

Fracture Rehabilitation

ACG: A-0366 (AC)

[Link to Codes](#)

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Clinical Indications

- Fracture rehabilitation may be indicated for **1 or more** of the following(1)(2):
 - Initial therapy, when **ALL** of the following are present:
 - Fracture that is appropriate for rehabilitation, as indicated by **1 or more** of the following:
 - Ankle fracture (eg, fracture of malleolus, talus, or tibial plafond)(3)(4)(5)[N](#)
 - Calcaneal fracture(8)(9)[N](#)
 - Carpal fracture[A](10)[N](#)
 - Clavicle fracture(11)(12)[N](#)
 - Elbow fracture (eg, fracture of distal humerus, proximal radius or ulna, or olecranon)(16)(17)(18)(19)[N](#)
 - Femoral shaft fracture[N](#)
 - Hand fracture (eg, fracture of metacarpal or phalanx)(20)[N](#)
 - Hand or wrist crush injury or dislocation(21)(22)[N](#)
 - Hip fracture (eg, fracture of proximal femur or acetabulum)(23)(24)(25)[N](#)
 - Knee fracture (eg, fracture of distal femur, tibial plateau, or patella)(32)(33)(34)[N](#)
 - Pelvic fracture(35)(36)(37)[N](#)
 - Shoulder fracture (eg, fracture of proximal humerus, glenoid fracture)(38)(39)[N](#)
 - Spinal compression fracture(40)(41)[N](#)
 - Tibial fracture[N](#)
 - Wrist fracture (eg, fracture of distal radius or ulna)(45)(46)(47)(48)(49)[N](#)

- No active wound infection(52)
- No evidence of postoperative complication (eg, fracture displacement, loose hardware, new neurologic deficit)
- Patient is expected to be able to adequately participate in and respond as planned to proposed treatment.
- Extended therapy, when **ALL** of the following are present(53)(54)(55)(56):
 - Functional progress has been made during initial therapy, or patient requires maintenance therapy plan[B] to prevent further deterioration or preserve existing function.
 - Goals of therapy are not yet met.
 - Patient is actively participating in treatment sessions.
 - Patient is adherent to plan of care.

Treatment Plan

- Treatment plan includes:
 - Goals of therapy(2):
 - Decreased pain to allow patient to participate in activities of daily living(35)(57)
 - Improvement in quality of life
 - Increased functional independence with mobility-related tasks(58)
 - Increased strength and ROM(52)(59)
 - Increased understanding of self-management of disease, injury, or surgical procedure
 - Independence in performing home exercise program(45)(60)
 - Management of edema
 - Return to work and leisure activities
 - Planned interventions:
 - Education, including:
 - Adaptive device and equipment training(2)(61)
 - Edema control(62)(63)
 - Energy conservation and body mechanics training
 - Fall prevention(57)(64)
 - Healing process
 - Home exercises(29)(45)(47)(60)(63)
 - Home use of thermal agents(61)
 - Joint protection
 - Weight-bearing and/or ROM limitations
 - Work and home environment modifications to minimize risk of future injuries
 - Therapeutic modalities, including:
 - Aerobic exercises and endurance conditioning(64)(65)
 - Balance and coordination activities for lower extremity fracture(57)(66)(67)
 - Brace for knee or ankle fracture(68)(69)
 - Dexterity and fine motor coordination activities for upper extremity fracture
 - Functional mobility training(24)(60)(70)
 - Gait training for lower extremity fracture(2)(65)
 - Joint mobilization after evidence of healing(2)
 - ROM exercises for **1 or more** of the following:
 - Ankle and foot (calcaneus) fracture(4)(5)(71)
 - Clavicle fracture(11)(12)
 - Elbow fracture(18)(19)
 - Femoral shaft fracture(2)
 - Hip fracture(2)
 - Knee fracture (eg, fracture of distal femur, tibial plateau, or patella)(32)
 - Pelvic fracture(2)
 - Shoulder fracture(39)

