

## INDEX

Note: CVD stands for cardiovascular disease.

Page numbers in *italics* indicate figures.

Page numbers followed by a “t” indicate tables.

Clinical trials and studies are indexed under the acronym of the name.

- 4S (Scandinavian Simvastatin Survival Study), 207, 213
- A1C (glycosylated hemoglobin), 21, 64t, 65, 76, 236. See also *Glycemic control*.
- in diabetes, 63, 64t, 309
  - ethnicity and, 63
  - goals/targets, 238t, 244, 252, 319t
  - monitoring, 249
  - obesity treatment and, 89
- AACE (American Association of Clinical Endocrinologists)
- algorithm for prediabetes management, 240
  - comprehensive treatment guidelines for diabetes, 57-58, 62, 67, 237, 238t-239t
  - lipids guidelines, 200t
  - treatment algorithm for glycemic control, 244, 246-248
- ABCD trial, 150
- Abdominal obesity, 15-19, 22t, 31-33, 320. See also *Waist circumference*.
- CVD risk and, 185
  - lipoprotein abnormalities in, 184t
- Acarbose (Precose), 256t, 279
- effect on CVD risk factors, 255t
- ACCOMPLISH trial, 149-150, 149t
- ACCORD trial, 151-154, 236-237, 236
- ACCORD-LIPIDS, 221-222
- ACE inhibitors (angiotensin-converting enzyme inhibitors), 154-155, 156t, 314
- actions, 45, 154, 170
  - clinical trials
    - AASK, 296
    - ABCD, 150
    - ACCOMPLISH, 149-150, 149t
    - ALLHAT, 150, 151, 153, 299
    - CAPP, 154
    - FACET, 154, 172
    - HOPE, 154
    - IDNT, 296
    - MICRO-HOPE, 298
    - PROGRESS, 299
    - RENAAL, 157, 296
    - RESOLV trial, 157
  - combination agents with, 174t, 175t
  - combination therapy
    - with aliskiren, 170
    - with CCBs, 149-150, 149t, 167, 175t

ACE inhibitors (angiotensin-converting enzyme inhibitors), combination therapy (*continued*)  
with diuretics, 174t  
metabolic problems of, 172  
CVD risk reduction with, 47, 149-150, 149t, 153, 157-158  
as initial medication choice, 140  
insulin resistance and, 155  
microalbuminuria and, 155  
monitoring for, 317t  
new-onset diabetes and, 150  
RAAS and, 44  
recommendations for, 60, 295  
renal function and, 154-155, 157, 295-296  
in treatment algorithm, 60, 147, 148  
use in diabetics, 45, 47, 154-155, 295-296, 314  
as preferred therapy for hypertension, 147

Aceon. See *Perindopril*.

Acetohexamide (Dymelor), 258t

ACT NOW study, 265

Actoplus Met. See *Pioglitazone/metformin*.

Actos. See *Pioglitazone*.

Adiponectin, 38, 45, 193

Adipose tissue, 30-33

adipocytes in, 30, 31, 47

angiotensinogen production by, 45, 45t

cytokines from, 31, 36, 37, 40

functions of, 30-31

location in body, 31, 32

location-specific metabolic effects of, 31, 34t-35t

macrophages in, 31, 33

metabolic effects of, 31, 34t-35t

Adipose tissue dysfunction, 33-36, 34t-35t

adipocyte, 30, 33, 40

CRP and, 38

inflammation and, 36

monocytes and, 37

small fat cells, 33-36

visceral adipose tissue, 30

white adipose tissue (WAT), 36

Adolescents, obesity prevalence in, 12

ADVANCE trial, 235, 236-237

Advanced glycosylated end products, 48t

Afreeza, 276

African American Study of Kidney Disease and Hypertension, 150

African Americans

A1C values, 63

hypertension treatment in, 148, 149, 167

mortality from obesity, 11-12

stroke and, 298

Age. See also *Elderly population*.

cardiovascular disease and, 72, 289

diabetes prevalence and, 14-15, 15t, 289

Age (*continued*)

fat mass increase and redistribution, 292

hypertension and, 138

physiological changes with, 292

Albiglutide (Tanzeum), 268-269

Albuminuria, 83t. See also *Microalbuminuria*.

Alcohol intake, moderation of, 139, 139t, 299, 321

Aldactazide (spironolactone/hydrochlorothiazide), 176t

Aldactone. See *Spironolactone*.

Aldosterone antagonists, 163t

Aliskiren (Tekturna), 170, 171t

ALLHAT, 150, 167

CHD/CV outcome in, 150, 151, 299

new-onset diabetes in, 150, 151

Allogliptin (Nesina), 256t, 269

alogliptin/metformin (Kazano), 257t

alogliptin/pioglitazone (Oseni), 257t

Alpha-glucosidase inhibitors (AGIs), 256t, 279

$\alpha_1$ -receptor blocker, 147

American Association of Clinical Endocrinologists. See *AACE*.

American Diabetes Association (ADA), 58

cardiometabolic risk factors, 71-73, 72

Amiloride (Midamor), 163t

amiloride/hydrochlorothiazide (Moduretic), 176t

Amlodipine, 151, 152

clinical trials, 151, 152, 153, 158, 172

combination agents, 175t

combination therapy, 170, 172

Amlodipine/atorvastatin (Caduet), 176t

Amlodipine/benazepril (Lotrel), 175t

Amlodipine/olmesartan medoxomil (Azor), 175t

Amlodipine/olmesartan/hydrochlorothiazide (Tribenzor), 175t

Amlodipine/valsartan (Exforge), 175t

Amlodipine/valsartan/hydrochlorothiazide (Exforge HCT), 175t

AMPK pathway, 307-308

Angina pectoris, prevalence of, 25t

Angiotensin-converting enzyme inhibitors. See *ACE inhibitors*.

Angiotensin II, overexpression in diabetic cardiomyopathy, 306

Angiotensin II receptor blockers. See *ARBs*.

Angiotensinogen, 47

Ankle-brachial index, 70

Anticoagulation, 238t, 304-305

Antihypertensive drugs. See *Hypertension management*.

Antiplatelet therapy, 47, 51, 315-320, 318t

Apixaban, 305

ApoB, 72, 186t, 187

risk levels, 60

treatment goals, 200t, 205t, 318t

for diabetics, 238t, 314, 317t

Apolipoproteins, 42t, 70

ARBs (angiotensin II receptor blockers), 44, 155-158, 159t

actions, 45, 155-157, 170

ARBs (angiotensin II receptor blockers) (*continued*)

clinical trials

- IDNT, 157, 296
  - IRMA, 157, 296
  - LIFE, 157-158
  - ONTARGET, 157
  - RENAAL, 157, 296
  - RESOLV, 157
  - VALUE, 150, 158
- combination agents, 174t-175t  
combination therapy, 170, 174t-175t  
efficacy, 155-158  
as initial medication choice, 140, 157  
monitoring for, 317t  
new-onset diabetes and, 158  
recommendations for, 47, 60  
renal function and, 155-157, 295-296  
in treatment algorithm, 60, 147, 148  
use in diabetics, 45, 47, 147, 158, 295-296, 314

Arrhythmias, 303-305

ASCOT study, 167, 214-216, 299

Aspirin, 47, 315-320, 318t

- contraindications for, 318t
- low-dose, 315-320, 318t
- recommendation for diabetics, 238t, 315-320, 318t
- Reye's syndrome and, 318t
- undertreatment with, 309

ASTEROID study, 216-217

Atacand. See *Candesartan*.

Atenolol (Tenormin), 160-161, 168t

Atenolol/chlorthalidone (Tenoretic), 175t

Atherosclerosis, 40, 50, 216-220

- fibrates and, 218-220
- lipid levels and, 187-188

Atorvastatin (Lipitor), 191, 208t

- clinical trials, 210t, 216, 218-219

Atorvastatin/amlodipine (Caduet), 176t

Atrial fibrillation, 25t, 303-305

- obesity and, 81, 83t, 303

Avalide (irbesartan/hydrochlorothiazide), 174t

Avandamet. See *Rosiglitazone/metformin*.

Avandaryl. See *Rosiglitazone/glimepiride*.

Avandia. See *Rosiglitazone*.

Avapro. See *Irbesartan*.

Azilsartan medoxomil (Edarbi), 159t

Azilsartan medoxomil/chlorthalidone (Endarbyclor), 174t

Azor (amlodipine/olmesartan medoxomil), 175t

“Band” (adjustable gastric band), 124

Bariatric surgery, 120-126

- benefits of, 120, 129
- CVD risk intervention with, 125-126

Bariatric surgery (*continued*)

future development and devices, 124-126

duodenal-jejunal bypass sleeve (EndoBarrier), 124-125

gastric electrical stimulation (GES), 124

implantable devices, 124-125

indications for, 120-121, 129

patient selection for, 120-121

procedures, 121-124

Adjustable Gastric Band (AGB), 124

Biliopancreatic Diversion with Duodenal Switch (BPD/DS), 123-124

FDA-approval for, 121

Roux-En-Y Gastric Bypass (RYGB), 121-123, 122

Vertical Sleeve Gastrectomy (VSG), 123

safety concerns, 126

in treatment models, 58, 62, 68t

Behavioral Risk Factor Surveillance System, 16-17

Belviq. See *Lorcaserin*.

Benazepril (Lotensin), 149-150, 149t, 156t

Benazepril/amlodipine (Lotrel), 175t

Benazepril/hydrochlorothiazide (Lotensin HCT), 174t

Bendroflumethiazide, 175t

Benicar. See *Olmесartan*.

$\beta$ -Blockers, 160-167, 168t-169t, 314

with  $\alpha$ -blocking properties, 165

clinical trials, 160-161

combination agents, 175t

combination therapy, 147, 172, 175t

combined  $\alpha_1$ - and  $\beta$ -blockers, 168t

CVD outcomes, 151

diabetes risk and, 164

glycemic control and, 161

hyperglycemia risk with, 161, 164

hypoglycemia with, 165

as initial medication choice, 140, 165

recommendation against, 161

new-onset diabetes and, 161-164

in treatment algorithm, 60, 147

use in diabetics, 60, 164, 165

with vasodilating properties, 147, 161, 165

Biguanide, 256t-259t. See also *Metformin*.

Bile acid sequestrants (BAS), 189t, 194t-195t, 281

colesevelam (Welchol), 253, 256t, 281

IMPROVE-IT trial, 191, 222

indications for, 199, 281

in therapy for hyperglycemia, 256t, 281

Biofeedback, 139t

Biomarkers, for cardiovascular disease, 17-19, 19t, 185

Bisoprolol (Zebeta), 168t

Bisoprolol/hydrochlorothiazide (Ziac), 175t

Blood clots, 83t

Blood coagulation, 50-51, 51

Blood glucose control. See *Glycemic control*.

Blood pressure, 317t. See also *Hypertension*.

- cardiometabolic risk and, 72
- in diabetic patients
  - benefits of tight control of, 46, 135
  - summary of treatments, 314-315, 317t
- dippers vs non-dippers, 136, 138
- elevated. See *Hypertension; Hypertension treatment*.
- levels
  - for diabetics, percentage of patients achieving, 309
  - dippers vs non-dippers, 136, 138
  - for hypertension, 74t
  - tight control of, benefits of, 151, 170-172
- measurement of, 136-138, 317t
- nocturnal values of, 136
- salt intake and, 144-145
- target levels, 58, 60, 65, 135-136, 137t, 145-146, 147, 148, 314, 317t
  - in diabetic patients, 135, 136, 137t, 145-146, 291, 296, 314
  - for diabetics, 135, 136, 137t, 145-146, 238t, 291, 296, 309, 314
- individualization in, 317t

BLOOM trials, 105-106, 108t-109t

BLOSSOM trial, 105, 108t-109t

BMI. See *Body mass index*.

