

Recommendations of VCF pathway for your FLS

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DISCLOSURES

No Disclosures



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OBJECTIVES

- Learn how to identify patients at high risk of VCF and when to order appropriate imaging
- Gain a better understanding of the VCF Pathway to help guide treatment of patients suffering from VCF
- Understand when it is appropriate to refer the patient for vertebral augmentation
- Address the underlying cause of the VCF and provide "total bone care"
- Understand how you can utilize the VCF Pathway in your FLS clinic
- Feel confident networking with local providers who provide VA



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WHAT DO WE KNOW ABOUT VCF?

- Incidence
 - Vertebral compression fractures (VCF) are the most common fragility fracture
 - 700,000-900,000 VCF per year in US (1/3 will seek care)
 - 70,000 hospitalizations annually
 - 15 billion in annual costs
- Demographics
 - 25% people over 70 years (10,000 people turn 65yo daily)
 - 50% people over 80 years
- Risk factors
 - history of 2 VCFs is the strongest predictor of future vertebral fractures in postmenopausal women
 - The Domino Effect: 1 fracture → 5x risk for another...2nd VCF → 10x risk

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Managing the patient, not the diagnosis

- PAIN
- QUALITY OF LIFE
- \$ COST OF CARE
- LOSS OF INDEPENDENCE
- MORBIDITY AND MORTALITY

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HOW DO THESE FRACTURES PRESENT?

- Symptoms
 - Up to 2/3 are asymptomatic
 - BACK PAIN...Thoracic or lumbar spine pain
 - Pain usually localized to area of fracture but may wrap around rib cage if dermatomal distribution
- ACUTE PHASE:
 - Sudden onset of back pain
 - Walking vs lying down
 - Decrease mobility
- LATE PHASE:
 - Height loss
 - Deformity (kyphosis and lordosis)
 - Chronic pain



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Vertebral Compression Fracture

- ALWAYS PERFORM A PHYSICAL EXAM!
- Physical exam
 - Focal tenderness at the level of the fracture and/or over the spinous process
 - Multiple compression fractures can lead to local kyphosis
 - Spinal cord injury (rare but severe)
 - nerve root deficits with compression fractures of lumbar spine that lead to severe foraminal stenosis
 - Pain with standing or walking. Decrease in pain with lying.
 - Kyphosis



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KEY SIGNS AND SYMPTOMS OF VCF WHEN IS IMAGING APPROPRIATE?

- HISTORY OF PRESENT ILLNESS:
 - Severe limitation of mobility/ADLs due to pain
 - Pain diminishes or is resolved with rest
 - Recent history of minimal /low velocity trauma
 - Pain is related to activity or movement
- PAST MEDICAL HISTORY :
 - Osteoporosis/osteopenia
 - Previous VCF
 - Chronic use of corticosteroids
- PHYSICAL EXAMINATION:
 - Tenderness to palpation over spinous process
 - Pain worsening by changes of motion
 - Midline back pain

NUMBER OF SIGNS AND SYMPTOMS	PROBABILITY OF VCF
1-3	LOW PROBABILITY
4-6	INTERMEDIATE PROBABILITY
7 OR MORE	HIGH PROBABILITY

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HOW DO WE DIAGNOSE THE VCF?

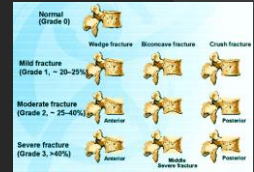
- **Diagnosis**
 - Lateral radiography of the vertebral column
- Radiographic criteria for VCFs include a decrease in vertebral body height of at least 20% or a 4-mm reduction from baseline height. The classic radiographic finding is an anterior wedge fracture
- Radiographs of the entire spine (concomitant spine fractures in 20%)
 - Loss of anterior, middle, or posterior vertebral height by 20% or at least 4mm
- CT scan
- MRI
 - Usually not necessary for diagnosis
 - Acute vs chronic nature of compression fracture