- o Tibial fracture(2)
 - o Wrist and hand fracture(59)
- Splint(18)
- Strengthening exercises for **1 or more** of the following:
 - o Ankle and foot (calcaneus) fracture(72)
 - o Clavicle fracture(11)(12)
 - o Elbow fracture(18)(19)
 - o Femoral shaft fracture(2)
 - o Hip fracture(2)(26)
 - o Knee fracture (eg, fracture of distal femur, tibial plateau, or patella)(2)
 - o Pelvic fracture(2)
 - o Shoulder fracture(38)
 - o Spinal compression fracture(43)
 - o Tibial fracture(2)
 - o Wrist and hand fracture(62)
- Wheelchair mobility training for lower extremity fracture(2)

Visits per Episode

ICD-10-CM Code	Diagnosis Description	One Visit Episode %	Mean *	25th %ile *	50th %ile (Median) *	75th %ile *	Episode > 1 Year % *
M26.629	Arthralgia of temporomandibular joint, unspecified side	13.51%	6.8	3	5	9	3.13%
M84.361D	Stress fracture, right tibia, subsequent encounter for fracture with routine healing	17%	13.0	7	10	17	2.41%
M84.362D	Stress fracture, left tibia, subsequent encounter for fracture with routine healing	10.64%	8.4	4	7	10	0%
M84.374D	Stress fracture, right foot, subsequent encounter for fracture with routine healing	22.13%	8.6	4	7	11	0%
M84.375D	Stress fracture, left foot, subsequent encounter for fracture with routine healing	18.81%	11.1	4	7	12	1.22%
S22.080D	Wedge compression fracture of T11-T12 vertebra, subsequent	11.59%	10.7	5	7	11	3.28%

	encounter for fracture with routine healing						
S32.010D	Wedge compression fracture of first lumbar vertebra, subsequent encounter for fracture with routine healing	11.63%	11.1	4	7	13	1.32%
S42.001D	Fracture of unspecified part of right clavicle, subsequent encounter for fracture with routine healing	10.32%	10.1	4	7	12	0.88%
S42.002D	Fracture of unspecified part of left clavicle, subsequent encounter for fracture with routine healing	7.38%	10.2	5	8	13	0%
S42.021D	Displaced fracture of shaft of right clavicle, subsequent encounter for fracture with routine healing	10.08%	9.7	4	8	14	0%
S42.022D	Displaced fracture of shaft of left clavicle, subsequent encounter for fracture with routine healing	14.05%	9.2	4	6	12	0%
S42.201D	Unspecified fracture of upper end of right humerus, subsequent encounter for fracture with routine healing	4.46%	17.3	6	14	22	2.07%
S42.202D	Unspecified fracture of upper end of left humerus, subsequent encounter for fracture with routine healing	5.88%	16.6	6	13	21	0.96%
S42.252D	Displaced fracture of greater tuberosity of left humerus, subsequent encounter for fracture with routine healing	4.35%	15.2	6	12	23	0%
S42.254D	Nondisplaced fracture of greater tuberosity of right humerus, subsequent	11.01%	12.9	6	10	17	0%

	encounter for fracture with routine healing						
S42.255D	Nondisplaced fracture of greater tuberosity of left humerus, subsequent encounter for fracture with routine healing	6.67%	11.4	4	9	16	0.89%
S42.291D	Other displaced fracture of upper end of right humerus, subsequent encounter for fracture with routine healing	4.94%	16.9	6	13	25	1.3%
S42.292D	Other displaced fracture of upper end of left humerus, subsequent encounter for fracture with routine healing	7.78%	16.9	7	15	23	1.2%
S42.295D	Other nondisplaced fracture of upper end of left humerus, subsequent encounter for fracture with routine healing	6.25%	17.0	6	14	24	0%
S42.402D	Unspecified fracture of lower end of left humerus, subsequent encounter for fracture with routine healing	11.69%	14.5	4	11	21	0%
S42.441D	Displaced fracture (avulsion) of medial epicondyle of right humerus, subsequent encounter for fracture with routine healing	10.96%	12.8	5	10	16	0%
S52.021D	Displaced fracture of olecranon process without intraarticular extension of right ulna, subsequent encounter for closed fracture with routine healing	2.86%	12.3	5	10	19	0%
S52.022D	Displaced fracture of olecranon process without	14.86%	13.0	5	9	17	0%

