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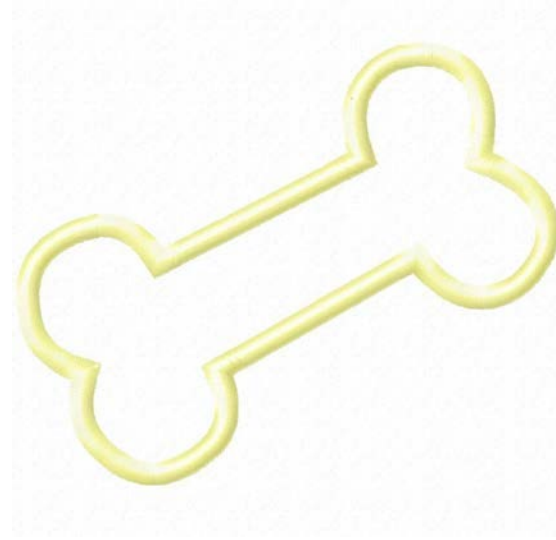


# BONE HEALTH

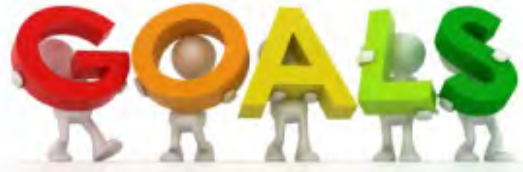
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# BONE HEALTH



- ❖ BONE MINERAL DENSITY (BMD)
- ❖ ASSESSED BY DUAL-ENERGY X-RAY ABSORPTIOMETRY (DEXA) SCAN
- ❖ AS BMD DECREASES, FRACTURE RISK INCREASES



- ❖ PREVENT LOW BMD
- ❖ MAXIMIZE BONE MASS
- ❖ MINIMIZE RATE OF BONE LOSS
- ❖ MAINTAIN BONE STRENGTH
- ❖ PREVENT FRACTURES

# PREVENTION

- ❖ NUTRITION/SUPPLEMENTATION
- ❖ PHYSICAL ACTIVITY
- ❖ SMOKING CESSATION
- ❖ AVOIDING EXCESS ALCOHOL INTAKE
- ❖ AVOIDING CERTAIN MEDICATIONS WHEN POSSIBLE



# NUTRITION

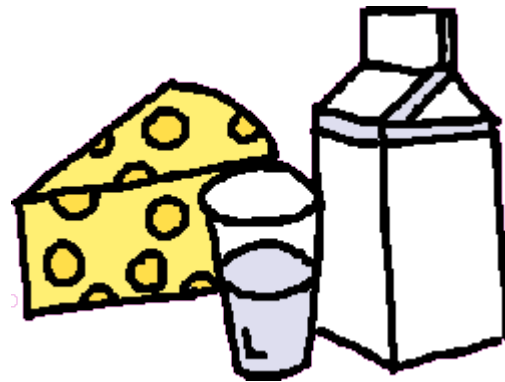
- ❖ PROTEIN

- ❖ CALCIUM: 1 000-1 200mg/day

- ❖ MILK, CHEESE, YOGURT, DARK GREEN LEAFY VEGETABLES

- ❖ VITAMIN D: 600-1 000IUs/day

- ❖ MILK, SALMON, TUNA



# CALCIUM SUPPLEMENTATION

## ❖ CALCIUM CARBONATE

- ❖ LEAST EXPENSIVE
- ❖ BEST WITH MEALS

## ❖ CALCIUM CITRATE

- ❖ BEST ON AN EMPTY STOMACH
- ❖ BEST FOR THOSE ON PRESCRIPTION ANTACIDS

## ❖ AVOID TAKING WITH ANTACIDS, IRON, THYROID MEDS

## ❖ SIDE EFFECTS

- ❖ INDIGESTION, CONSTIPATION, KIDNEY STONES

# VITAMIN D DEFICIENCY

## ❖ CAUSES

- ❖ DECREASED INTAKE, ABSORPTION
- ❖ REDUCED SUN EXPOSURE
- ❖ DECREASED SYNTHESIS IN LIVER, KIDNEY

## ❖ SYMPTOMS

- ❖ BONE PAIN AND TENDERNESS
- ❖ MUSCLE WEAKNESS
- ❖ FRACTURE



# VITAMIN D SUPPLEMENTATION

- ❖ VITAMIN D3 (CHOLECALCIFEROL)
  - ❖ BETTER IMPROVEMENT IN VITAMIN D LEVELS
- ❖ VITAMIN D2 (ERGOCALCIFEROL)



# PHYSICAL ACTIVITY

- ❖ WEIGHT BEARING EXERCISE (walking, dancing, etc.) 30 MINUTES MOST DAYS OF THE WEEK
- ❖ INCREASES BMD, IMPROVES MUSCLE TONE, BALANCE AND STRENGTH, THEREBY REDUCING FALLS AND DECREASING CHANCE OF FRACTURE