Body fat, 31, 32, 66-67. See also *Body mass index (BMI); Obesity*.

- ectopic, 43, 51

Body mass index (BMI), 12, 66-67, 143t

- calculation of, 12, 66, 143t
- obesity and overweight defined by, 12, 13, 19t, 65-66, 67t
- weight classes, 19t, 67t

BPD/DS (biliopancreatic diversion with duodenal switch), 123-124

Bromocriptine mesylate (Cycloset), 255t, 256t, 279-281

- effect on CVD risk factors, 255t, 280-281, 280

Bumetanide (Bumex), 162t

Bupropion, 107

Bydureon, 266

Byetta (exenatide), 266

Bystolic. See *Nebivolol*.

C-reactive protein (CRP), 17-19, 19t, 20t, 38, 76

- cardiac CRP, 70

Caduet (amlodipine/atorvastatin), 176t

Calcium channel blockers (CCBs), 150, 167

- clinical trials
  - ABCD, 150
  - ALLHAT, 150, 151, 152, 299
  - FACET trial, 150, 154, 172
  - HOT, 167
  - SYST-EUR, 167
  - VALUE, 150, 158
- combination agents, 175t
- combination therapy, 147, 148, 149-150, 149t, 167, 172, 173, 175t
- CVD risk reduction with, 149-150, 149t, 151, 152, 167, 172
  - with combination therapy, 172, 173

Calcium channel blockers (CCBs) (*continued*)

- as initial medication choice, 140
- new-onset diabetes and, 150
- RAAS inhibitors vs, 150
- recommendations for, 60, 167
- in treatment algorithm, 60, 147, 148
- use in diabetics, 147, 167, 172, 314

Calcium intake, 139t

Calories, dietary recommendations for, 144t, 190t

Canagliflozin (Invokana), 257t, 271, 273-274

Cancer risk, 307-309

- endometrial cancer, 292

Candesartan (Atacand), 157, 159t

Candesartan/hydrochlorothiazide (Atacand HCT), 174t

Capoten. See *Captopril*.

CAPPP (Captopril Prevention Project), 154

Captopril (Capoten), 154, 156t, 157, 160-161

Carbohydrates, recommended dietary intake, 190t

Cardiometabolic conditions, 43, 52, 62

- staging system, 73, 74t-75t
- treatment algorithm (AAACE), 62

Cardiometabolic risk factors (ADA), 71-73, 72

Cardiometabolic syndrome. See *Metabolic syndrome*.

Cardiovascular disease (CVD), 11-27, 313-322

- costs of, 23-24
- diabetes and, 11, 29, 30, 45-46
  - treatment in, 313-322, 316t-319t
- incidence of, 24, 25t
- inflammation, role in, 37
- interrelationships of, 11-27
- mortality, 11
  - in diabetics, 11, 15, 16, 24
  - prior MI and, 15
- obesity and, 29, 30, 72, 81
- prevalence of, 24, 25t
- prevention, summary of, 316t-319t
- recurrence of, 25t
- risk. See *Cardiovascular disease risk*.
- risk reduction. See *Cardiovascular disease risk reduction*.
- risk stratification, 57-79

Cardiovascular disease prevention, 314-322, 316t-319t.

- See also *Cardiovascular disease risk reduction*.
- aggressive primary prevention, 70
- risk assessment and, 69-70

Cardiovascular disease risk, 11-79

- assessment of, 69-70, 204-206, 206t
- absolute risk, 69, 70
- multiple vs single (persistent) factors in, 69
- number needed to treat, 70
- relative risk, 69-70
- 10-year CVD risk, 204-206, 206t
- classifications based on serum lipid levels, 185, 186t

Cardiovascular disease risk (*continued*)

- components of, 29-55
  - adipose tissue dysfunction, 30-36
  - blood coagulation, 50-51, 51
  - conclusion on, 51-53
  - dyslipidemia, 41-44, 72, 183
  - endothelial dysregulation, 48-50, 49
  - glucose control, 229-237
  - hyperglycemia, 30, 49, 229-237
  - hypertension, 45-47
  - inflammation, 36-38, 72, 76
  - insulin resistance, 38-41, 49, 51-52, 72
  - interactions of, 30, 72
  - platelet aggregation, 50-51, 51
  - RAAS dysregulation, 44-51
- diabetes and, 15, 16, 24, 29, 72, 193
  - dyslipidemia in, 183-188
  - endothelial dysfunction and, 49
  - non-dipping of blood pressure and, 138
  - plasma cholesterol and, 57
  - prior history of MI, 15
  - risk reduction with therapies, 249-281, 254t-255t
    - T1D, 185-187, 229, 232
    - T2D, 15, 16, 57, 185, 229, 232, 233
  - treatment guidelines, 57-58, 254t-255t
- diagnostic tests for, 69-70
  - dyslipidemia and, 41-44, 72, 183-188, 186t
  - “high risk” state, components of, 29-30, 30
- interactions with obesity and diabetes, 29-55, 30, 72
- monitoring and follow-up, 58
- obesity and, 11, 17, 24, 30, 51-52, 72, 81-82, 83t, 193
  - treatment guidelines, 58-59, 82-134
- overview and interrelationships of, 11-27
- percentage of patients treated, 309-310
- risk factors, 72, 314-322, 316t-319t
  - age, 72
  - biomarkers, 17-19, 17t, 185
  - current levels of control of, 309-310
  - diabetes, 15, 16, 57, 72
  - diagnostic tests for, 69-70
  - dyslipidemia, 183-188, 186t
  - genetics, 72
  - hyperglycemia, 229-237
  - IFG and, 21, 52, 74t-75t
  - IGT and, 21, 52, 74t-75t
  - inflammatory biomarkers, 17-19, 19t, 76
  - LDL-C levels, 196, 197t
  - low adiponectin levels, 38
  - menopause, 290-291
  - metabolic conditions, 19-23, 51-53
  - metabolic syndrome, 21-23
  - microalbuminuria, 139

Cardiovascular disease risk, risk factors (*continued*)

- obesity, 11, 17, 24, 30, 51-52, 72, 81-82, 83t, 183, 185, 289
  - oxidative stress, 49, 51
  - prediabetes, 19-21, 65
  - prior history of MI, 15
  - smoking, 72
  - Type 2 diabetes, 15, 16
  - risk levels, treatment and, 60-61, 70
  - risk staging tools, 71-77
    - cardiometabolic condition staging system, 73, 74t-75t
    - cardiometabolic risk factors (ADA), 71-73, 72
    - Edmonton Obesity Staging System (EOSS), 76-77
    - Framingham Global Risk Assessment tools, 73-76
    - Reynolds Risk Score, 76
  - risk stratification, 57-79, 185, 186t. See also *Risk stratification*.
  - in special populations, 289-312
    - cancer risk, 307-309
    - cardiovascular considerations, 303-307
      - atrial fibrillation and arrhythmias, 303-305
      - heart failure, 305-306
      - sudden cardiac death, 306-307
    - current control of CVD risk factors, 309-310
    - elderly population, 292-294
    - gender-specific considerations, 289-292
    - renal disease, 295-296
    - sleep disturbances and sleep apnea, 299-303
    - stroke in diabetic and obese patients, 296-299
  - synergistic effects in, 51-52
  - undertreatment of, 309-310
- Cardiovascular disease risk reduction, 24, 313-322, 316t-319t
- AACE treatment algorithm, 58-59, 60-61
  - antiplatelet therapy, 51, 315-320, 318t
  - complications-centric model, 57-58, 58-59, 62, 321
  - in diabetes, summary, 313-322, 316t-319t
  - diabetes treatment and, 57-58, 249-281
  - dyslipidemia management, 65, 183-227, 315, 317t-318t.
    - See also *Dyslipidemia management*.
  - CVD risk assessment, 204-206, 206t
  - CVD risk of dyslipidemia, 183-188, 186t, 196, 197t
  - CVD risk reduction with management, 188-193
  - lipid levels, management recommendations, 188-193, 189t, 200t, 315, 317t-318t
    - actions of pharmacologic agents on, 194t-195t
    - order of priorities for, 188, 189t
    - treatment goals, 193-206
  - lipid lowering in diabetic subjects, 207-222, 210t-212t
  - management approach, 188-193, 189t, 190t
  - order of priorities in, 189t
  - pharmacologic therapy, 188-189, 189t. See also *Dyslipidemia management*.
    - agents for, 194t-195t
  - screening recommendations, 193-195

Cardiovascular disease risk reduction, dyslipidemia management (*continued*)  
treatment algorithm (AHA/ACC), 202-203  
treatment goals, 193-206  
for CAD risk, 200t  
for CVD prevention, 200-206, 202-203  
CVD risk and, 196-206, 198t, 200t, 206t  
in diabetics, 191-192  
HDL-C level, 196, 200t, 201t  
LDL-C levels, 195-199, 198t, 200t, 205t  
for metabolic syndrome risk, 201t  
triglycerides, 199, 200t, 201t

hyperglycemia management, 229-288, 238t-239t, 240.  
See also *Hyperglycemia management*.  
algorithms for management, 241, 242-243, 246-248  
CVD risk and, 229-237  
effects of pharmacological agents, 249-281, 254t-255t  
goals of glycemic management, 237-249, 238t-239t, 240, 252  
pharmacological therapy, 241-281  
agents for, 249-281, 254t-259t  
algorithms for treatment, 241, 242-243, 246-248, 250-251

hypertension management, 135-181.  
See also *Hypertension management*.  
in diabetics, 135, 136, 137t, 138, 145-146  
general approach, 135-140  
nonpharmacologic treatment, 139t, 140-146, 142t  
pharmacologic therapy, 146-178, 147, 148  
CVD risk reduction with, 149-150, 149t, 151-154, 152, 153, 157-158, 167  
target BP values, 65, 135-136, 137t, 142t  
for CVD risk reduction, 60, 62, 65  
for diabetics, 135, 136, 137t

obesity treatment/weight loss, 58-59, 62, 67-69, 68t, 81-134, 321  
CVD risk reduction with, 87-91, 88-90, 313-322  
pharmacologic treatments, 91-120, 94t-100t  
weight loss as primary intervention, 87-91, 88-90  
treatment, matching intensity to absolute risk, 69-70

CARDS, 210t, 216, 218-219  
CARE study, 207-213  
Carvedilol (Coreg, Coreg CR), 161, 164-165, 166t, 168t  
CHICAGO study, 265  
Children, obesity prevalence in, 12  
Chlorpropamide, 262  
Chlorthalidone, 162t, 174t, 175t  
clinical trials, 152, 153, 158-160  
Cholesterol absorption inhibitor, 189t, 194t-195t  
Cholesterol level, 186t, 190t. See also *Dyslipidemia*.  
CVD risk and, 185, 186t  
dietary cholesterol intake, recommended levels, 190-191, 190t  
HDL (HDL-C), 41-43, 72, 187, 191, 194t-195t  
CVD risk and, 39, 186t  
in diabetes, 43t

Cholesterol level, HDL (HDL-C) (*continued*)  
obesity treatment and, 84-85, 87, 89  
optimal, 186t  
raising, 189t  
reduced, 74t, 184t

LDL (LDL-C), 43t, 186t, 187, 190-191, 194t-195t  
CVD risk and, 185, 186t  
lowering, 189t  
obesity treatment and, 84-85, 88-89, 90  
target values, 43-44, 186t, 205t  
non-HDL-C, 194t-195t, 199, 200t, 205t, 238t, 314