	intraarticular extension of left ulna, subsequent encounter for closed fracture with routine healing						
S52.121D	Displaced fracture of head of right radius, subsequent encounter for closed fracture with routine healing	7.81%	11.8	4	8	16	0.85%
S52.122D	Displaced fracture of head of left radius, subsequent encounter for closed fracture with routine healing	9.55%	11.1	4	7	16	0.7%
S52.124D	Nondisplaced fracture of head of right radius, subsequent encounter for closed fracture with routine healing	13.9%	9.6	4	8	12	1.24%
S52.125D	Nondisplaced fracture of head of left radius, subsequent encounter for closed fracture with routine healing	13.53%	8.4	3	6	11	0%
S52.501D	Unspecified fracture of the lower end of right radius, subsequent encounter for closed fracture with routine healing	13.69%	10.6	4	8	14	0.19%
S52.502D	Unspecified fracture of the lower end of left radius, subsequent encounter for closed fracture with routine healing	12.3%	11.1	4	7	15	0.61%
S52.531D	Colles' fracture of right radius, subsequent encounter for closed fracture with routine healing	7.19%	12.0	5	9	15	0.78%
S52.532D	Colles' fracture of left radius, subsequent	8.41%	11.0	4	8	14	0%

	encounter for closed fracture with routine healing						
S52.551D	Other extraarticular fracture of lower end of right radius, subsequent encounter for closed fracture with routine healing	16.95%	10.3	3	8	14	0%
S52.552D	Other extraarticular fracture of lower end of left radius, subsequent encounter for closed fracture with routine healing	16.53%	10.0	4	6	12	0%
S52.571D	Other intraarticular fracture of lower end of right radius, subsequent encounter for closed fracture with routine healing	10.14%	11.8	5	8	15	1.31%
S52.572D	Other intraarticular fracture of lower end of left radius, subsequent encounter for closed fracture with routine healing	12.17%	11.5	5	8	15	0.5%
S52.591D	Other fractures of lower end of right radius, subsequent encounter for closed fracture with routine healing	15.38%	13.0	5	10	16	0%
S52.592D	Other fractures of lower end of left radius, subsequent encounter for closed fracture with routine healing	12.88%	11.2	4	8	16	0%
S62.001D	Unspecified fracture of navicular [scaphoid] bone of right wrist, subsequent encounter for fracture with routine healing	22.62%	8.2	3	5	9	0%
S62.002D	Unspecified fracture of navicular [scaphoid] bone of left wrist, subsequent	17.72%	8.4	3	6	11	0%

	encounter for fracture with routine healing						
S62.306D	Unspecified fracture of fifth metacarpal bone, right hand, subsequent encounter for fracture with routine healing	29.7%	7.5	3	5	8	0%
S62.316D	Displaced fracture of base of fifth metacarpal bone, right hand, subsequent encounter for fracture with routine healing	27.84%	7.3	3	5	9	1.43%
S62.326D	Displaced fracture of shaft of fifth metacarpal bone, right hand, subsequent encounter for fracture with routine healing	28.57%	5.2	3	4	7	0%
S62.336D	Displaced fracture of neck of fifth metacarpal bone, right hand, subsequent encounter for fracture with routine healing	22.82%	8.4	3	5	10	1.74%
S62.614D	Displaced fracture of proximal phalanx of right ring finger, subsequent encounter for fracture with routine healing	15.25%	13.9	5	10	18	3%
S62.615D	Displaced fracture of proximal phalanx of left ring finger, subsequent encounter for fracture with routine healing	5.88%	11.1	4	8	14	2.08%
S62.616D	Displaced fracture of proximal phalanx of right little finger, subsequent encounter for fracture with routine healing	23.83%	9.7	4	6	12	0%
S62.617D	Displaced fracture of proximal phalanx of left little finger, subsequent encounter for fracture with routine healing	13.91%	8.7	3	6	12	0%

