 279
- Salinity 264, 268, 302, 303
Salmonella typhi Ty21a 110
- Sanitary Conference, Rome 30
- Sanitation 10, 259, 265
 standards in 278
- Sea mullet 205
- Seamen's Hospital Society 26
- Seasonality 270
 behavioural factors 273
 epidemic curve 271
 estuarine cities 271
 fishing 274
 handwashing 274
 human mobility 271
 faecal contamination 271
 famine 274
 migration 274
 non-availability of water 274
 of the host 273
 poverty 273
 rainfall 271
 sewage lagoons 272
 socioeconomic effect 273
 sunlight 272
 temperature 272
- Second Pandemic 20
- Secondary transmission 276
- Sedimentation 312, 314
- Septic tanks 308
- Sewage/sewers 296, 305, 306, 307
 treatment 296
- Shellfish 234
- Shiga-like toxin 144
- Shrimp 235
- Sicily 21
- Snow, Dr John 31, 37, 39, 41, 255
- Societal context 257
- Socioeconomic
 factors 280
 status 257
- Sociogeography 258

- Soil 21
 elevation of 35
 role of 37
- South/Central America 21, 239
- Spain 21
- Spatial perspective 255
 behaviour 256
 cause and effect 256
 causal mechanisms 255
 disease distributions 255
 ecological systems 257
 education 259
 geographical perspectives 258
 landscape epidemiology 256
 medical cartography 255
 medical service 259
 personal hygiene 259
 sanitation 259
 societal context 257
- Squid 235
- St. Petersburg 23
- Stomach acid barrier 125
- Structural adjustment policies 279
 structural adjustment programmes 280
- Sucrose 77
- Sunderland 24
- Sunlight 272, 303
- Survival 211
 ecological models of 335
 experiments 193, 195
 inter-epidemic 334
 phase 338
 phenotypes 340
- Suspended growth 302
- Switzerland 21
- Tanzania 271
- Taxonomy of vibrios 1
- Temperature 272
- Third Pandemic 21
- Toxin corrugated pili (TCP) , 125, 130
- Toxins 134
 Accessory cholera enterotoxin (Ace) 142
 heat-stable enterotoxin (ST) 144
 enterotoxin 135, 157
 genetics of 139
 haemolysin/cytolysin 143
 New Cholera Toxin (NCT) 144
 role of additional toxins in disease 145
 Shiga-like toxin 144
 sodium-channel inhibitor 145
 tcpA 113, 130
 Zonula occludens toxin (Zot) 141
- toxR* 113, 125
 toxR regulon 146
- toxR* 125
- Transudate from serum 100
- Trickling filters 308, 315
- Ultramicrobacteria 229
- United Kingdom 198
- USA 198, 237
- V. cholerae*, see *Vibrio cholerae*
- Vaccination 11
 oral 97, 150
- Vaccines 95
 attenuated *S. typhi* expressing *V. cholerae* O1 antigens 168
 attenuated *V. cholerae* O1 153
 attenuated *V. cholerae* O1 El Tor 165–6
 Bengal-15 169
 bivalent *Salmonella typhi* Ty21a 110
 combination cholera-toxin B-subunit-WCV (B-WCV) 102, 103, 104, 107, 109
 CVD-103HgR 108
 killed whole cells (WCV) 103, 104, 107
 live, attenuated 97, 108
 live, against *V. cholerae* O139 168
 non-living oral 150
 parenteral whole-cell inactivated 157
 rationale for live cholera vaccines 153
 recombinant vaccine candidates 159
 toxin-deletion mutants 108
- Vellore 20
- Viable, non-culturable cells (VNCs) 216, 232, 336, 303, 341
- Vibrio cholerae* El Tor 8, 15, 130, 132, 143, 211, 239, 276, 315, 319, 335
- Vibrio cholerae* non-O1 11, 12, 13, 14, 191, 229, 301, 315, 322
- Vibrio cholerae* O139 7, 11, 99, 101, 114, 246, 259, 262, 301
- Bangladesh strains 247
 dispersion 269
 immunity 270

- Vibrio cholerae*
 biotypes 6
 characteristics 1–17
 colonization 129
 ecology 187–254, 333–47
 ecology, aquatic 301
 epidemiology 7
 identification 3
 immunity to 95–124
 isolation 197, 198, 199, 200, 201, 204
 microhabitats 202, 228
 motility/flagellae 128
 non-culturable 217
 pathogenesis 125–50
 reservoirs 191, 192, 193, 202, 203
 serotyping 5
 survival 193, 195, 211, 334, 338, 340
 taxonomy 1, 6, 194
 vaccines 150–71
 zoological microhabitats 228–54
Vibrio mimicus 3, 7, 11, 14, 301
Vibrios
 biochemical characteristics 4
 isolation 204
 reservoirs 206, 212
 taxonomy 1
Volunteer studies 126, 127
Waste stabilization pond (WSP) 297, 316
Wastewater 295–332
 concentrations of *V. cholerae* in 304
 disinfection of 316
 effluent 322
 treatment 295, 297, 299, 300, 303, 304, 308, 316
Water hyacinth 303
Water
 barrages 262
 brackish 268
 drinking 41
 groundwater 263
 salt 265
 storage 257
 supply 280
Waterborne Theory 37
Whitehead, Rev. Henry 45, 48
World Bank 257, 280
Zonula occludens toxin (Zot) 141