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CLASSIFYING VERTEBRAL COMPRESSION FRACTURES

- **Classification:**
 - Wedge
 - Biconcave
 - Crush fractures
- **Grade of Fracture:**
 - Mild or Grade 1: 20%-25% loss of vertebral height
 - Moderate or Grade 2: 25%-40% loss of vertebral height
 - Severe or Grade 3: Greater than 40% loss of vertebral body height

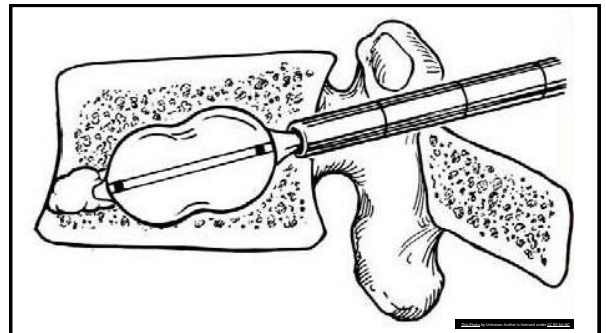


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Vertebral Compression Fracture TREATMENT PATHWAYS

- **Nonoperative**
 - Observation, bracing, and medical management
 - Majority of cases
 - Pharmacologic interventions to assist in fragility fracture risk reduction
 - Extension orthosis
- **Operative**
 - **Vertebroplasty**
 - Controversial
 - Randomized, double-blind, placebo-controlled trials have shown no beneficial effect of vertebroplasty
 - Vertebroplasty has higher rates of cement extravasation and associated complications than kyphoplasty
 - **Kyphoplasty**
 - Patient continues to have severe pain symptoms after 6 weeks of nonoperative treatment
 - Kyphoplasty is different than vertebroplasty in that a cavity is created by balloon expansion and therefore the cement can be injected with less pressure
 - **Surgical decompression and stabilization**
 - Rare
 - Progressive neurologic deficit
 - PLL injury and unstable spines

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WHY VCF PATHWAY ?

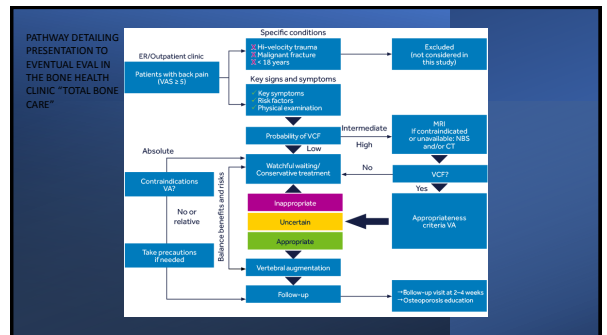
- Historically there has been a lack of consensus in management of VCF.
- Management of vertebral fragility fractures: A clinical care pathway developed by a multiple disciplinary panel using the RAND/UCLA Appropriateness Method
 - Highly-structured approach for developing patient-specific recommendations that combines best available clinical evidence with the collective judgments of a multispecialty panel of experts.
 - To develop the VCF Care Pathway, the panel considered 576 potential clinical scenarios.
- Bone health and osteoporosis Foundation supports new evidence-based care pathway designed to optimize care of a vertebral compression fractures
- VCF pathway helps providers better identify which patient is to treat with vertebral augmentation versus conservative management

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VCF PATHWAY WHAT IS THE BENEFIT?

- Helps identify and capture patients
- Helps effectively manage care
- Improves quality of care provided
- Reduces variation of care provided
- Increases efficient use of healthcare through integration of evidence-based medicine into clinical practice
- Total bone care

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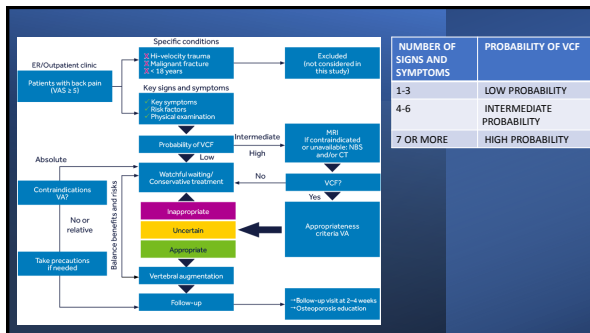
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WHEN TO CONSIDER ADVANCED IMAGING