S72.001D	Fracture of unspecified part of neck of right femur, subsequent encounter for closed fracture with routine healing	5.97%	16.7	6	12	23	3.17%
S72.002D	Fracture of unspecified part of neck of left femur, subsequent encounter for closed fracture with routine healing	7.04%	13.5	5	9	19	1.52%
S82.001D	Unspecified fracture of right patella, subsequent encounter for closed fracture with routine healing	2%	14.6	5	12	21	3.06%
S82.002D	Unspecified fracture of left patella, subsequent encounter for closed fracture with routine healing	6.98%	12.3	6	9	14	1.25%
S82.102D	Unspecified fracture of upper end of left tibia, subsequent encounter for closed fracture with routine healing	12.36%	14.3	7	12	19	0%
S82.122D	Displaced fracture of lateral condyle of left tibia, subsequent encounter for closed fracture with routine healing	5.71%	18.9	6	13	28	3.03%
S82.141D	Displaced bicondylar fracture of right tibia, subsequent encounter for closed fracture with routine healing	4.03%	16.0	7	12	22	1.68%
S82.142D	Displaced bicondylar fracture of left tibia, subsequent encounter for closed fracture with routine healing	5.85%	17.4	6	12	24	2.82%
S82.201D	Unspecified fracture of shaft of right tibia, subsequent	10.45%	14.5	5	13	21	1.67%

	encounter for closed fracture with routine healing						
S82.202D	Unspecified fracture of shaft of left tibia, subsequent encounter for closed fracture with routine healing	10.32%	15.1	7	12	19	0.88%
S82.401D	Unspecified fracture of shaft of right fibula, subsequent encounter for closed fracture with routine healing	8.55%	12.3	4	10	16	0.93%
S82.402D	Unspecified fracture of shaft of left fibula, subsequent encounter for closed fracture with routine healing	5.66%	13.3	4	10	17	2%
S82.51XD	Displaced fracture of medial malleolus of right tibia, subsequent encounter for closed fracture with routine healing	11.76%	8.7	3	6	12	0%
S82.61XD	Displaced fracture of lateral malleolus of right fibula, subsequent encounter for closed fracture with routine healing	5.99%	11.1	5	9	14	1.01%
S82.62XD	Displaced fracture of lateral malleolus of left fibula, subsequent encounter for closed fracture with routine healing	8.73%	10.1	4	8	14	0%
S82.64XD	Nondisplaced fracture of lateral malleolus of right fibula, subsequent encounter for closed fracture with routine healing	12.9%	9.7	4	8	13	0.46%
S82.65XD	Nondisplaced fracture of lateral malleolus of left fibula, subsequent	11.59%	10.6	5	9	13	0.49%

	encounter for closed fracture with routine healing						
S82.831D	Other fracture of upper and lower end of right fibula, subsequent encounter for closed fracture with routine healing	12.29%	8.9	4	7	12	0.48%
S82.832D	Other fracture of upper and lower end of left fibula, subsequent encounter for closed fracture with routine healing	10.76%	9.6	4	7	12	0%
S82.841D	Displaced bimalleolar fracture of right lower leg, subsequent encounter for closed fracture with routine healing	8.2%	13.9	6	11	19	1.7%
S82.842D	Displaced bimalleolar fracture of left lower leg, subsequent encounter for closed fracture with routine healing	7.46%	14.6	6	11	22	2.15%
S82.851D	Displaced trimalleolar fracture of right lower leg, subsequent encounter for closed fracture with routine healing	6.79%	16.5	8	14	21	1.92%
S82.852D	Displaced trimalleolar fracture of left lower leg, subsequent encounter for closed fracture with routine healing	7.93%	16.5	7	14	23	1.91%
S82.891D	Other fracture of right lower leg, subsequent encounter for closed fracture with routine healing	8.96%	12.0	4	9	17	2.07%
S82.892D	Other fracture of left lower leg, subsequent encounter for closed fracture with routine healing	7.8%	12.5	4	8	18	1%

S92.351D	Displaced fracture of fifth metatarsal bone, right foot, subsequent encounter for fracture with routine healing	17.42%	9.4	3	6	13	0%
S92.352D	Displaced fracture of fifth metatarsal bone, left foot, subsequent encounter for fracture with routine healing	17.54%	6.3	3	5	8	0%
S92.354D	Nondisplaced fracture of fifth metatarsal bone, right foot, subsequent encounter for fracture with routine healing	19.02%	8.0	3	6	10	0.67%
S92.355D	Nondisplaced fracture of fifth metatarsal bone, left foot, subsequent encounter for fracture with routine healing	21.21%	9.1	4	7	11	0.77%
T84.84XD	Pain due to internal orthopedic prosthetic devices, implants and grafts, subsequent encounter	16.85%	10.5	4	7	12	1.35%
Z87.81	Personal history of (healed) traumatic fracture	10.84%	12.3	3	8	18	1.35%

