



Roadmaps for Clinical Practice

Case Studies in Disease Prevention and Health Promotion

**Assessment and Management of Adult Obesity:
A Primer for Physicians**

Assessment of health risks

Figure 2.1 Determining BMI

There are two easy ways to determine your patients' BMI:

1. BMI is calculated as weight in kilograms (kg) divided by the square of height in meters (m²).

$$BMI = \frac{\text{weight (kg)}}{\text{height squared (m}^2\text{)}}$$

Using pounds (lb) and inches (in), divide weight in pounds by the square of height in inches. Then multiply the resulting number by 703.

$$BMI = \frac{\text{weight (lbs) x 703}}{\text{height squared (in}^2\text{)}}$$

or

2. Use a BMI chart (see Figure 2.2 below).

Figure 2.2 Body Mass Index Chart

BMI	Normal					Overweight					Obese					Extreme obesity																				
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Height (inches)	Body weight (pounds)																																			
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Source: *The Practical Guide to the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. National Heart, Lung, and Blood Institute and North American Association for the Study of Obesity. Bethesda, Md: National Institutes of Health; 2000. NIH Publication number 00-4084, October 2000.

Figure 2.4 Measuring Waist Circumference

Because most practices do not routinely measure waist circumference, it may be helpful for you or your intake nurse to explain why it is being done. A simple explanation, such as the following, usually suffices: "A waist measurement is an important clue to your current and future health. I'd like you to breathe normally while I take your measurement."

To measure your patient's waist circumference:

1. Locate the upper hip bone and the top of the right iliac crest.
2. Place a measuring tape in a horizontal plane around the abdomen at the level of the iliac crest.
3. Ensure that the tape is snug, but does not compress the skin, and is parallel to the floor.
4. Read the measurement at the end of a normal expiration of breath.

Source: Adapted from *The Practical Guide to the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. National Heart, Lung, and Blood Institute and North American Association for the Study of Obesity. Bethesda, Md: National Institutes of Health; 2000. NIH Publication number 00-4084, October 2000.

Figure 2.3 Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risks

	BMI (kg/m ²)	Obesity Class	Disease risk* relative to normal weight and waist circumference	
			Men ≤40 in (≤102 cm) Women ≤35 in (≤88 cm)	Men >40 in (>102 cm) Women >35 in (>88 cm)
Underweight	< 18.5		—	—
Normal	18.5 – 24.9		—	—
Overweight	25.0 – 29.9		Increased	High
Obesity (Mild)	30.0 – 34.9	I	High	Very high
(Moderate)	35.0 – 39.9	II	Very high	Very high
(Severe/extreme)	≥ 40	III	Extremely high	Extremely high

* Disease risk for Type 2 diabetes, hypertension, and cardiovascular disease

Source: Adapted from National Heart, Lung, and Blood Institute and National Institute for Diabetes and Digestive and Kidney Diseases. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: Evidence Report*. *Obes Res*. 1998;6(suppl 2):51S-210S.

Figure 2.7 Obesity-related Risk Factors and Conditions: cardiovascular, endocrine, gastrointestinal, genitourinary, integument, musculoskeletal, neurologic, psychological, and respiratory

Cardiovascular

- Hypertension
- Congestive heart failure
- Cor pulmonale
- Varicose veins
- Pulmonary embolism
- Coronary artery disease

Endocrine

- The metabolic syndrome
- Type 2 diabetes
- Dyslipidemia
- Polycystic ovarian syndrome/androgenicity
- Amenorrhea/infertility/menstrual disorders

Gastrointestinal

- Gastroesophageal reflux disease (GERD)
- Non-alcoholic fatty liver disease (NAFLD)
- Cholelithiasis
- Hernias
- Colon cancer

Genitourinary

- Urinary stress incontinence
- Obesity-related glomerulopathy
- Hypogonadism(male)
- Breast and uterine cancer
- Pregnancy complications

Integument

- Striae distensae (stretch marks)
- Status pigmentation of legs
- Lymphedema
- Cellulitis
- Intertrigo, carbuncles
- Acanthosis nigricans/skin tags