Chronic kidney disease (CKD), 46, 148, 149, 230, 235  
Cigarette smoking. See *Smoking*.  
Circadian rhythms, 279-280  
Clinical trials and studies  
4S, 207, 299  
AASK, 150, 296  
ABCD, 150  
ACCOMPLISH, 149-150, 149t  
ACCORD, 151-154, 236-237, 236  
ACCORD-LIPIDS, 221-222  
ACT NOW, 265  
ADVANCE, 235, 236-237  
ALLHAT, 150, 151, 152, 153, 167, 299  
ASCOT, 167, 214-216, 299  
ASTEROID, 216-217  
BLOOM, 105-106, 108t-109t  
BLOSSOM, 105, 108t-109t  
CAPPP, 154  
CARDS, 210t, 216, 218-219  
CARE, 207-213  
CHICAGO, 265  
CONQUER, 101, 102t-103t  
COR trials, 107-110, 112t-113t, 114t-115t  
DAIS, 207, 218-220  
DCCT, 233, 234  
DDPOS, 85, 86  
DIAGAMI, 306  
DPP, 84-85, 84  
DPPOS, 85, 86  
DREAM, 47, 265  
EASY-FIT, 191  
EDIC, 233, 234  
ELIXA, 249  
EMPA-REG OUTCOME, 253, 273, 273, 274, 282  
EQUIP, 101, 102t-103t  
EXAMINE, 249, 269-270  
FACET, 150, 154, 172  
FIELD, 210t-211t, 220-221  
Framingham Heart Study, 73, 81-82, 297, 305-306  
GEMINI, 164-165, 166t  
Health Professionals Follow up Study, 17

Clinical trials and studies (*continued*)

Helsinki Heart Study (HHS), 207, 217-218  
HERS, 292  
HHS, 207, 217-218  
HOPE, 154  
HOT, 167  
HPS, 211t, 214, 215  
IDNT, 157, 296  
IMPROVE-IT, 191, 222  
IRAS, 187-188  
IRMA 2, 157, 296  
JUPITER, 217  
KEEPS, 291-292  
LEAD, 266-268  
LIFE, 157-158  
LIPID trial, 213-214  
Look AHEAD, 84, 85-91, 88-90  
MDRD, 295-296  
MICRO-HOPE, 298  
NAVIGATOR, 47  
NHANES, 16, 17, 19t  
Nurses' Health Study, 17, 289  
ONTARGET, 157  
ORIGIN, 308-309  
PEPI, 291  
PROACTIVE, 265  
PROGRESS, 299  
RECORD, 264  
RENAAL, 157, 296  
RESOLV, 157  
SAVOR, 249, 269-270  
SCALE, 111-117, 118t, 119  
SEQUEL, 101, 102t-103t, 104  
SHEP, 151, 158-160  
SOS, 126  
STOP-2, 160  
SYST-EUR, 167, 298  
TECOS, 249, 269-270  
UKPDS, 160, 160-161, 170-172, 235, 236-237, 261, 298, 304  
VA-HIT, 207, 212t  
VADT, VADT, 235-236, 236-237  
VALUE, 150, 158, 167  
Coagulation of blood, 50-51, 51  
Colesevelam hydrochloride (Welchol), 255t, 256t, 281  
Complications-centric model, 57-58, 58-59, 62, 73, 129, 321  
Computed tomography (CT), 70  
Congenital heart defects, 25t  
Congestive heart failure (CHF), in diabetics, 230  
CONQUER trial, 101, 102t-103t  
Contrave. See *Naltrexone SR/bupropion SR*.  
COR trials, 107-110, 112t-113t, 114t-115t  
Coreg/Coreg CR. See *Carvedilol*.

Coronary heart disease (CHD)

costs of, 23  
diabetes and, 11, 230, 289-290  
dietary recommendations, 190-191  
fibrates and, 220  
gender and, 289-290  
hypertension and, 46  
lipid levels, treatment goals, 200t  
obesity and, 83t  
outcomes in ALLHAT, 150, 152, 153, 167  
prevalence of, 25t  
recommended LDL-C level for, 196-199  
risk prediction, 76  
Corzide (nadolol/bendroflumethiazide), 175t  
Cozaar. See *Losartan*.  
Creatinine level, 221, 261  
Crestor. See *Rosuvastatin*.  
CRP. See *C-reactive protein*.  
Cycloset. See *Bromocriptine mesylate*.  
Cytokines, 31, 36, 37, 40, 41, 52  
  
Dabigatran, 304-305  
DAIS study, 207, 218-220  
Dapagliflozin (Farxiga), 257t, 271  
DASH diet, 142t, 145, 317t  
DCCT trial, 233, 234  
"Deadly duo" (diabetes and obesity), 15-19  
Demdex. See *Torsemide*.  
Depression, obesity and, 83t, 84  
DiaBeta. See *Glyburide*.  
Diabetes, 11-27  
  blood pressure in  
    benefits of tight control, 46, 135, 170-172  
    target BP values, 135, 136, 137t, 145-146, 291, 296, 314  
    percent of patients reaching, 309  
  cancer and, 292  
  cardiometabolic risk factors, 71-73, 72  
  cardiovascular risk in, 15, 16  
  complications, 233, 234  
    macrovascular, 135, 229, 230-231  
    microvascular, 135, 229, 230-231, 282  
  coronary heart disease (CHD) and, 11, 230  
  costs of, 24  
  CRP levels and, 19, 20t  
  CVD and, 11, 15, 16, 29, 30  
    hypertension and, 45-46  
  CVD risk and, 15, 16, 24, 49, 57, 72, 146, 193, 229-232, 314  
  dyslipidemia and, 183-188, 186t  
  interrelation with other factors, 30, 72  
  risk reduction, 12  
  risk reduction with therapy, 249-253, 254t-255t  
  CVD risk reduction, summary of, 313-322, 316t-319t

## Diabetes (*continued*)

- diagnostic criteria for, 59-65, 64t
  - changes in, 14
    - glucose testing, 59-63, 64t
- dyslipidemia in, 41, 183-188, 189t, 314
  - clinical trials of lipid lowering, 207-222
    - fibrates, 210t-211t, 212t, 217-222
    - statins, 207-217, 210-212t
  - CVD risk and, 183-188, 186t
  - dietary recommendations, 189-191, 190t
  - lipoprotein abnormalities, 41-44, 43t, 183-188, 184t
  - management approaches, 188-193, 189t
- endothelial dysfunction in, 48t, 49
- fibrinogen levels and, 19, 20t
- glucose control and, 229-249
- hyperactive phenotype in, 50
- hyperglycemia, 59, 229-237. See also *Hyperglycemia management*.
  - management of, 229-288
- hypertension and, 45-46, 47, 135-136
  - dippers vs non-dippers, 136, 138
- hypertension treatment in, 136, 137t, 150-172
  - target BP values, 135, 136, 137t, 145-146
- hypoglycemia and, 232, 237
- incidence of, 13-15, 14
  - new-onset diabetes, 150-172
- inflammation and, 229
- insulin resistance and, 229-232
- lipoprotein abnormalities in, 41-44, 43t, 183-188, 184t
- menopause and hormone replacement therapy, 290-292
- mortality from, 11, 24, 50
  - mortality from CVD causes, 15, 16, 24, 63, 229
- new-onset (NOD), 150-172
- obesity and, 15-19, 29, 30, 83t, 229, 289
  - as "deadly duo," 15-19
  - insulin resistance as link between, 29, 41, 46, 183
  - as twin epidemics, 12-15
- pathogenesis of, 229-232
- platelet activation and aggregation in, 50-51, 52
- prediabetes, 19-21, 65, 129
  - criteria for, 19-21, 64t, 65
  - monitoring of, 65, 66t
  - prevalence of, 21, 129
  - primary prevention of, 316t
  - progression to diabetes, 47, 65, 129
  - risk factors for, 66t, 74t-75t
  - treatment algorithm, 240
- prevalence of, 13-15, 14, 15t, 18, 24
  - by age, gender, and ethnicity, 14-15, 15t
  - of diagnosed and undiagnosed diabetes, 14-15, 15t
  - increase in
    - body weight and, 17-19, 18
    - reasons for, 13-14
    - by weight classes, 16-17

## Diabetes (*continued*)

- prevention, clinical studies on, 84-85, 84, 86
  - prothrombotic mechanisms in, 50, 51
  - risk
    - assessment with cardiometabolic condition staging system, 73, 74t-75t
    - as risk factor for CVD, 11, 15, 16, 24
    - risk factors for, 17, 18, 46, 289
  - stroke and, 11, 230, 296-299
  - Type 1 (T1D)
    - CVD risk and, 185-187, 229, 232
    - intensive glycemic control in, 233, 234
    - lipid levels in, 185-187
    - treatment of, 319t
  - Type 2 (T2D), 11, 15-19, 75t, 281-282
    - ACE inhibitors/ARBs and, 47
    - as contributor to CVD development, 57
    - CVD risk and associated conditions, 15, 16, 57, 185, 229, 232, 233
      - genes associated with, 233
    - CVD risk reduction with therapy, 249-253, 254t-255t, 281-282
    - dyslipidemia and, 183, 185
    - endothelial dysfunction and, 48
    - glucose control, clinical trials of, 236-237
    - intensive glycemic control in, 233-237
    - risk of, 38, 41, 75t
    - sleep disturbances and, 299-301, 302, 320
    - treatment recommendations, 57-58
  - undiagnosed, 13, 24
- Diabetes treatment/management, 229-237, 313. See also *Hyperglycemia management*.
- AACE guidelines, 57-58, 62, 237, 238t-239t
  - ACE inhibitors and ARBs, 45, 47
  - ADA/EASD guidelines, 58
  - aggressive blood pressure control, 46
  - choice of therapeutic agents, 321-322
  - clinical trials
    - DPP, 84-85, 84
    - DPPOS, 85, 86
  - comprehensive program for, 63-65
  - dyslipidemia, treatment targets, 58
  - management for CVD prevention, 43-44
  - pharmacological therapy, 241-281
    - agents for, 256t-259t
      - effects on CVD risk, 249-281, 254t-255t
    - suboptimal rates of treatment and control, 309-310
    - target BP values, 135, 136, 137t, 145-146, 291, 296, 314
    - treatment algorithms, 57-58, 242-243, 246-248
  - type 1 diabetes, 319t
- Diabetic nephropathy, 295-296, 315. See also *Microalbuminuria; Renal disease*.
- Diabinese. See *Chlorpropamide*.
- DIAGAMI trial, 306