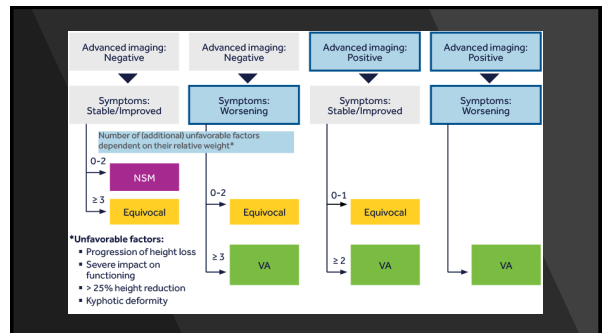
- UNNECESSARY for patients with moderate symptoms and a low probability of VCF
- Indicated for all patients with severe symptoms and/ or intermediate to high probability of VCF
- MRI is most appropriate imaging technique and also helps aid in chronic vs acute.
- If unable to obtain an MRI → CT and nuclear bone scan is a good alternative.

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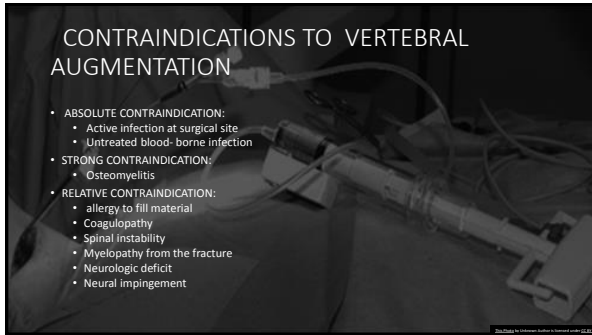
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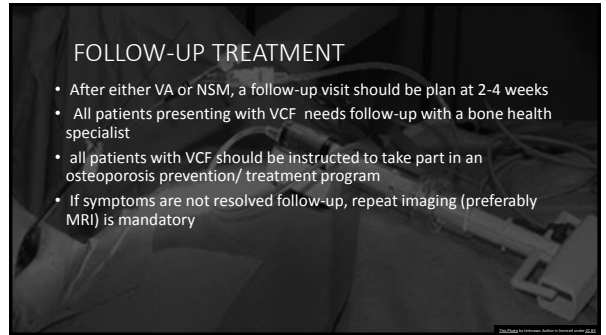
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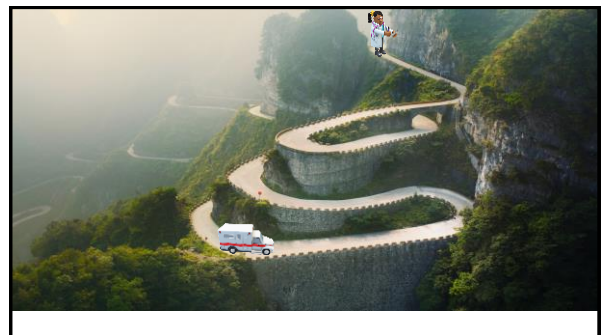
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Incorporating into your FLS

- Listen to patient needs and examine!
- Utilize guidelines provided
- Collaborate with local interventionalist to refer and obtain referrals and to refer... Let them know you exist!
 - Care coordination will start from the beginning between the fracture management specialists and FLS provider
- Collaborate with local hospital/ER to see where VCF patients are referred. Be a common part of the referral process. Educate ED on the guidelines to let them know who is a candidate for VA.
 - Need appropriate assessment and referral for augmentation and bone health evaluation.
- Educate your system and/or local providers of guidelines and importance of total bone care

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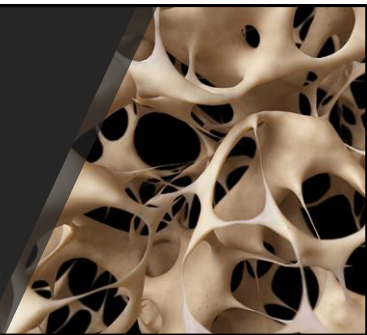
Marketing and Educational Tools

- Provide local clinics & ED with brochures and other educational materials to review to help educate patients and raise awareness of vertebral compression fractures.
 - Include information on what the patient should expect in the fracture care process to eventual referral to FLS program.
 - Patient needs to know that ultimately, they should be seen for their bone health.
 - Include the clinic info for the patient to make an appointment if not referred at the initial evaluation.