Musculoskeletal

- Hyperuricemia and gout
- Immobility
- Osteoarthritis (knees, hips)
- Low back pain

Neurologic

- Stroke
- Idiopathic intracranial hypertension
- Meralgia paresthetica

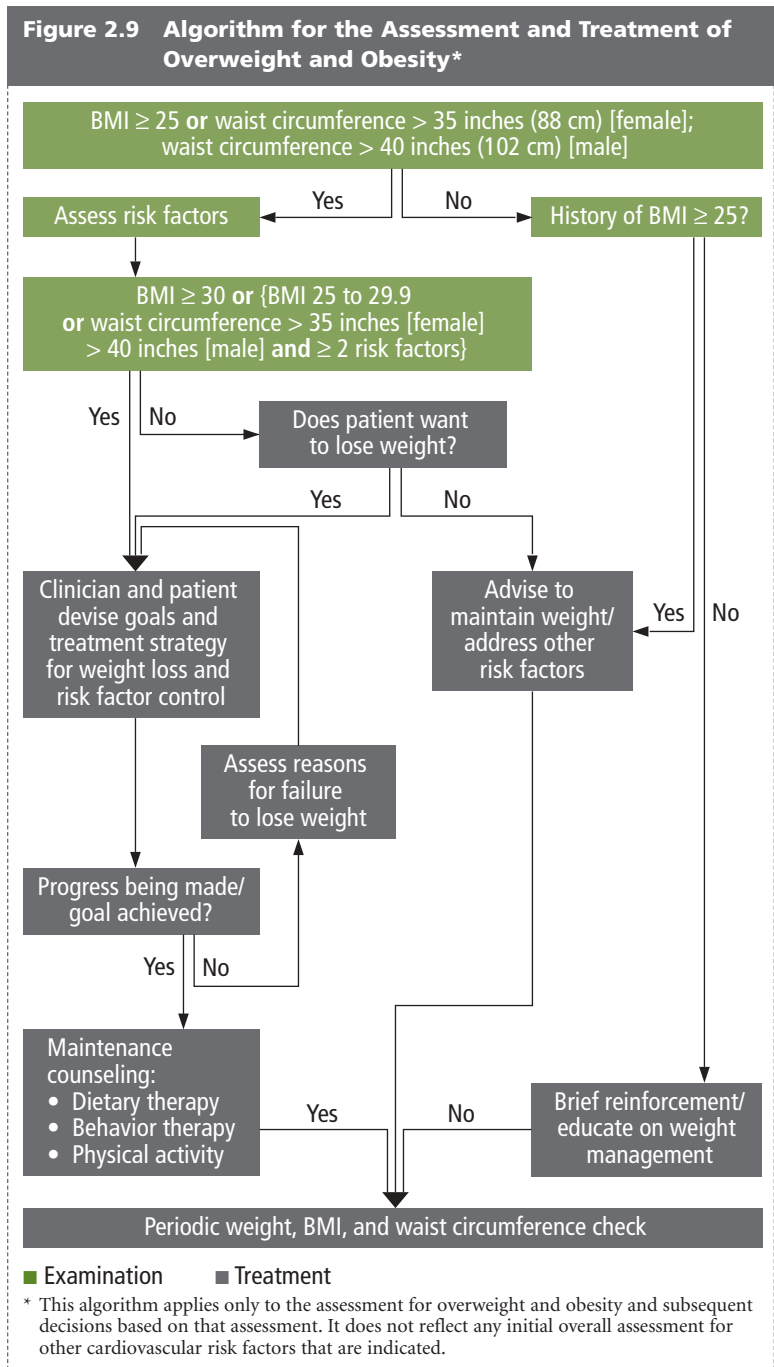
Psychological

- Depression/low self esteem
- Body image disturbance
- Social stigmatization

Respiratory

- Dyspnea
- Obstructive sleep apnea
- Hypoventilation syndrome
- Pickwickian syndrome
- Asthma

Source: Kushner RF and Roth JL, 2003.



Source: Adapted from *The Practical Guide to the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. National Heart, Lung, and Blood Institute and North American Association for the Study of Obesity. Bethesda, Md: National Institutes of Health; 2000. NIH Publication number 00-4084, October 2000.