- Diagnostic criteria
  - diabetes, 59-65, 64t
  - obesity, 65-67, 67t
  - prediabetes, 65, 66t
- Diagnostic tests, for CVD risk assessment, 69-70
- Diastolic blood pressure, 83t, 88, 125, 238t
- Diet, 142-146, 189-191, 193, 316t
  - caloric recommendations, 144t, 190t
  - DASH, 142t, 145, 317t
  - for dyslipidemia management, 189-191, 190t
  - high-fat, 190
  - for hypertension control, 139t, 142-146, 317t
  - lipid-lowering, 190t, 193
  - Mediterranean, 190
  - pharmacologic therapy along with, 191
  - recommendations, 190t, 193
  - sodium reduction, 139, 139t, 144-145, 145t, 190t, 299
- Diovan. See *Valsartan*.
- Diovan HCT (valsartan/hydrochlorothiazide), 174t
- Dipping, of diurnal blood pressure, 136
- Diupres. See *Reserpine/chlorthalidone*.
- Diuretics, 158-160, 162t-163t, 298-299
  - aldosterone antagonists, 163t
  - clinical trials
    - ALLHAT, 150, 151, 152, 153, 299
    - STOP-2, 160
    - UKPDS, 160
  - combination agents, 174t-176t
  - combination therapy, 140, 172, 174t-175t
  - CVD risk reduction with, 151
  - as initial medication choice, 140, 151
  - loop diuretics, 162t
  - need for, to reach BP goals, 140
  - plasma renin increase, 170
  - potassium-sparing, 163t
  - recommendations for, 60
  - safety concerns, 160
  - thiazide diuretics, 158-160, 162t
  - in treatment algorithm, 60, 147, 148
  - use in diabetics, 147, 160
- Dopamine receptor agonist, 256t, 279-281
- DPP (Diabetes Prevention Program), 84-85, 84
- DPPOS (Diabetes Prevention Program Outcomes Study), 85, 86
- DPP-4 inhibitors, 256t, 269-270
  - actions of, 254t, 269
  - clinical trials, 249, 269-270
  - combinations agents, 257t
  - CVD risk/outcomes and, 249, 254t, 269-270
  - dosages, 256t
  - generic and trade names, 256t, 269
    - alogliptin (Nesina), 256t, 269
    - linagliptin (Trajenta), 256t, 269
  - DPP-4 inhibitors, generic and trade names (*continued*)
    - saxagliptin (Onglyza), 256t, 269
    - sitagliptin (Januvia), 256t, 269
    - vidagliptin, 269
  - intensifying treatment with, 250-251
  - in treatment algorithm, 246-248
- DREAM trial, 47, 265
- Duetact (pioglitazone/glimepiride), 259t
- Dulaglutide (Trulicity), 268-269
- Duodenal-jejunal bypass sleeve (EndoBarrier), 124-125
- Dyazide (triamterene/hydrochlorothiazide), 176t
- Dyslipidemia, 41-44, 72
  - assessment of (lipid panel), 183, 193-195
  - CVD risk and, 41-44, 72, 183, 183-188, 186t
  - CVD risk assessment, 60, 204-206, 206t
  - diabetes and, 41, 183-188, 314
    - clinical trials of lipid lowering in, 207-222
    - dietary recommendations, 189-191, 190t
    - lipoprotein pattern, 43t
    - statin effects in, 207, 210t-212t
  - diet recommendations for, 189-191, 190t
  - HDL cholesterol in, 41-43, 43t, 185, 186t
  - in hypertension, 41, 43t
  - in insulin resistance, 41, 42t
  - insulin resistance as link between obesity and diabetes and, 41, 183
  - LDL, 60, 72, 183, 184t
  - LDL cholesterol, 84-85, 88-89, 90, 185, 186t
  - lipid-lowering therapy for. See *Dyslipidemia management*.
  - lipoprotein abnormalities, 41-44, 42t, 43t, 184t, 201t
    - CVD risk and, 183-188, 186t
    - in metabolic syndrome, 201t
  - obesity and, 30, 51, 83t, 84, 183, 184t, 187
  - obesity treatment and, 89-90, 91
  - risk factors for, 183
  - screening for, 193-195
  - treatment target levels, 58, 65
  - triglyceride levels in, 41, 43
  - VLDL, 41, 42t, 43t, 184t, 187-188
- Dyslipidemia management, 60-61, 183-227, 202-203, 315, 317t-318t
  - clinical trials in diabetics, 207-222
    - fibrate trials, 210t-211t, 212t, 217-222
    - statin trials, 207-217, 210-212t
  - CVD risk reduction with management, 188-193
  - lipid levels, management recommendations, 188-193, 189t, 315, 317t-318t
    - combined hyperlipidemia, 189t
    - diet, 189-191, 190t
    - HDL-C raising, 189t
    - LDL-C lowering, 189t
    - lifestyle modifications, 188, 189-190
    - NCEP ATP III guidelines, 188, 199
    - order of priorities for, 188, 189t

Dyslipidemia management,  
lipid levels, management recommendations (*continued*)  
  pharmacologic therapy, 188-189  
  treatment goals, 193-206  
  triglyceride lowering, 189t  
lipoprotein abnormalities, 183-188, 184t, 186t  
management approach, 188-193, 189t, 317t-318t  
  combination therapy, 318t  
  diet, 189-191, 190t  
  glycemic control, 189t  
  lifestyle modification, 189-190, 189t, 315  
  lipid level recommendations, 189t  
  order of priorities in, 189t  
  pharmacologic therapy, 188-189, 189t  
pharmacologic therapy, 188-189, 189t  
agents for, 194t-195t  
  bile acid sequestrants, 189t, 194t-195t  
  cholesterol absorption inhibitor, 189t, 194t-195t  
  fenofibrate, 189t  
  fibrates, 189t, 217-222  
  fibric acid derivatives, 189t, 194t-195t  
  fish oil, 189t  
  gemfibrozil, 189t  
  niacin, 189t  
  nicotinic acid, 189t, 194t-195t  
  omega-3 polyunsaturated fatty acid drugs, 193, 194t-195t  
  statins, 187, 188, 189t, 194t-195t, 200-204, 203-204  
    effects on lipid levels, 208t-209t  
    high-dose, 189t, 203-204  
    as preferred first-line therapy, 189t  
  combined hyperlipidemia, 189t  
  guidelines and recommendations, 187, 188, 189t  
  timing of initiation of, 188, 189t  
  recommendations for, 315, 317t-318t  
    AACE lipids guidelines, 200t  
    ACC/AHA guidelines, 187, 200-206, 202-203  
    ADA/ACCF consensus conference, 188  
    IAS lipids guidelines, 201t, 204  
    NCEP ATP III guidelines, 188, 196, 199  
    NLA guidelines, 205t  
  screening recommendations, 193-195  
  treatment algorithms, 60-61, 202-203  
  treatment goals, 193-206, 201t, 315  
    for CVD prevention, 200-206, 202-203  
    CVD risk and, 196-206, 198t, 200t, 206t  
    in diabetics, 191-192  
    HDL-C level, 196, 200t, 201t  
    LDL-C levels, 195-199, 198t, 200t, 205t  
    percentage of patients reaching targets for, 309-310  
    triglycerides, 199, 200t, 201t

EASD. See *European Association for the Study of Diabetes*.  
EASY-FIT, 191  
Ectopic fat, 43, 51  
Edarbi. See *Azilsartan medoxomil*.  
EDIC trial, 233, 234  
Edmonton Obesity Staging System (EOSS), 76-77  
Edoxaban, 305  
Elderly population, 292-294  
  blood pressure in, 135, 137t, 138  
  calcium channel blockers and, 167  
  with hypertension, BP target level, 135, 137t  
  nebivolol for heart failure in, 161  
  renal artery atherosclerosis in, 138  
  SHEP trial in, 158-160  
  weight loss benefits and risks, 293-294, 293t  
ELIXA trial, 249  
EMPA-REG OUTCOME, 253, 273, 273, 274, 282  
Empaglifozin (Jardiance), 253, 257t, 271, 273, 273  
Empaglifozin/linagliptin (Glyxambi), 257t  
Enalapril (Vasotec), 156t  
  clinical trials, RESOLV trial, 157  
Enalapril/felodipine (Lexxel), 175t  
Enalapril/hydrochlorothiazide (Vaseretic), 174t  
End-stage renal disease (ESRD), 151, 152, 153, 157  
EndoBarrier (duodenal-jejunal bypass sleeve), 124-125  
Endothelial dysfunction, 48-50, 48t, 49  
  causes of, 48, 52, 229  
Endothelin-1, 48t  
EOSS. See *Edmonton Obesity Staging System*.  
Eplerenone (Inspra), 163t  
Eprosartan (Teveten), 159t  
Eprosartan/hydrochlorothiazide (Teveten HCT), 174t  
EQUIP trial, 101, 102t-103t  
Ethnicity, diabetes prevalence and, 14-15, 15t  
European Association for the Study of Diabetes (EASD), 58  
EXAMINE trial, 249, 269-270  
Exenatide (Byetta), 266  
  insulin glargine with exenatide, 249  
Exercise electrocardiogram (ECG), 70  
Exercise. See *Physical activity*.  
Exforge (amlodipine/valsartan), 175t  
Exforge HCT (amlodipine/valsartan/hydrochlorothiazide), 175t  
Ezetimibe (Zetia), 222

FACET, 150, 154, 172  
Factor Xa inhibitors, 304-305  
Farxiga. See *Dapaglifozin*.  
Fasting plasma glucose, 59, 64t, 238t, 245  
  impaired (IFG), 19, 64t, 74t-75t  
Fat  
  distribution of body fat, 31, 32, 43  
  saturated fat intake, 142, 190

Felodipine/enalapril (Lexxel), 175t  
 Fenofibrates, 189t, 193, 218-222  
 Fibrates, 189t, 191-192, 194t-195t  
   actions of, 194t-195t  
   clinical trials of, 207, 210t-211t, 212t, 217-222  
   combinations with statins, 191-192, 221-222, 318t  
   fenofibrate, 189t, 193, 199  
   gemfibrozil, 189t, 193  
   for hypertriglyceridemia, 193  
   indications for, 199  
   serum creatinine level and, 221  
 Fibrin network, 50  
 Fibrinogen, 17-19, 19t, 20t, 47, 51, 52  
 Fibrinolysis, 48t, 50  
 Fibrosis, 45  
 FIELD study, 210t-211t, 220-221  
 Fish oil, 189t, 193, 199  
 Fluvastatin (Lescol, Lescol XL), 191, 208t  
 Foot problems, in diabetics, 230  
 Fortamet, 256t  
 Fosinopril (Monopril), 156t, 172, 173  
 Fosinopril/hydrochlorothiazide (Monopril HCT), 174t  
 Framingham Global Risk Assessment tools, 73-76  
 Framingham Heart Study, 73, 81-82, 297, 305-306  
 Framingham scores, 73-76  
 Free fatty acids (FFAs), 39-41, 40, 46, 187  
 Furosemide (Lasix), 162t  
  
 Gastric bypass, 121-123, 122  
 Gastric electrical stimulation (GES), 124  
 Gemfibrozil (Lopid), 189t, 193, 207, 212t, 217-218  
 GEMINI trial, 164-165, 166t  
 Gender, 289-292  
   CVD risk and, 289-292  
   diabetes prevalence by, 14-15, 15t  
   obesity prevalence and, 12  
 Genetics, CVD risk and, 72  
 Ghrelin, 127t, 128  
 GIP, 265  
 Gliclazide, 262  
 Glimepiride (Amaryl), 258t, 259t, 262  
 Glinides, 257t  
 Glinide/biguanide combination agent, 257t  
 Glipizide (Glucotrol, Glucotrol XL), 258t, 262  
 Glipizide/metformin (Metaglip), 258t  
 GLP-1 receptor agonists, 246-248, 265-269  
   actions of, 254t, 265-266, 267t, 268  
   clinical trials (LEAD), 266-268  
   effect on CVD risk factors, 254t, 267t, 269  
   intensifying treatment with, 250-251  
   safety concerns, 267-268, 267t  
 Glucagonlike peptide-1 (GLP-1), 265  
  