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OSTEOPOROSIS

- Osteoporosis is a disease that occurs when the body loses too much bone, makes too little bone, or both.
- Historically diagnosed by Dual-energy X-ray absorptiometry (DXA)
 - T-score ≤ -2.5
- We MUST understand bone strength to diagnose appropriately
 - Bone Strength = Bone Density + Bone Quality

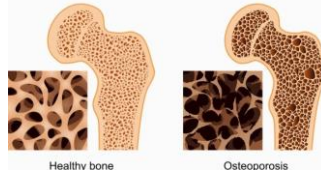


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Assessing Bone Quality

- Detailed medical history including fractures
 - medications
 - preexisting conditions
 - nutrition
- Family history
- Smoking and alcohol status
- Surgeon evaluation on bone quality

BONE QUALITY

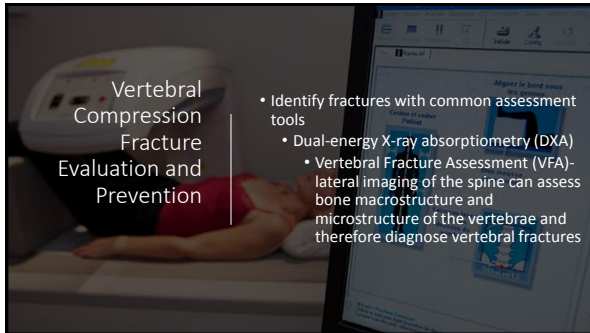


<http://www.cadherinmedical.co.nz/wp-content/uploads/2015/10/Osteoporosis4.jpg> &v=0&am

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Vertebral Compression Fracture Evaluation and Prevention

- Identify fractures with common assessment tools
 - Dual-energy X-ray absorptiometry (DXA)
 - Vertebral Fracture Assessment (VFA)- lateral imaging of the spine can assess bone macrostructure and microstructure of the vertebrae and therefore diagnose vertebral fractures



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Vertebral Fracture Assessment

When is it Appropriate to Obtain a VFA?

FEMALE	MALE
Post-menopausal women with a T-score of -1.5 SD to -2.4 SD, and: <ul style="list-style-type: none"> Age 70 years or older Historical height loss > 4 cm Prospective height loss of > 2 cm Self-report history of vertebral fracture 	Men with a T-score of -1.5 SD to -2.4 SD, and: <ul style="list-style-type: none"> 80yo or older Historical height loss > 6 cm Prospective height loss of > 3 cm Self-report history of vertebral fracture
Post-menopausal women with a T-score of -1.5 SD to -2.4 SD, and two or more of the following: <ul style="list-style-type: none"> Age 60 to 69 Historical height loss 2-4 cm Self-reported prior non-vertebral fracture Secondary osteoporosis 	Men with a T-score of -1.5 SD to -2.4 SD, and two or more of the following: <ul style="list-style-type: none"> Age 70 to 79 Historical height loss 3-6 cm Self-reported prior non-vertebral fracture Secondary osteoporosis Androgen deprivation therapy or following orchiectomy

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Vertebral Compression Fracture TREATMENT

- It is critical that patients with vertebral fractures are treated with osteoporosis medications to treat the underlying condition and reduce the risk for future fractures
- Anabolics
 - Stimulates bone formation. More bone is formed than is taken away → stronger bone that is less likely to break.
- Antiresorptives
 - Slows bone resorption or breakdown.

