Drug Use and Abuse

Stephen A. Maisto
Syracuse University

Mark Galizio
University of North Carolina at Wilmington

Gerard J. Connors
Research Institute on Addictions, University at Buffalo
CHAPTER 5

Psychopharmacology and New Drug Development 91

Characteristics of Users 92
  Biological Characteristics 92
  Psychological Characteristics 93

Social and Environmental Factors 96

Tolerance 97
  Types of Tolerance 97
  Explanations of Tolerance 98

Behavioral Pharmacology 101
  Reinforcement and Punishment 102
  Operant Principles and Drug Dependence 103
  Drug Discrimination 104
  Conflict Paradigm 105

Animal Models and Human Drug Use 105

Human Behavioral Pharmacology 106
  Ethical Issues 106
  Placebo Controls 106

New Drug Development 108
  Clinical Trials and FDA Approval 108
  Distribution and Marketing 110
  Generic Drugs 111

Summary 112

CHAPTER 6

Cocaine, Amphetamines, and Related Stimulants 115

The Coca Leaf 116

Early Use of Cocaine 118

The Amphetamines 120

Cocaine Epidemic II 121

The Return of Meth 126

Pharmacokinetics of Stimulants 129

Mechanism of Stimulant Action 130

Acute Effects at Low and Moderate Doses 130
  Physiological Effects 130
  Behavioral Effects 131

Acute Effects at High Doses 133

Effects of Chronic Use 133
  Tolerance 133
  Dependence 135

Stimulant Drugs and ADHD 135
Summary 139

CHAPTER 7

Nicotine 141

History of Tobacco Use 143
  The West Discovers Tobacco 143
  Tobacco as Panacea 144
  From Panacea to Panned 144

Prevalence of Tobacco Use 145
  Smoking in the United States 145
  Initiation of Smoking 147
  Smokeless Tobacco Use 148

Pharmacology of Nicotine 149
  Sites of Action 149
  Pharmacokinetics 149

Tolerance and Dependence 151
  Tolerance 151
  Physical Dependence 152

Acute Effects of Nicotine 152
  Nicotine's Dependence Liability 153

Effects of Chronic Tobacco Use 154
  Tar, Nicotine, and Carbon Monoxide 156
  Diseases Linked to Cigarette Smoking 157
  Other Tobacco Products and Health 158
  Passive Smoking 158

Treatment of Cigarette Smoking 160
  The Necessity of Formal Treatment 161
  Treatment Effectiveness 162
  Conclusions about the Treatment of Cigarette Smoking 164

Summary 167

CHAPTER 8

Caffeine 170

Sources of Caffeine 171

History of Caffeine Use 173

Prevalence of Caffeine Consumption 174

Pharmacology of Caffeine 176
  Sites of Action 176
  Pharmacokinetics 177
Medical and Psychotherapeutic Uses 269
  History of Therapeutic Use 269
  Nausea and Vomiting 270
  Cachexia 272
  Glaucoma 272
  Other Uses 272

Physiological Effects 273
  Acute Effects 273
  Longer-Term Effects 273

Psychological Effects 275
  Behavioral Effects 275
  Cognitive Effects 276
  Emotional Effects 277
  Social and Environmental Effects 278

Summary 280

CHAPTER 12
Hallucinogens 283

Overview 284

Serotonergic Hallucinogens: LSD and Related Compounds 285
  Early History 285
  Recent History 288
  Mechanisms of Action of LSD-Like Drugs 291
  Pharmacokinetics of LSD-Like Drugs 291
  Psychotherapeutic Uses 292
  Effects of Serotonergic Hallucinogens 293
  Adverse Effects of Serotonergic Hallucinogens 293

Methylated Amphetamines 296
  Overview 296
  History and Epidemiology 297
  Effects of Methylated Amphetamines 298
  Toxicity 300
  Residual Effects of MDMA 300

Anticholinergic Hallucinogens 302

Dissociative Anesthetic Hallucinogens 303
  History 303
  Pharmacokinetics 304
  Effects of PCP and Ketamine 304

Salvinorin A (Salvia) 305

Summary 306

CHAPTER 13
Psychotherapeutic Medications 308

Historical Overview 310
  The Pre-Chlorpromazine Era 310
  The Age of Chlorpromazine 311

Epidemiology 312

Classes of Drugs and Their Actions 314
  Antipsychotics 314
  Antidepressants 319
  Antianxiety Agents 326
  Mood-Stabilizing Drugs 339

Psychotherapeutic Drugs and Pregnancy 341

Summary 342

CHAPTER 14
Other Prescription and Over-the-Counter Drugs 347

Overview 348

Prescription Drugs 348
  Birth Control Drugs 348
  Anabolic Steroids 351

Over-the-Counter Drugs 356
  FDA Classification 356
  Analgesics 357
  Cold and Allergy Medications 358
  Over-the-Counter Stimulants and Sedatives 359

Herbal Products, Hormones, and Dietary Supplements 359
  Areca (Betel) 360
  DHEA 360
  Ephedra/Ma Huang 361
  Ginkgo Biloba 361
  Kava 361
  Melatonin 362
  S-Adenosy-Methionine 362
  St. John’s Wort 362
  Valerian 363
  Gamma Hydroxybutyrate 363

Inhalants 364

Summary 365
CHAPTER 15
Treatment of Substance-Use Disorders 368

Motivation to Change 370
Change without Formal Treatment 371
Self-Help Groups 372
  Alcoholics Anonymous 373
  Other Self-Help Groups 375
Models of Substance-Use Disorders 377
  Five Model Categories 377
  Biopsychosocial Model 378
Professional Treatment:
  Assessment and Goals 379
    Abstinence or Moderation? 380
    Harm Reduction 380
Alcohol Treatment Settings and Services 381
  Types of Settings and Services 381
  Pharmacological Treatment 383
  Effectiveness of Alcohol Treatment 384
  Nonpharmacological Professional Treatment 385
  Self-Help Treatment 386
  Effectiveness of Pharmacological Treatments 388
Other Drug Treatment Settings and Services 390
  Treatment of Nonopiate Drug Abusers 391
  Pharmacotherapy of Other Drug Problems 391
  Effectiveness of Drug Treatment 393
  Nonpharmacological Professional Treatment 394
  Self-Help Treatment 394
  Pharmacological Treatments 395
  Promising Treatment Techniques 396
Special Topics in Alcohol and Drug Treatment 398
  Treatment of Polysubstance Abusers 398
  Treatment of Dual-Diagnosis Patients 399

Relapse 399
Models of Causes and Treatment Methods 402
Economic Factors in Alcohol and Drug Treatment 403
The Stepped Care Approach 404
Summary 405

CHAPTER 16
Prevention of Substance Abuse 409

Defining Prevention 411
Models of Prevention 411
  Sociocultural Model 412
  Distribution of Consumption Model 414
  Proscriptive Model 415
Principles of Drug Abuse Prevention 416
Current Topics in Prevention 419
  Education and Mass Media Efforts 420
  Affect-Oriented Programs 422
  Alternative Behaviors and Resistance-Skills Training 423
  Worksite Programs 424
  Programs for College Students 426
Closing Comments on Prevention 429
Summary 429

GLOSSARY 433
REFERENCES 440
INDEX 474