 Glucophage, 256t  
 Glucophage XR, 256t  
 Glucose concentration, 59-63, 64t, 72  
 Glucose control. See *Glycemic control*.  
 Glucose intolerance, 46, 302  
 Glucose regulation, 229-237  
 Glucose testing, 59-63, 64t, 65  
 Glucotrol, Glucotrol XL. See *Glipizide*.  
 Glucovance. See *Glyburide/metformin*.  
 Glumetza, 256t  
 Glyburide (DiaBeta, Micronase, Glynase PresTab), 258t, 262  
 Glyburide/metformin (Glucovance), 258t  
 Glycemic control, 229-237, 319t, 320. See also *Hyperglycemia management*.  
   CVD risk and, 229-237  
   reduction with glycemic control, 189t, 249  
   goal levels, 244-245, 250-251, 252, 319t, 320  
   for diabetics, 241, 242-243, 246-248, 309  
   patient/disease features and, 252, 319t  
   treatment algorithm for, 244, 246-248  
   goals of, 237-249  
   hypertriglyceridemia and, 187  
   hypoglycemia and, 232, 237  
   intensifying treatment for, 250-251  
   intensive/tight, 232, 233-237, 234, 320  
   severe hypoglycemia risk with, 237  
   self-monitoring (SMGB), 249  
   in T1D, 233  
   in T2D, 233-237  
 Glycosylated hemoglobin. See *A1C*.  
 Glynase PresTab. See *Glyburide*.  
 Glyset. See *Miglitol*.  
 Glyxambi (empaglifozin/linagliptin), 257t  
  
 HCTZ (hydrochlorothiazide), 158, 170, 174t, 175t  
 HDL. See *High-density lipoprotein*.  
 HDL cholesterol (HDL-C), 41-43, 72, 74t, 187. See also *Non-HDL-C*.  
   actions of pharmacologic agents on, 194t-195t, 208t  
   CVD risk and, 185, 186t, 294, 318t  
   in metabolic syndrome, 22t  
   niacin and, 192  
   obesity treatment and, 84-85, 87, 89  
   optimal level, 186t, 196  
   raising, 189t  
   statin effects on, 208t  
   target/goal levels, 191, 196, 201t, 318t  
   for diabetics, 238t, 317t  
 Health Professionals Follow up Study, 17  
 Heart  
   fibrosis of, 45  
   left ventricular abnormalities, 81, 83t, 125  
   RAAS expression in, 44-45

- Heart disease  
 costs of, 24  
 diabetes and, 230  
 improvement after bariatric surgery, 125-126  
 mortality rates, 290-291  
 obesity and, 81, 83t  
 prevalence and incidence of, 25t
- Heart failure, 152, 153, 305-306  
 hypertension and, 46  
 prevalence, incidence, and recurrence of, 25t
- Helsinki Heart Study (HHS), 207, 217-218
- HERS, 292
- High-density lipoprotein (HDL), 41-43, 72, 187.  
 See also *HDL cholesterol*.  
 cardiometabolic risk and, 74t, 185  
 diabetes and, 43t  
 insulin resistance and, 183, 184t  
 particle sizes, 183, 184t
- Hispanics, 15, 298
- HMG-CoA reductase inhibitors. See *Statins*.
- HOPE (Heart Outcomes Prevention Evaluation), 154
- Hormone replacement therapy (HRT), 291-292
- HOT study, 167
- HPS (Heart Protection Study), 211t, 214, 215
- Hydrochlorothiazide (HCTZ), 158, 170, 174t, 175t
- Hydrodiuril. See *Hydrochlorothiazide*.
- Hydropres (reserpine/thiazide), 176t
- Hypercoagulable state, 51, 72
- Hyperglycemia, 59, 229-237  
 antihypertensive drugs and risk of, 164  
 $\beta$ -blockers and, 161, 164  
 cardiovascular risk and, 30, 49, 229-237  
 dyslipidemia and, 229  
 insulin resistance and, 229-232  
 in T1D and T2D, 233-237
- Hyperglycemia management, 229-288. See also *Glycemic control*.  
 clinical trials  
 ACCORD, 236-237, 236  
 ADVANCE, 235, 236-237  
 DCCT, 233, 234  
 EDIC, 233, 234  
 meta-analysis of, 236-237  
 UKPDS, 235, 236-237  
 VADT, 235-236, 236-237  
 CVD risk and, 229-237  
 effects of pharmacological agents on, 249-281, 254t-255t  
 goals of glycemic management, 237-249  
 approach to management, 252  
 glycemic targets/goals, 244-245, 250-251  
 patient/disease features and, 252  
 lifestyle modification and weight loss, 237-241, 238t-239t  
 prediabetes treatment algorithm, 240  
 recommendations for, 237, 238t-239t, 240
- Hyperglycemia management (*continued*)  
 intensive glycemic control, 232, 233, 234  
 monitoring  
 for effectiveness of therapy, 245-249  
 for renal function, 317t  
 SMBG, 259, 321  
 pharmacological therapy, 241-281  
 agents for, 249-281  
 currently available oral agents, 256t-259t  
 effects on CVD risk, 249-281, 254t-255t  
 alpha-glucosidase inhibitors, 256t, 279  
 basal insulin, 246-248  
 bile acid sequestrant (colesevelam), 256t, 281  
 bromocriptine mesylate, 256t, 279-281  
 combination agents, 257t-259t  
 DPP-4 inhibitors, 256t, 269-270  
 gliinides, 257t  
 GLP-1 receptor agonists, 265-269  
 human insulin, 274-279  
 insulin analogues, 274-279  
 metformin, 253-261, 256t  
 SGLT2 inhibitor, 257t, 270-274  
 sulfonylureas (SFUs), 258t, 261-263  
 thiazolidinediones, 259t, 263-265  
 algorithms for treatment, 241, 242-243, 246-248  
 choice of agents, 241-244  
 general approach in, 241-244  
 intensification of, 244, 250-251  
 in T1D, 233, 234  
 in T2D, 233-237  
 treatment algorithms, 241, 242-243, 243, 246-248
- Hyperinsulinemia, 39
- Hyperkalemia, 172
- Hypertension, 45-47, 135-181. See also *Blood pressure*.  
 age and, 138  
 benefits of control of, 46, 135, 151  
 blood pressure, 74t, 137t  
 benefits of tight BP control, 46, 135, 151  
 target levels, 58, 60, 65, 135-136, 137t, 145-146, 147, 148, 314  
 cardiometabolic risk and, 72  
 CRP levels and, 19, 20t  
 CVD risk and, 45-47, 45t, 72  
 hypertensive cardiomyopathy, 306  
 defined, 137t  
 diabetes and, 44-47, 150-151, 161  
 hypertension diagnosis in, 135  
 target BP values, 135, 136, 137t, 145-146, 147  
 treatment recommendations. See *Hypertension management*.  
 endothelial dysfunction in, 48t  
 essential or primary, 138  
 fibrinogen levels and, 19, 20t, 47  
 insulin resistance and, 45t, 46

## Hypertension (*continued*)

- lipoprotein abnormalities in, 41-44, 43t, 47
  - metabolic syndrome and, 21, 22t, 45
  - obesity and, 30, 45, 45t, 81, 83t, 138, 289
  - pathogenesis of, 45t
  - prehypertensive state, 138
  - RAAS system and, 44, 47, 52
  - sleep apnea and, 301
- ## Hypertension management, 135-181, 317t
- benefits of BP control, 46, 65, 135, 151
  - blood pressure, 317t
    - measurement, 136-138
    - risk stratification by, 141t
    - target values, 60, 135-136, 137t
  - case presentation, 173-178
  - in diabetic patients, 47, 135-140, 314, 317t
    - case presentation, 173-178
    - challenges of treating hypertension in, 136
    - diet, 142-146
    - dippers vs non-dippers, 136, 138
    - lifestyle modifications, 139, 139t, 140-146, 147
    - pharmacologic treatment, 146, 147, 314, 317t
      - combination medications, 170-172, 174t-176t
      - more than one medication, 140, 147, 165, 170-172
      - RAAS inhibitors in, 140
    - summary, 314-315, 317t
    - target BP values, 135, 136, 137t, 145-146, 147
  - general approach, 135-140
  - lifestyle modifications, 139, 139t, 140-146, 141t, 142t
  - microalbuminuria, BP control and, 138-139
  - nonpharmacologic treatment, 140-146
    - diet, 142-146, 317t
    - lifestyle modifications, 139, 139t, 140-146, 142t, 147
    - lipid levels, 140
    - SBP reduction with, 142t
    - weight loss, 139, 139t, 140-142, 142t
      - calories needed to lose weight, 142, 144t
  - pharmacologic therapy, 146-178, 314, 317t
    - agents for, 154-172
      - ACE inhibitors, 154-155, 156t
      - ARBs, 155-158, 159t
      - $\beta$ -blockers, 160-167, 168t-169t
      - calcium channel blockers, 167
      - combination therapy and combination agents, 170-172, 173, 174t-176t
      - combined  $\alpha_1$ - and  $\beta$ -blockers, 168t
      - diuretics, 158-160, 162t-163t
      - renin inhibitors, 167-170, 171t
    - CVD risk reduction with, 149-150, 149t, 151-154, 152, 153, 157-158, 167, 314-315
      - with combination therapy, 172, 173
    - in diabetics, 147
      - more than one medication, 140, 147, 165, 170-172

## Hypertension management, pharmacologic therapy (*continued*)

- ethnicity and, 148, 149, 167
  - initial medication, agents for, 140, 151, 157
  - more than one medication, 140, 147, 148, 165, 170-172
  - multiple RAAS blockers, cautions for, 317t
  - new-onset diabetes with, 150-151
  - preferred therapy, 147, 148, 149
  - risk stratification and, 141t
  - time of initiation of, 139-140, 141t
  - treatment algorithms, 147, 148
- ## recommendations, 136-137, 137t, 314, 317t
- alcohol intake, moderation of, 139, 139t
  - BP target values, 137t, 147, 148
  - diet, 139t, 317t
  - lifestyle modifications, 139, 139t, 141t
  - risk stratification and, 141t
  - salt intake, reduction of, 139, 139t, 144-145
  - weight loss, 139, 139t
- ## risk stratification, 141t
- target BP values, 60, 135-136, 137t, 145-146, 147, 148
    - for cardiometabolic and CVD risk, 58, 60, 62, 65, 139
    - for diabetics, 135, 136, 137t, 145-146, 147, 314
    - JNC 8, 135-136, 137t, 148
    - for microalbuminuria, 139
    - for nondiabetics over age 60, 135, 137t
    - for obese patients, 135
    - summary of guidelines, 137t
  - treatment algorithms, 58, 60-61, 147, 148
- ## Hypertriglyceridemia, 185, 186t, 187-188
- treatment of, 192-193
- ## Hypoglycemia, 232, 237, 244
- metformin, low risk with, 253-260
- ## Hypokalemia, 172
- ## Hypomagnesemia, 172
- ## Hypothalamus, 107, 126-127, 128
- ## Hyzaar (losartan/hydrochlorothiazide), 174t
- 
- ## IDNT (Irbesartan Diabetic Nephropathy Trial), 157, 296
- ## Imaging techniques, noninvasive, 70
- ## Impaired fasting glucose (IFG), 19, 59, 64t, 74t-75t
- ## Impaired glucose tolerance (IGT), 21, 46, 64t, 74t-75t
- ## IMPROVE-IT trial, 191, 222
- ## Indapamide (Lozol), 162t
- ## Inderal LA. See *Propranolol LA*.
- ## Inflammation, 36-38, 52, 229
- assessment, with cardiac CRP, 70
  - cardiometabolic risk and, 72, 76
  - inflammatory biomarkers, 17-19, 19t, 76
  - insulin resistance and, 39, 40
  - pro-inflammatory cytokines, 36, 40, 41
  - systemic, obesity and, 83t