* Visit Summary for Episodes with 2 or more Visits

Evidence Summary

Background

Rehabilitation therapy addresses different needs at the 3 stages of fracture healing. During the inflammatory stage, the aims are to control edema and other signs and symptoms of inflammation, reduce the risk of further injury or tissue damage, and promote healing. During the repair stage, early ROM exercises and weight-bearing may begin. The goals during the remodeling phase are to restore ROM, strength, power, and endurance, as well as to address any neuromuscular deficits that may influence proprioception, coordination, and balance.(1) **(EG 2)** Because postfracture sequelae include decreased ROM and strength, primary goals of rehabilitation include stretching and strengthening.(2) **(EG 2)**

Criteria

The evidence for the clinical indications found in this guideline includes 40 published peer reviewed articles, 2 specialty society or other evidence-based guidelines, 6 Cochrane systematic reviews, and 6 book sections.

For ankle fracture, evidence demonstrates at least moderate certainty of at least moderate net benefit. **(RG A1)** A systematic review and meta-analysis of 25 randomized trials and cohort studies (1376 participants) concluded that, following open reduction and internal fixation of ankle fractures, active exercises accelerate return to work and daily activities 21 days more quickly as compared with immobilization and early weight-bearing tends to accelerate return to work and daily activities as compared with late weight-bearing (3 to 6 weeks postoperatively). (6) **(EG 1)** A systematic review that included 53 studies with 4489 participants with ankle fracture found that enhanced physical therapy modalities (eg, antigravity treadmill, spring-loaded ankle trainer, progressive exercise program) did not improve activity limitation or quality of life compared with standard physical therapy. (7) **(EG 1)** A retrospective study of 126 patients with acute unilateral closed ankle fracture concluded that protected weight-bearing with rigid immobilization within 15 days of surgical repair was safe because there were no cases of malunion or nonunion and the complication rate was low. (3) **(EG 2)**

For calcaneal fracture, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Successful nonoperative management of closed calcaneal fracture usually consists of elevation, splinting, and non-weight-bearing for up to 12 weeks; immobilization with a splint and compressive dressing may be converted to a cast or fracture boot 7 to 10 days after injury to begin gentle ROM exercises. (8) **(EG 2)** In a study of surgical repair of displaced intra-articular calcaneal fractures in 167 patients, postoperative non-weight-bearing exercises, including extension and plantar flexion of the toes and ankle, were encouraged as soon as pain could be tolerated; crutch-assisted walking was allowed 2 or 3 days following surgery. Partial-weight-bearing began about 4 weeks postoperatively, and full-weight-bearing was allowed when there was osseous union on radiographs, which was generally at 3 months postoperatively. (9) **(EG 2)**

For carpal fracture, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Rehabilitation of fracture of the scaphoid (one of the carpal bones) may consist of a forearm spica splint with ROM exercises for 4 weeks, followed by progressive ROM exercises and strengthening dependent upon radiographic union. (2) (10) **(EG 2)**

For clavicle fracture, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Clavicle fractures are frequently managed nonsurgically, although the optimal management strategy for clavicle fractures is not well-defined. (13) (14) **(EG 1)** For patients managed surgically, unrestricted shoulder motion can usually begin soon after surgery with progressive ROM activities occurring from 2 to 6 weeks postoperatively; strengthening exercises are typically started 6 weeks postoperatively. (11) (12) **(EG 2)** A systematic review of 10 studies (4 randomized controlled trials) reporting on nonoperative management of clavicle fractures, including immobilization, partial mobilization, and/or functional rehabilitation, found that studies that allowed immediate mobilization of the shoulder had nonunion rates of 5% to 24% vs 3% to 29% nonunion rates with strict immobilization. There were no significant differences in nonunion rates between protocols with or without strengthening exercises; however, heterogeneity between rehabilitation protocols limited the ability to draw conclusions about efficacy of specific exercises. (15) **(EG 1)**