Anabolics	Antiresorptives
<ul style="list-style-type: none"> Teriparatide (Parathyroid Hormone analog) (PTH) (1-34) Abaloparatide (Parathyroid Hormone Related-Protein analog, PTHrP) (1-34) Romosozumab-aqqg 	<ul style="list-style-type: none"> Alendronate Sodium or Alendronate Sodium plus Vitamin D3 Risedronate Sodium Zoledronic Acid Denosumab Calcitonin-Salmon Menopausal Hormone Therapy (MHT) Raloxifene Tissue-Selective Estrogen Complex: Conjugated Estrogens/Bazedoxifene

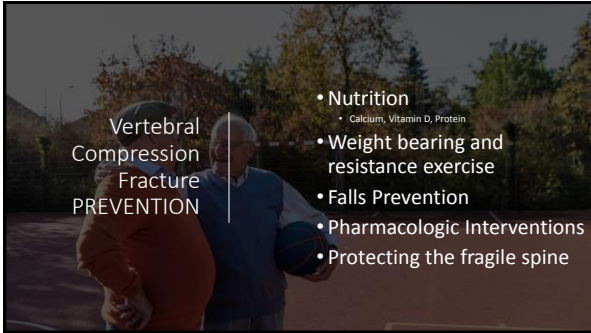
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OSTEOPOROSIS

Balancing the Benefits Risk Ratio

- Risk of atypical femur fracture 0.01%
- Risk of osteonecrosis of the jaw (treated) 0.01%
- Must communicate clearly the risks and benefits associated with the medications

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Vertebral Compression Fracture PREVENTION

- Nutrition
 - Calcium, Vitamin D, Protein
- Weight bearing and resistance exercise
- Falls Prevention
- Pharmacologic Interventions
- Protecting the fragile spine

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Weight Bearing Exercise

- Activities that make you move against gravity while staying upright. Weight-bearing exercises can be **high-impact** or **low-impact**.
- **Low-impact weight-bearing exercises** can also help keep bones strong and are a safe alternative if you cannot do high-impact exercises.
 - Using elliptical training machines, low impact aerobics, stair-step machine, fast walking on a treadmill or outside.
- **High-impact weight-bearing exercises** help build bones and keep them strong. **Not recommended for all patients as the risk of falling or subsequent vertebral fracture may be too high.**
 - Dancing, hiking, jogging/running, jumping rope, stair climbing, tennis, pickleball.

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Muscle Strengthening and Resistance Exercises

- Activities where you move your body, a weight or some other resistance against gravity. They are also known as resistance exercises and include:
 - Lifting weights
 - Using elastic exercise bands
 - Using weight machines
 - Lifting your own body weight
 - Functional movements, such as standing and rising up on your toes

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Educate Patient and Family on Falls Prevention

Teach OUTDOOR safety tips	Teach INDOOR safety tips
<ul style="list-style-type: none"> •Shoewear •Handrails •Walk in the grass if sidewalk looks slippery •Carry salt in winter for sidewalks if slippery. •Inspect the floors! •Outdoor lighting •Keep hands free of objects (shoulder bag, fanny pack, or purse) •USE A WALKER OR CANE AS NEEDED •Grocery or product delivery available •Caution at curbs •Hip protectors 	<ul style="list-style-type: none"> • Lighting • Non-slip rugs • Grab rails • Shower chair • Walker/cane • Remove clutter • Remove throw rugs, cords, cables, or wire • Keep commonly used items within reach

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Protecting the Fragile Spine

Educating patients

- Avoid movements that require bending forward from the waist with straight legs
- Avoid sit-ups and abdominal crutches
- Avoid twisting or bending at the torso to an extreme
- Avoid carrying packages that are too heavy
- Avoid lifting heavy objects overhead
- Avoid bending forward when coughing and sneezing
- Avoid reaching too far, such as reaching for objects on a high shelf
- Be cautious doing activities that increase the likelihood of a fall

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Physical Therapy

Occupational Therapy

Physiatrists

- Physical therapy (PT) referral to design a safe and appropriate exercise program tailored to individual needs
- Can help reduce the risk of spine fractures, limit kyphosis and lessen patient chance of falls
- Occupational Therapy (OT) to help patients learn how to perform ADLs that may be limited from back pain after the VCF
- Tai Chi can help with coordination and balance → falls reduction

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Patient and Provider Resources

- Bone Health and Osteoporosis Foundation
- Bonesource
- International Osteoporosis Foundation
- American Society for Bone and Mineral Research



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QUESTIONS?

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