Insulin, 274-279, 307-308  
 actions of, 255t  
 animal-based, 274  
 basal, 246-248, 278  
   intensifying treatment with, 250-251  
 effect on CVD risk factors, 255t, 275-277  
 human, 274  
 hyperinsulinemia, 307-308  
 indications for, 275, 277  
 insulin analogues, 274-279  
 insulin glargine with exenatide (Lixilan), 249  
 intensifying treatment with, 250-251  
 long-acting, 275, 276, 277  
 NPH, 250, 275  
 onset of action, 275-277, 276  
 prandial, 250-251  
 sequential insulin strategies, 278  
 short-acting, 275, 276, 277, 278  
 Insulin resistance, 29, 38-41, 40, 308  
 abdominal obesity and, 320  
 ACE inhibitors, benefits for, 155  
 cancer risk and, 307  
 cardiometabolic risk and, 72  
 circadian rhythms and, 279-280  
 as CVD risk factor, 30, 49, 51-52  
 diabetes risk and, 38-39  
 dyslipidemia and, 42t, 70, 183, 184t, 187  
 endothelial dysfunction and, 48  
 hyperglycemia and, 229-232  
 hypertension and, 45t, 46  
 inflammation and, 39, 40  
 as link between obesity and diabetes, 29, 41, 46, 183  
 lipoprotein modifications in, 42t, 70, 183, 184t  
 nitric oxide and, 49  
 obesity and, 31, 39-41, 51, 83t, 320  
 prothrombotic mechanisms and, 51  
 sleep disturbances and, 299, 301  
 TZDs, benefits for, 263  
 vasoconstrictor/vasodilator imbalance, 49  
 VLDL and, 183  
 Intensive lifestyle intervention (ILI). See *Lifestyle modifications*.  
 Invokana. See *Canagliflozin*.  
 Ipragliflozin, 271  
 IRAS (Insulin Resistance Atherosclerosis Study), 187-188  
 Irbesartan (Avapro), 157, 159t, 174t, 296  
 Irbesartan/hydrochlorothiazide (Avalide), 174t  
 IRMA 2, 157, 296  
 Janumet (sitagliptin/metformin), 257t  
 Janumet XR (sitagliptin/metformin XR), 257t  
 Januvia. See *Sitagliptin*.  
 Jardiance. See *Empagliflozin*.

Jentadueto (linagliptin/metformin), 257t  
 JNC 7  
   hypertension management recommendations, 140, 147  
   prehypertensive definition, 138  
   recommended BP levels, 145  
 JNC 8  
   BP levels in hypertension, 135-136, 137t, 145-146  
   hypertension treatment recommendations, 135-136, 137t, 140, 148, 167  
 Joint National Committee. See *JNC 7*; *JNC 8*.  
 JUPITER trial, 217

Kazano (alogliptin/metformin), 257t  
 Kidney. See *Chronic kidney disease*; *Renal disease*.  
 Kombiglyze XR (saxagliptin/metformin XR), 257t

Labelalol (Normodyne, Trandate), 168t  
 Lactic acidosis, 261  
 Lasix. See *Furosemide*.  
 LDL. See *Low-density lipoprotein*.  
 LDL cholesterol (LDL-C), 43t, 58, 186t, 187, 195-199  
 actions of pharmacologic agents on, 194t-195t  
 calculation of, 195-196  
 CVD risk and, 185, 186t, 196, 197t  
 lowering of, agents and treatment approach, 189t  
 obesity treatment and, 84-85, 88-89, 90  
 ratio to HDL-C, 294  
 recommended level for CHD patients, 190-191  
 risk levels, 60, 186t, 198t  
 statin effects on, 192, 208t  
 target values, 43-44, 186t, 191, 318t  
   in diabetics, 291, 314, 317t  
   optimal level, 186t, 195-196  
 treatment goals, 195-199, 198t, 205t  
   for diabetics, 238t  
 LEAD trial, 266-268  
 Left ventricular abnormalities, 81, 83t, 125  
 Leptin, 38, 45t  
 Lescol. See *Fluvastatin*.  
 Lexxel (Felodipine/enalapril), 175t  
 LIFE trial, 157-158  
 Lifestyle modifications, 60, 316t  
   for diabetes, 237-241  
   for dyslipidemia, 188, 189-190, 189t, 192-193, 315  
   for hyperglycemia management, 237-241  
   for hypertension control, 139, 139t, 140-146, 141t, 142t  
   diet, 139t  
   medication concurrent with, 141t  
   weight loss, 139, 139t, 140-142, 142t  
   intensive lifestyle intervention (ILI), 82, 84-85, 86-91, 88-90  
   for obesity, 62, 68t, 82, 84-85, 86-91, 88-90  
 Linagliptin (Trajenta), 256t, 269  
 Linagliptin/empagliflozin (Glyxambi), 257t

- Linagliptin/metformin (Jentadueto), 257t
- Lipid-lowering therapy. See *Dyslipidemia management*.
- LIPID trial, 213-214
- Lipids. See also *Dyslipidemia*.
- assessment/testing of, 60, 70, 193-195
  - hormone replacement therapy and, 291-292
  - lipid-lowering therapy, 188-222, 317t-318t
  - recommendations for, 60-61, 65
  - treatment goals for diabetics, 238t
- Lipitor. See *Atorvastatin*.
- Lipoprotein(s), 41-44, 183-188. See also *Dyslipidemia*.
- actions of pharmacologic agents on, 194t-195t
  - assessment/testing of, 60, 70
  - particle size, 183, 184t
  - treatment considerations, 58
- Lipoprotein (a), 43t, 70
- Lipoprotein abnormalities, 41-44, 43t, 183-188, 184t.
- See also *Dyslipidemia*.
  - CVD risk and, 183-188, 186t
  - in hypertension and diabetes, 41-44, 43t
  - in insulin resistance, 41, 42t, 183
  - particle size, 183, 184t
- Liraglutide (Saxenda), 94t-100t, 111-120
- clinical trials, 111-117, 118t, 119
  - safety, 95t-98t, 117-120
- Liraglutide (Victoza), 266-268
- Lisinopril (Prinivil, Zestril), 151, 152, 156t, 170
- Lisinopril/hydrochlorothiazide (Prinzide, Zestoretic), 174t
- Lispro insulin, 275
- Liver, 51
- fat deposition in, 39, 40
  - non-alcoholic fatty liver disease (NAFLD), 41
- Lixilan (insulin glargine with exenatide), 249
- Lixisenatide (Lyxumia), 268
- Look AHEAD trial, 84, 85-91, 88-90
- Loop diuretics, 162t
- Lopid. See *Gemfibrozil*.
- Lopressor. See *Metoprolol*.
- Lopressor HCT (metoprolol/hydrochlorothiazide), 175t
- Lorcaserin (Belviq), 92, 94t-100t, 104-107, 108t-109t
- contraindications, 96t, 105
  - safety, 95t-98t, 106-107
- Losartan (Cozaar), 157-158, 159t, 174t
- Losartan/hydrochlorothiazide (Hyzaar), 174t
- Lotensin. See *Benazepril*.
- Lotensin HCT (Benazepril/hydrochlorothiazide), 174t
- Lotrel (amlodipine/benazepril), 175t
- Lovastatin (Altacor, Mevacor), 191, 208t
- Low-density lipoprotein (LDL), 72, 184t, 187. See also *LDL cholesterol*.
- in abdominal obesity, 184t
  - CVD risk and, 183-185
  - risk levels, 60
- Low-density lipoprotein (LDL) (*continued*)
- small dense, 41, 70, 183, 187
  - VLDL, 41, 42t, 43t, 184t
- Lozol. See *Indapamide*.
- Luseoglitazone, 271
- Lyxumia (lixisenatide), 268
- Macrophages, 31, 33, 37-38
- Macrovascular disease, 135, 172, 229, 230-231
- Magnesium intake, 139t
- Mavik. See *Trandolapril*.
- Maxzide (triamterene/hydrochlorothiazide), 176t
- MDRD trial, 295-296
- Menopause, 290-292
- Metabolic conditions associated with CVD risk, 19-23
- insulin resistance, 38-41
  - metabolic syndrome, 21-23
  - prediabetes, 19-21
- Metabolic memory, 233, 235
- Metabolic syndrome, 21-23
- as a prediabetes equivalent, 65
  - ATP III criteria, 65
  - blood pressure target value, 146
  - cardiometabolic risk and, 23, 73, 74t-75t
  - criteria/definition for, 22, 22t, 74t-75t
  - diagnosis criteria, 201t
  - dyslipidemia treatment and, 217
  - harmonized definition of, 23
  - hypertension and, 21, 22t, 45
  - inflammation in, 36-37
  - insulin resistance and, 41
  - lipids in, 201t
  - risk factors for, 21-23, 22t, 74t-75t
- Metaglip (glipizide/metformin), 258t
- Metformin (Glucophage, Fortamet, Glumetza), 253-261, 256t
- actions/effects of, 253, 254t, 260-261
  - cancer risk and, 308
  - combination agents, 257t-259t
  - combination injectable therapy, 247
  - combination therapy with, 260, 261
  - contraindications, 261
  - CV outcomes with, 260-261, 260
  - CVD risk factors, effects on, 249, 254t, 261
  - dosages, 256t
  - in DPP and DDPOS, 84-85, 84
  - formulations and trade names, 256t
  - as initial, first-line therapy, 241, 260, 261
  - low hypoglycemia risk with, 253-260
  - monotherapy, dual therapy, and triple therapy, 246
  - in treatment algorithm, 246-248
- Metformin combination agents, 257t
- aoglitin/metformin (Kazano), 257t

Metformin combination agents (*continued*)  
glipizide/metformin (Metaglip), 258t  
glyburide/metformin (Glucovance), 258t  
linagliptin/metformin (Jentadueto), 257t  
pioglitazone/metformin (Actoplus Met), 259t  
pioglitazone/metformin XR (Actoplus Met XR), 259t  
repaglinide/metformin (Prandimet), 257t  
rosiglitazone/metformin (Avandamet), 259t  
saxagliptin/metformin XR (Kombiglyze XR), 257t  
sitagliptin/metformin (Janumet), 257t  
sitagliptin/metformin XR (Janumet XR), 257t  
Metolazone (Mykrox, Zaroxolyn), 162t  
Metoprolol (Lopressor), 164-165, 166t, 168t  
Metoprolol XR (Toprol-XL), 168t  
Metoprolol/hydrochlorothiazide (Lopressor HCT), 175t  
Mevacor. See *Lovastatin*.  
Micardis. See *Telmisartan*.  
Micardis HCT (telmisartan/hydrochlorothiazide), 174t  
MICRO-HOPE, 298  
Microalbuminuria, 138-139, 155  
Miconase. See *Glyburide*.  
Microvascular disease, 84, 135, 172, 229, 230-231, 282  
Microzide. See *Hydrochlorothiazide*.  
Midamore. See *Amiloride*.  
Miglitol (Glyset), 256t, 279  
Moduretic (amiloride/hydrochlorothiazide), 176t  
Moexipril (Univase), 156t  
Monocytes, 37, 39  
Monopril. See *Fosinopril*.  
Monopril HCT (fosinopril/hydrochlorothiazide), 174t  
Mykrox. See *Metolazone*.  
Myocardial infarction (MI). See also *Stroke*.  
glycemic control, reduction with, 235  
risk, 30  
    in diabetic patients, 15, 16  
    prior MI and, 15  
    in women, 290-291  
Nadolol (Corgard), 168t  
Nadolol/bendroflumethiazide (Corzide), 175t  
Naltrexone SR/bupropion SR (Contrave), 94t-100t, 107-111  
    clinical trials, 107-110, 112t-113t, 114t-115t  
    safety, 95t-98t, 110-111  
Nateglinide (Starlix), 257t  
NAVIGATOR trial, 47  
NCEP (National Cholesterol Education Program)  
    dietary recommendations, 190, 190t  
    NCEP ATP III guidelines on lipids, 188, 196, 199  
Nebivolol (Bystolic), 161, 168t  
Nesina. See *Alogliptin*.  
New-onset diabetes (NOD), 150-172  
    antihypertensive medications and, 150-172

New-onset diabetes (NOD) (*continued*)  
    ARBs and, 158  
    β-blockers and, 161-164  
NHANES, 16, 17, 19t  
Niacin, 189t, 192, 199, 318t  
Nicotinic acid, 189t, 194t-195t  
Nitrendipine, in SYST-EUR, 298  
Nitric oxide (NO), 45, 48t, 49  
NOACs, 304-305  
Non-alcoholic fatty liver disease (NAFLD), 41  
Non-HDL-C, 194t-195t, 199, 200t, 205t, 238t, 314  
    target levels, 317t, 318t  
Nondipping, of blood pressure, 136, 138  
Normodyne (Labetalol), 168t  
Nurses' Health Study, 17, 289  
Nutrition. See *Diet*.