For elbow fracture (eg, fracture of distal humerus, proximal radius or ulna, or olecranon), evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** A prospective randomized study of 180 consecutive patients with simple radial head fracture concluded that early active mobilization after 48 postinjury hours of sling immobilization is safe and can result in superior outcomes as compared with either immediate postinjury mobilization or mobilization after 7 days in a cast. (16) **(EG 1)** Active hand, wrist, and shoulder ROM exercises should be started immediately after operative repair of an elbow fracture. Elbow active-assisted ROM exercises are typically started 7 to 10 days postoperatively. (17) **(EG 2)** A systematic review identified only one study (with high risk of detection and reporting biases) regarding the effect of early mobilization on elbow function after fracture; additional research was recommended. (18) **(EG 1)** Strengthening exercises should begin after evidence of callus formation in an elbow fracture. (19) **(EG 2)**

For femoral shaft fracture, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Rehabilitation from a femoral shaft fracture includes avoidance of painful ambulation with progressive weight-bearing and early mobilization in axially stable fractures (usually delayed 6 to 10 weeks in unstable fractures), followed by gait training and stair negotiation. (2) **(EG 2)**

For hand fracture (eg, fracture of metacarpal or phalanx), evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Rehabilitation of a metacarpal or phalangeal fracture consists of splinting followed by progressive ROM exercises and strengthening as the fracture heals. (2) (20) **(EG 2)**

For hand or wrist crush injury or dislocation, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Wrist dislocation with carpal instability is usually treated by immobilization followed by ROM and strengthening exercises. (21) (22) **(EG 2)**

For hip fracture (eg, fracture of proximal femur or acetabulum), evidence demonstrates at least moderate certainty of at least moderate net benefit. **(RG A1)** A systematic review and meta-analysis of 9 randomized trials (669 patients) evaluating the efficacy of exercise interventions within the first 3 months after surgical repair of hip fracture in patients age 65 years or older found moderate-quality to high-quality evidence that exercise improved physical function 3 to 6 months postoperatively. The authors noted that heterogeneity among the included studies limited the results. (23) **(EG 1)** A meta-analysis of 13 randomized controlled trials (1903 patients) evaluating the effect of structured exercise (defined as an active program aimed at improving mobility) after hip fracture found that exercise was associated with improved mobility, especially when it included progressive resistance training and was delivered in settings outside the hospital. (24) **(EG 1)** A systematic review that included 13 randomized clinical trials and 1107 patients showed that community-dwelling hip fracture patients who received an extended home-

based or community-based exercise rehabilitation program after surgical repair and a regular rehabilitation period displayed significant improvement in strength of both knee extensors, balance, performance-based test scores, Timed Up and Go test scores, and fast gait speed.(26) **(EG 1)** A randomized controlled trial of 205 adults age 70 years or older with acute hip fracture evaluating geriatric care and rehabilitation with and without an additional home-based rehabilitation program reported no significant improvements with home-based rehabilitation in fall risk, complications, or readmissions.(27) **(EG 1)** A secondary analysis of a randomized controlled trial with 81 community-dwelling patients recovering from hip fracture surgery compared a yearlong multicomponent rehabilitation program (including a progressive home exercise program) with standard care and found, at 1 and 2 years postoperatively, that the program was associated with increased physical activity measured by patient report on a modified Grimby scale.(28) **(EG 2)** A retrospective population-based cohort study included 11,200 individuals residing in the community with physician-diagnosed dementia who underwent hip fracture surgery, and concluded that postfracture rehabilitation for these patients is associated with lower risk of both long-term care placement and mortality.(29) **(EG 2)** A literature review determined that patients with hip fracture should be mobilized soon after surgery (often the morning following surgery) because early ambulation has been found to improve patient outcomes, such as functional recovery and mortality rate. Rehabilitation should progress each day, ideally leading to stair climbing by postoperative day 4.(30) **(EG 2)** A national clinical guideline on the management of hip fractures recommends multidisciplinary rehabilitation after hip fracture surgery.(31) **(EG 2)**

For knee fracture (eg, fracture of distal femur, tibial plateau, or patella), evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Nonsurgical management of a patellar fracture with clinically intact extensor mechanism and minimal fracture displacement includes a long leg splint for up to 4 weeks, early weight-bearing, ROM exercises begun at 1 to 2 weeks, resistance exercises added at 6 weeks, and isometric quadriceps exercises and straight leg raises when the pain has subsided.(32) **(EG 2)** Nonoperative treatment of tibial plateau fractures includes stabilization in a brace, early and ongoing ROM exercises, and immediate non-weight-bearing ambulation that progresses to weight-bearing as the fracture heals.(33) **(EG 2)**