Obesity, 11-27, 65-69, 81-134, 320-321  
    abdominal, 15-19, 45t, 184t, 185, 320  
    adipose tissue dysfunction and, 33-36  
    benefits of weight loss, 82-91  
    blood pressure target value, 146  
    body mass index (BMI) and, 12, 13, 19t, 66-67, 67t, 81  
    cancer incidence and, 11, 307  
    in children, 12  
    comorbidities, 69, 81, 83t, 129  
    complications of, 62, 66, 83t  
    treatment decisions and, 69  
    costs of, 24  
    CVD and, 29, 30, 72, 81-82, 83t  
    CVD risk and, 11, 17, 24, 30, 51-52, 72, 81-82, 83t, 183, 185, 193, 320  
    atrial fibrillation, 81, 83t, 303  
    stroke, 296-299  
    women and, 289-292  
    CVD risk reduction and, 11, 12, 87-91, 88-90, 321  
    summary of, 313-322  
    defined by BMI, 12, 13, 65-66, 67t, 81  
    morbid obesity, 81  
    severe obesity, 81  
    weight classes, 16, 19t, 67t, 81  
diabetes and, 15-19, 18, 29, 30, 83t, 229, 289, 320  
    as "deadly duo," 15-19  
    insulin resistance as link between, 29, 41, 46, 183  
    metformin, effect on weight loss, 253  
    as risk factors for CVD, 11  
    as twin epidemics, 12-15  
diagnostic criteria for, 65-67, 67t  
diet and, 190  
dyslipidemia and, 30, 83t, 84, 183, 184t, 187  
Edmonton Obesity Staging System (EOSS), 76-77  
in elderly, 293, 293t  
hypertension and, 30, 45, 45t, 46, 81, 83t, 138, 289



- Obesity (*continued*)
- inflammation and, 17-19, 19t, 83t
  - insulin resistance and, 39-41, 83t, 320
  - interactions with diabetes and CVD, 11-27, 30
  - mortality from, 11-12, 66
  - prevalence, 12, 13, 24
    - increase in, 16-17, 18
  - prevention of, 69, 321
  - severe, 12, 13, 90-91
    - defined by BMI, 12, 81, 91
  - sleep disorders and, 83t, 84, 300, 320
  - staging and severity, 62
  - weight classes, 16, 19t, 67t, 81
- Obesity treatment/weight loss, 81-134, 320-321. See also *Weight loss*.
- bariatric surgery, 120-126, 321
    - benefits of, 120, 129
    - CVD risk intervention with, 125-126
    - future development and devices, 124-126
    - implantable devices, 124-125
    - patient selection for, 120-121
    - procedures, 121-124
      - Adjustable Gastric Band (AGB), 124
      - Biliopancreatic Diversion with Duodenal Switch (BPD/DS), 123-124
      - FDA-approval for, 121
      - Roux-En-Y Gastric Bypass (RYGB), 121-123, 122
      - Vertical Sleeve Gastrectomy (VSG), 123
    - safety concerns, 126
  - benefits of, 82-91
    - with moderate weight loss, 87-91
    - for severe obesity, 84
  - BMI-centric model, 67, 68t
  - complications-centric model, 57-58, 62, 67-69, 73, 129, 321
  - diet, 68t
  - goals of, 67-69
  - lifestyle modifications, 58, 62, 68t, 321
    - intensive lifestyle intervention, 82, 84-85, 86-91, 88-90
  - pharmacologic treatment, 91-120, 321
    - agents for, 94t-100t
      - liraglutide (Saxenda), 94t-100t, 111-120
      - lorcaserin (Belviq), 92, 94t-100t, 104-107
      - orlistat (Xenical), 92, 94t-100t, 193
      - phentermine, 92, 94t-100t
      - phentermine/topiramate ER (phen/top ER, Qysmia), 92, 93-104, 94t-100t
    - long-term/chronic use, 92-120
    - short-term drugs, 92
  - physical activity and, 68t
  - treatment algorithm, 62, 67
  - weight loss as primary intervention, 58, 67, 68t, 81-134
    - benefits of, 82-91
      - moderate weight loss, 87-91
    - clinical trials, 84-87, 84, 86, 88-90
    - as primary intervention, 82-91
- Obesity treatment/weight loss (*continued*)
- weight regain, challenges of, 126-129, 127t
- Obstructive sleep apnea, 83t, 84
- OGTT. See *Oral glucose tolerance test*
- Olmesartan (Benicar), 159t, 175t
- Olmesartan/amlodipine/hydrochlorothiazide (Tribenzor), 175t
- Omega-3 polyunsaturated fatty acid drugs, 194t-195t
- Omega-3 polyunsaturated fatty acids, 191, 193, 194t-195t
- Onglyza. See *Saxagliptin*.
- ONTARGET, 157
- Oral glucose tolerance test (OGTT), 65
- ORIGIN trial, 308-309
- Orinase. See *Tolbutamide*.
- Orlistat (Xenical), 92, 94t-100t, 193
- Oseni (alogliptin/pioglitazone), 257t
- Overweight, 11-12, 66, 72
  - categories (by BMI), 12, 13, 67t, 81
- Oxidative stress, 33, 48, 49, 51, 52
- PAI-1 (plasminogen-activator inhibitor type 1), 47, 51, 52
- Pancreas, 39
- PEPI trial, 291
- Perindopril (Aceon), 156t
- Peripheral arterial disease
  - hypertension and, 46
  - prevalence of, 25t
- Phentermine, 92, 94t-100t
- Phentermine/topiramate ER (phen/top ER, Qysmia), 92, 93-104, 94t-100t
  - clinical trials, 101-104, 102t-103t
  - dosage levels, 93, 99t
  - safety, 95t-98t, 104
- Physical activity, 91, 316t
- Physical inactivity, 72, 185
- Pioglitazone (Actos), 193, 249, 259t, 264-265
- Pioglitazone/alogliptin (Oseni), 257t
- Pioglitazone/glimepiride (Duetact), 259t
- Pioglitazone/metformin (Actoplus Met), 259t
- Pioglitazone/metformin XR (Actoplus Met XR), 259t
- Pitavastatin, 191, 208t
- Plasma glucose concentration, 59-63, 64t
- Plasminogen-activator inhibitor type 1 (PAI-1), 47
- Platelet aggregation, 50-53, 51, 52
- Platelets, 48, 50-51, 52
  - platelet activation, 50, 52
- Polycystic ovarian syndrome (PCOS), 41
  - diabetes and prediabetes risk, 65
- POMC neurons, 107
- Postprandial glucose, 238t, 275, 279
- Postprandial triglycerides, 187
- Potassium levels, 139t, 317t
- Potassium-sparing diuretics, 163t
- Prandimet, 257t

Prandin. See *Repaglinide*.  
 Pravachol. See *Pravastatin*.  
 Pravastatin (Pravachol), 191, 207-213, 208t  
 Precose. See *Acarbose*.  
 Prediabetes, 19-21, 47, 64t, 65  
   criteria for, 19-21, 64t, 65  
   CVD risk and, 19-21, 65, 229  
   metabolic syndrome and, 65  
   monitoring of, 65, 66t  
   prevalence of, 21, 129  
   primary prevention of, 316t  
   progression to diabetes, 47, 65, 129  
   risk factors for, 66t, 74t-75t  
   treatment algorithm, 240  
 Prehypertensive state, 138  
 Prinivil. See *Lisinopril*.  
 Prinzide (lisinopril/hydrochlorothiazide), 174t  
 PROACTIVE study, 265  
 Procoagulant state, 50  
 PROGRESS study, 299  
 Propranolol LA (Inderal LA), 168t  
 Proteinuria, 297-298  
 Prothrombotic activity, 48  
 Prothrombotic mechanisms in diabetes, 50, 51  
 Prothrombotic state, in obesity, 83t  
  
 QT interval, 303-304, 307  
 Quinapril (Accupril), 156t  
  
 RAAS. See *Renin-angiotensin-aldosterone system*.  
 Race/ethnicity, 11-12, 14-15, 15t  
 Ramipril (Altace), 156t, 170  
 Reactive oxidant species (ROS), 48, 49  
 RECORD study, 264  
 Relaxation techniques, 139t  
 RENAAL trial, 157, 296  
 Renal artery atherosclerosis, 138  
 Renal disease, 139, 295-296  
   ACE inhibitors, benefits for, 154-155, 157  
   ARBs, benefits for, 155-157  
   chronic kidney disease, 46, 148, 149, 230, 235  
   diabetic nephropathy, 295-296, 315  
 Renal function, monitoring, 317t  
 Renal parenchymal disease, 138  
 Renin, 167-170. See also *Renin inhibitors*.  
 Renin-angiotensin-aldosterone system (RAAS), 44-51  
   activation of, 48, 52  
   endothelial dysfunction and, 48, 52  
   hypertension and, 44, 47, 52  
   inhibition of, 47, 167-170  
   metabolic roles of, 44  
   obesity and, 47  
  
 Renin inhibitors, 47, 167-170, 171t  
   aliskiren (Tekturna), 170, 171t  
    $\beta$ -blockers and, 161  
   cautions for, 306, 317t  
   combination therapy, 170  
   compared with CCB, 150  
   recommendations for, 47, 167-170  
   use in diabetics, 314  
 Repaglinide (Prandin), 257t  
 Reserpine/chlorthalidone (Diupres), 176t  
 Reserpine/thiazide (Hydropres), 176t  
 RESOLV trial, 157  
 Retinopathy, benefit of obesity reduction, 84  
 Reye's syndrome, 318t  
 Reynolds Risk Score, 76  
 Risk factors for CVD. See *Cardiovascular disease risk*.  
 Risk reduction. See *Cardiovascular disease risk reduction*.  
 Risk stratification, 57-79  
   based on serum lipid levels, 185, 186t  
   CVD risk assessment, diagnostic tests for, 69-70  
   diabetes, 57-58  
   diagnostic criteria and, 59-69  
   diagnostic tests/studies and, 69-70  
   obesity, 58-59  
   risk assessment (CVD risk), 69-70  
   risk staging tools, 71-77  
     cardiometabolic condition staging system, 73, 74t-75t  
     cardiometabolic risk factors (ADA), 71-73, 72  
     Edmonton Obesity Staging System (EOSS), 76-77  
     Framingham Global Risk Assessment tools, 73-76  
     Reynolds Risk Score, 76  
   treatment decisions and, 70  
 Rivaroxaban, 305  
 Rosiglitazone (Avandia), 47, 259t, 264-265  
 Rosiglitazone/glimepiride (Avandaryl), 259t  
 Rosiglitazone/metformin (Avandamet), 259t  
 Rosuvastatin (Crestor), 191, 208t, 216-217  
 Roux-En-Y Gastric Bypass (RYGB), 121-123, 122  
  
 Salt intake, reduction of, 139, 139t, 144-145, 145t  
 Saturated fat intake, 142, 190  
 SAVOR trial, 249, 269-270  
 Saxagliptin (Onglyza), 249, 256t, 269  
 Saxagliptin/metformin XR (Kombiglyze XR), 257t  
 Saxenca. See *Liraglutide*.  
 SCALE Diabetes trial, 116-117, 118t, 119  
 SCALE Obesity and Pre-diabetes trial, 111-117, 118t, 119  
 Scandinavian Simvastatin Survival Study (4S), 207, 213, 299  
 SEQUEL trial, 101, 102t-103t, 104  
 Serotonin syndrome, 105  
 SFUs. See *Sulfonylureas*.

SGLT2 inhibitors (canagliflozin, dapagliflozin, empagliflozin), 257t, 270-274, 282  
actions of, 254t, 270-272, 271  
clinical trials (EMPA-REG OUTCOME), 253, 273, 273, 274, 282  
combination agent with DPP-4 inhibitor (empagliflozin/linagliptin), 257t  
dosages, 257t  
effect on CVD risk factors, 254t, 271-274, 273, 282  
intensifying treatment with, 250-251  
kidney function, dependence on, 270-271, 271  
newer agents under development, 271  
side effects, 273-274  
in treatment algorithm, 246-248  
weight loss with, 272

SHEP, 151, 158-160

Simvastatin (Zocor), 191, 208t  
clinical trials, 207, 211t, 213, 214, 215

Sitagliptin (Januvia), 256t, 269

Sitagliptin/metformin (Janumet), 257t

Sitagliptin/metformin XR (Janumet XR), 257t

Sleep disturbances, 299-303  
obesity and, 83t, 84, 300, 320  
sleep apnea, 299-303, 320-321  
glucose intolerance and, 302  
sleep-disordered breathing (SDB), 299-303

“Sleeve” (vertical sleeve gastrectomy), 123

SMBG, 259, 321

Smoking, 316t  
cessation, 24, 139t, 299, 316t, 321  
as risk factor, 72

Sodium-glucose transporter 2, 270. See also *SGLT2 inhibitors*.

Sodium intake  
DASH diet, 142t, 145, 317t  
dietary recommendations for, 139t, 190t  
high-sodium foods to avoid, 145t  
per day recommendations, 139t  
reduction of, 139, 139t, 144-145, 299

Sodium pump, 45

SOS (Swedish Obese Subjects) study, 126

Special populations, 289-312  
cancer risk, 307-309  
cardiovascular considerations, 303-307  
atrial fibrillation and arrhythmias, 303-305  
heart failure, 305-306  
sudden cardiac death, 306-307  
elderly population, 292-294  
renal disease, 295-296  
sleep disturbances and sleep apnea, 299-303  
stroke in diabetic and obese patients, 296-299  
women, and gender considerations, 289-292

Spirolactone (Aldactone), 163t

Spirolactone/hydrochlorothiazide (Aldactazide), 176t

Starlix. See *Nateglinide*.

Statins, 194t-195t, 200-204  
ACC/AHA recommendation for, 187, 200-204, 202-203  
actions, 191-192  
in diabetic patients, 207, 210t-212t  
on lipid levels, 192, 194t-195t, 208t-209t  
ASCVD benefit groups for, 202-203  
choice of, 207  
clinical trials of, 207-217, 210t-212t  
4S, 207, 213, 299  
ASCOT-LLA, 214-216  
ASTEROID, 216-217  
CARDS, 210t, 216, 218-219  
CARE, 207-213  
EASY-FIT, 191  
HPS, 211t, 214, 215  
JUPITER, 217  
LIPID, 213-214  
in combination  
with fibrates, 191-192, 221-222, 318t  
with niacin, 192, 318t  
dosing information, 194t-195t  
efficacy, 207-217  
high-dose/high-intensity, 189t, 202-203  
moderate-intensity, 202-203  
recommendations for, 188, 189t, 199, 200, 202-203  
for dyslipidemia in diabetics, 189t, 191  
as preferred first-line therapy for dyslipidemia, 189t  
for stroke prevention, 299  
time of initiation of therapy, 188, 189t  
in treatment algorithm, 60, 202-203

STOP-2, 160

Stroke, 296-299  
ACE inhibitors and ARBs and, 151  
in diabetic patients, 11, 160, 216, 230, 296-299  
ethnicity and, 298  
mortality from, 11, 289, 296  
obesity and, 81, 296-299  
outcomes in ALLHAT, 152, 153  
prevalence, incidence, and recurrence of, 25t  
risk, 30, 46, 297  
in diabetic patients, 11, 15, 16  
prior MI and, 15

Sudden cardiac death, 306-307

Sulfonylureas (SFUs), 258t, 261-263  
action mechanism, 261-262  
actions of, 255t, 261-262  
CVD risk/outcomes and, 249, 255t, 262  
dosages, 258t  
efficacy, 262-263  
loss of, 263  
first generation, 258t, 262  
generic and trade names, 258t, 262

Sulfonylureas (SFUs) (*continued*)  
 initial, first-line treatment with, 262, 263  
 intensifying treatment with, 251  
 next generation, 262  
 second generation, 258t, 262  
 in treatment algorithm, 246-248

Sulfonylurea/biguanide (metformin) combination agents, 258t

Sulfonylurea/thiazolidinedione combination agents, 259t

Surgery for weight loss. See *Bariatric surgery*.

Swedish Obese Subjects (SOS) study, 126

Sympathetic nervous system (SNS), 45t, 47

Syndrome X. See *Metabolic syndrome*.

SYST-EUR, 167, 298

Systolic blood pressure, 74t, 291, 300  
 hypertension diagnosis, level for, 135-136, 137t  
 hypertension treatment and, 142t  
 obesity and, 83t, 84, 88, 89  
 target levels, 135-136, 137t, 291  
 for diabetics, 238t

Tanzeum (albiglutide), 268-269

Tarka (trandolapril/verapamil XR), 175t

TECOS trial, 249, 269-270

Tekturma. See *Aliskiren*.

Telmisartan (Micardis), 159t, 174t

Telmisartan/hydrochlorothiazide (Micardis HCT), 174t

Tenoretic (atenolol/chlorothalidone), 175t

Tenormin. See *Atenolol*.

Tetrahydrolipistatin. See *Orlistat*.

Teveten. See *Eprosartan*.

Teveten HCT (Eprosartan/hydrochlorothiazide), 174t

Thiazide diuretics, 158-160, 162t, 170  
 recommendations/algorithms for, 60, 147, 148

Thiazolidinediones (TZDs), 259t, 263-265  
 actions of, 255t, 263  
 CV risk and, 264-265, 264t  
 dosages, 259t  
 effect on CVD risk factors, 255t, 263-264  
 generic and trade names, 259t  
 RECORD study, 264  
 side effects and cautions, 264-265, 264t  
 in treatment algorithm, 246-248

Thiazolidinedione/biguanide combination agents, 259t

Thiazolidinedione/DPP-4 inhibitor combination agent, 257t

Thiazolidinedione/metformin combination agents, 259t

Thiazolidinedione/sulfonylurea combination agents, 259t

Thrombosis, 50-51, 51

Tobacco use. See *Smoking*.

Tofoglifozin, 271

Tolazamide (Tolinase), 258t, 262

Tolbutamide (Orinase), 258t, 262

Tolinase. See *Tolazamide*.

Toprol-XL (Metoprolol XR), 168t

Torseamide (Demadex), 162t

Toujeo, 276

Trajenta. See *Linagliptin*.

Trandate (Labetalol), 168t

Trandolapril (Mavik), 156t

Trandolapril/verapamil XR (Tarka), 175t

Triamterene (Dyrenium), 163t

Triamterene/hydrochlorothiazide (Dyazide, Maxzide), 176t

Tribenzor (olmesartan/amlodipine/hydrochlorothiazide), 175t

Triglycerides, 41  
 in abdominal obesity, 184t  
 actions of pharmacologic agents on, 189t, 194t-195t, 208t  
 cardiometabolic risk and, 72, 74t  
 CVD risk and, 72, 74t, 185, 186t  
 in diabetics, 43, 238t  
 glycemic control and, 187  
 hypertriglyceridemia, 185, 186t, 187-188, 192-193  
 lifestyle modifications and, 192-193  
 lowering, 189t, 194t-195t  
 in metabolic syndrome, 22t  
 obesity treatment and, 84, 89, 89  
 optimal level, 186t  
 risk levels, 60  
 statin effects on, 208t  
 treatment goals, 199, 200t, 201t

Trulicity (dulaglutide), 268-269

Type 2 diabetes. See *Diabetes, Type 2 (T2D)*.

TZDs. See *Thiazolidinediones*.

UKPDS (United Kingdom Prospective Diabetes Study), 160-161, 170-172, 304  
 CVD risk and outcomes, 235, 261, 298  
 glycemic control in, 170-172, 235, 236-237

Univasc. See *Moexipril*.

VA-HIT, 207, 212t

VADT, 235-236, 236-237

Valsartan (Diovan), 47, 157, 159t, 170, 174t, 175t

Valsartan/amlodipine/hydrochlorothiazide (Exforge HCT), 175t

Valsartan/hydrochlorothiazide (Diovan HCT), 174t

VALUE study, 150, 158, 167

Vascular endothelium, 48-50, 51

Vaseretic (enalapril/hydrochlorothiazide), 174t

Vasoconstriction, 48t, 49

Vasodilation, 46, 49

Vasotec. See *Enalapril*.

Verapamil XR/trandolapril (Tarka), 175t

Vertical Sleeve Gastrectomy (VSG), 123

Very low-density lipoproteins (VLDL), 41, 42t, 43t, 183, 184t, 187-188  
 overproduction of, 187  
 slowing production of, 193

Vidagliptin, 269

Visceral obesity. See *Abdominal obesity*.

VLDL. See *Very low density lipoprotein*.

VSG (vertical sleeve gastrectomy), 123

Waist circumference, 21, 22t, 74t, 201t, 292, 293

  SGLT2 inhibitors and, 272

Warfarin, 304

Weight. See also *Obesity*.

  gain, in adulthood, T2D and, 17, 18, 289, 294

  ideal weight, 142, 143t

  weight classes, by BMI, 16, 19t, 67t, 81

Weight loss, 81-134, 294. See also *Obesity treatment*.

  as a primary intervention, 82-91

  benefits of, 82-91

  benefits of moderate loss, 87-91

  calories needed to lose weight, 142, 144t

  clinical trials, 84-87, 84, 86, 88-90

  effect on prediabetes, 84-85, 84, 129

  in elderly patients, 293-294, 293t

  as goal of obesity treatment, 58, 67, 68t, 81, 82

  for hypertension control, 139, 139t, 140-142, 142t

  metformin and, 253

  physiological changes after, 127, 127t

  risk reduction through, 17, 67-69

  SGLT2 inhibitors and, 272

  sleep apnea, improvement with, 320-321

  surgery for, 120-124. See also *Bariatric surgery*.

  treatment recommendations, 67-69, 68t

  for diabetics, 238t

  weight regain, challenge of, 126-129, 127t

Weight regain, 126-129, 127t

Women, 289-292

Xenical. See *Orlistat*.

Zaroxolyn, 162t

Zestoretic (lisinopril/hydrochlorothiazide), 174t

Zestril. See *Lisinopril*.

Zetia. See *Ezetimibe*.

Ziac (bisoprolol/hydrochlorothiazide), 175t

Zocor. See *Simvastatin*.