For pelvic fracture, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Osteoporotic pelvic fractures with a stable pelvic ring are generally treated nonsurgically with pain management and mobilization.(35)(36)(37) **(EG 2)** Inadequate analgesia results in delayed mobilization and increases the risk of complications from prolonged bed rest.(36) **(EG 2)** Rehabilitation for pelvic fractures includes avoidance of painful ambulation with early partial-weight-bearing in the first 6 to 8 weeks, with goals that include weaning the patient from an assistive device for ambulation, safe transfers, and advancement in performance of activities of daily living.(2) **(EG 2)**

For shoulder fracture (eg, fracture of proximal humerus, glenoid fracture), evidence demonstrates at least moderate certainty of at least moderate net benefit. **(RG A1)** A systematic review of studies of upper limb fractures concluded that there is evidence to support specific exercise regimens in reducing impairments and improving upper limb function following proximal humerus fracture. After conservative management of proximal humerus fracture, early exercise may reduce pain and improve shoulder function.(38) **(EG 1)** For glenoid and other intra-articular fractures, early non-load-bearing ROM exercise is useful and generally begins with passive ROM exercises after 1 to 2 weeks of immobilization. Active-assisted ROM exercise generally starts at 4 weeks if the patient is pain free. Progressive light strengthening exercise may begin at 8 weeks; by 3 months, activities are allowed as tolerated.(39) **(EG 2)**

For spinal compression fracture, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Pain from osteoporotic vertebral fractures may require 8 to 12 weeks to resolve; further rehabilitation includes exercise, postural correction, trunk and lower extremity muscle strengthening, balance exercises, and education in the prevention of falls.(40)(41)(42) **(EG 2)** A systematic review that included 9 studies on the effects of therapeutic exercise for persons with osteoporotic vertebral fractures found positive trends regarding improvements in strength and balance, with no increase in pain following exercise protocols, but no definitive conclusions could be drawn because of limited or inconsistent evidence.(43) **(EG 1)** A systematic review of 9 trials (749 participants) that evaluated the use of therapeutic exercise for improving outcomes after osteoporotic vertebral fracture concluded that, although individual trials showed improvement in some outcomes, such as pain, physical function, and quality of life, the findings were inconsistent, the quality of evidence was low, and improvements were not clinically meaningful.(44) **(EG 1)**

For tibial fracture, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Rehabilitation for tibial fractures generally includes partial-weight-bearing with gentle ROM exercises and avoidance of resisted knee flexion and extension for the first 4 to 8 weeks. (2) **(EG 2)** Treatment during weeks 8 to 16 includes avoidance of painful ambulation with progressive weight-bearing and gait training.(2) **(EG 2)**

For wrist fracture (eg, fracture of distal radius or ulna), evidence demonstrates at least moderate certainty of at least moderate net benefit. **(RG A1)** A systematic review of 7 trials (including 2 randomized controlled trials) with 383 participants compared therapist-supervised therapy in a clinic with a home exercise program following distal radius fracture and concluded that patients without complications achieved similar outcomes in either program.(45) **(EG 1)** A systematic review and meta-analysis of 7 studies (6 randomized controlled trials, 395 total patients) evaluating the efficacy of early rehabilitation therapy following distal radius fracture fixation (ie, within 2 weeks of surgery) found that patients who started therapy early had significant improvement in wrist extension mobility and decreased pain compared with patients who started therapy later (ie, within 6 weeks of surgery). Both groups demonstrated improvements in wrist function.(50) **(EG 1)** A randomized controlled trial that compared the effectiveness of 6 weeks of supervised physical therapy with 6 weeks of home exercise for elderly patients with nonsurgical distal radius fracture found, after 1 year of follow-up, that patients who received supervised physical therapy had greater improvement in wrist and hand function (as measured by the Patient-Rated Wrist Evaluation) compared with those who received home therapy. The authors noted that there was no difference between groups after 2 years of follow-up.(51) **(EG 1)** A prospective randomized controlled trial of 81 patients with an unstable distal radius fracture who underwent open reduction and internal fixation found that patients in the accelerated rehabilitation group (consisting of passive ROM and strengthening exercises beginning 2 weeks postoperatively) had an earlier return to function and significantly better wrist flexion and grip

strength at 6 months, as compared with those in the standard rehabilitation group (same program, but beginning 6 weeks postoperatively).(46) **(EG 1)** An observational study that included 14 physiotherapists reporting on 160 distal radius fracture consultations found that the most common interventions included exercise, passive joint mobilization, teaching a home exercise program, and supervising ROM and flexibility exercises.(47) **(EG 2)** A national specialty society guideline suggests that patients perform active finger motion exercises following diagnosis of distal radius fractures and that a home exercise program be considered as a therapeutic option.(48) **(EG 2)**

Rationale

Use of this MCG care guideline helps the clinician determine if a particular treatment, medication, or service might be appropriate for a specific patient, taking into account their unique health complexities.

Use of these evidence-based clinical criteria to support decision making benefits the patient by identifying patient-specific complex clinical factors and conditions, promoting personalized treatment. Utilizing evidence-based clinical criteria promotes patient safety by helping ensure that potential patient benefits outweigh the risks. In addition, the use of evidence-based guidelines can increase consistency in treatment thresholds, leading to less variation in care and promoting equitable treatment among patients.

Related CMS Coverage Guidance

This guideline supplements but does not replace, modify, or supersede existing Medicare regulations or applicable National Coverage Determinations (NCDs) or Local Coverage Determinations (LCDs).

Code of Federal Regulations (CFR): 42 CFR 419.22(73); 42 CFR 422.101(74)

Internet-Only Manual (IOM) Citations: CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 14 - Medical Devices(75); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 15 - Covered Medical and Other Health Services(53); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 16 - General Exclusions from Coverage(76)

Medicare Coverage Determinations: Medicare Coverage Database(77)

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Footnotes

[A] Scaphoid fractures represent 70% to 90% of all carpal bone fractures.(10) [A in Context Link 1]

[B] According to the Centers for Medicare and Medicaid Services (CMS), a maintenance therapy program helps to maintain the patient's current condition or to prevent or slow further deterioration. CMS specifies that skilled therapy services are necessary for the performance of a safe and effective maintenance program only when (a) the particular patient's special medical complications require the skills of a qualified therapist to perform a therapy service that would otherwise be considered nonskilled, or (b) the needed therapy procedures are of such complexity that the skills of a qualified therapist are required to perform the procedure.(53) [B in Context Link 1]

Codes

ICD-10 Diagnosis: M26.629, M48.40XD, M48.40XG, M48.40XS, M48.41XD, M48.41XG, M48.41XS, M48.42XD, M48.42XG, M48.42XS, M48.43XD, M48.43XG, M48.43XS, M48.44XD, M48.44XG, M48.44XS, M48.45XD, M48.45XG, M48.45XS, M48.46XD, M48.46XG, M48.46XS, M48.47XD, M48.47XG, M48.47XS, M48.48XD, M48.48XG, M48.48XS, M48.50XD, M48.50XG, M48.50XS, M48.51XD, M48.51XG, M48.51XS, M48.52XD, M48.52XG, M48.52XS, M48.53XD, M48.53XG, M48.53XS, M48.54XD, M48.54XG, M48.54XS, M48.55XD, M48.55XG, M48.55XS, M48.56XD, M48.56XG, M48.56XS, M48.57XD, M48.57XG, M48.57XS, M48.58XD, M48.58XG, M48.58XS, M80.00XD, M80.00XG, M80.00XK, M80.00XP, M80.00XS, M80.011D, M80.011G, M80.011K, M80.011P, M80.011S, M80.012D, M80.012G, M80.012K, M80.012P, M80.012S, M80.019D, M80.019G, M80.019K, M80.019P, M80.019S, M80.021D, M80.021G, M80.021K, M80.021P, M80.021S, M80.022D, M80.022G, M80.022K, M80.022P, M80.022S, M80.029D, M80.029G, M80.029K, M80.029P, M80.031D, M80.031G, M80.031K, M80.031P, M80.031S, M80.032D, M80.032G, M80.032K, M80.032P, M80.032S, M80.039D, M80.039G, M80.039K, M80.039P, M80.039S, M80.041D, M80.041G, M80.041K, M80.041P, M80.041S, M80.042D, M80.042G, M80.042K, M80.042P, M80.042S, M80.049D, M80.049G, M80.049K, M80.049P, M80.049S, M80.051D, M80.051G,

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