# SMOKING

- ❖ REDUCES BMD
- ❖ INCREASES RISK OF FRACTURE



# ALCOHOL

❖ MORE THAN 2 DRINKS PER DAY DECREASES BMD

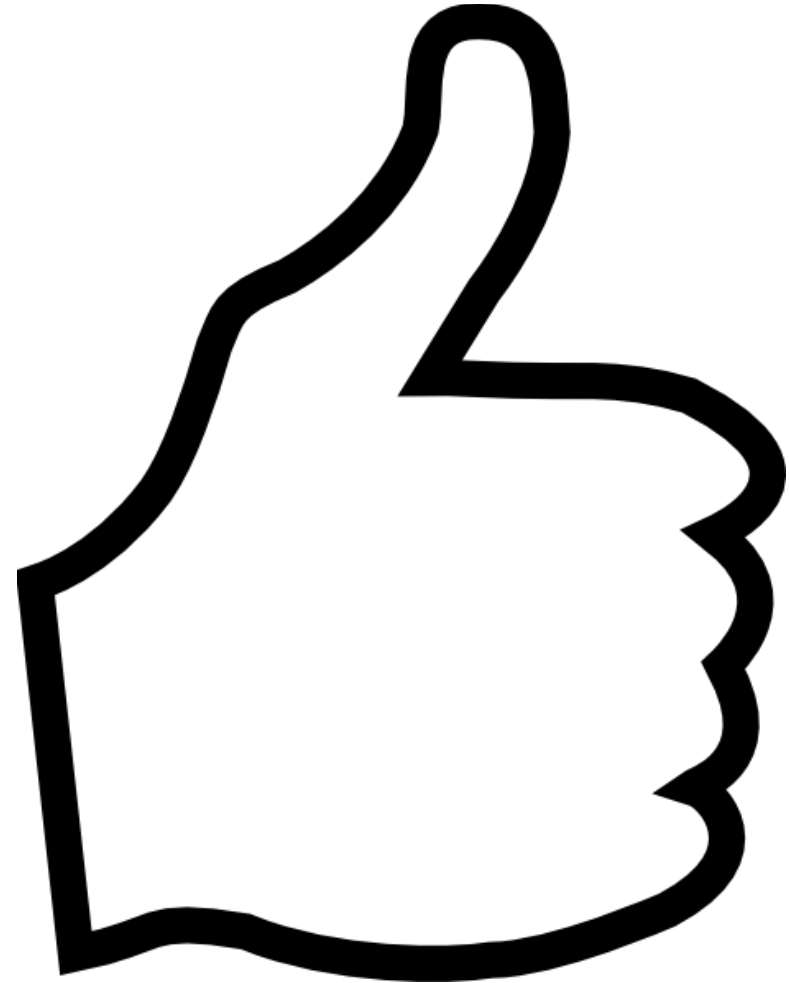


# MEDICATIONS — ADVERSELY AFFECT BONE METABOLISM

- ❖ GLUCOCORTICOIDS (STEROIDS)
- ❖ ANTICOAGULANTS (BLOOD THINNERS)
- ❖ ANTICONVULSANTS (SEIZURE MEDS)
- ❖ ANTIDEPRESSANTS
- ❖ ANTACIDS
- ❖ CHEMOTHERAPY
- ❖ LOOP DIURETICS (EX: FUROSEMIDE)

# MEDICATIONS - PROTECTIVE

- ❖ THIAZIDE DIURETICS (HCTZ, “WATER PILL”)
- ❖ STATINS (CHOLESTEROL MEDS)
- ❖ NITRATES
- ❖ BETA BLOCKERS



# OSTEOPOROSIS SCREENING

- ❖ ALL WOMEN AGE 65 OR OLDER
- ❖ POSTMENOPAUSAL WOMEN LESS THAN 65YO IF ONE OR MORE RISK FACTORS
  - ❖ FRACTURE, STEROID THERAPY, LOW BODY WT, RA, SMOKING, EXCESS ALCOHOL USE, PARENTAL HISTORY OF HIP FRACTURE
- ❖ NO SCREENING FOR MEN, UNLESS...
  - ❖ CLINICAL MANIFESTATIONS OF LOW BMD (LOW TRAUMA FRACTURE, LOSS OF HEIGHT, ETC)
  - ❖ RISK FACTORS OF FRACTURE (LONG-TERM STEROID THERAPY, TX FOR PROSTATE CA, ETC)

# FRACTURE RISK

- ❖ FRACTURE RISK ASSESSMENT TOOL (FRAX)
- ❖ COMPUTER BASED CALCULATOR TO ESTIMATE PROBABILITY OF FRACTURE IN THE NEXT 10 YEARS
- ❖ [www.shef.ac.uk/FRAX](http://www.shef.ac.uk/FRAX)

# OSTEOPENIA/OSTEOPOROSIS DIAGNOSIS

- ❖ FRAGILITY FRACTURE

- ❖ DEXA SCAN

  - ❖ T-SCORE: COMPARISON TO YOUNG ADULT POPULATION

  - ❖ Z-SCORE: COMPARISON TO AN AGE-MATCHED POPULATION



# OSTEOPOROSIS TREATMENT

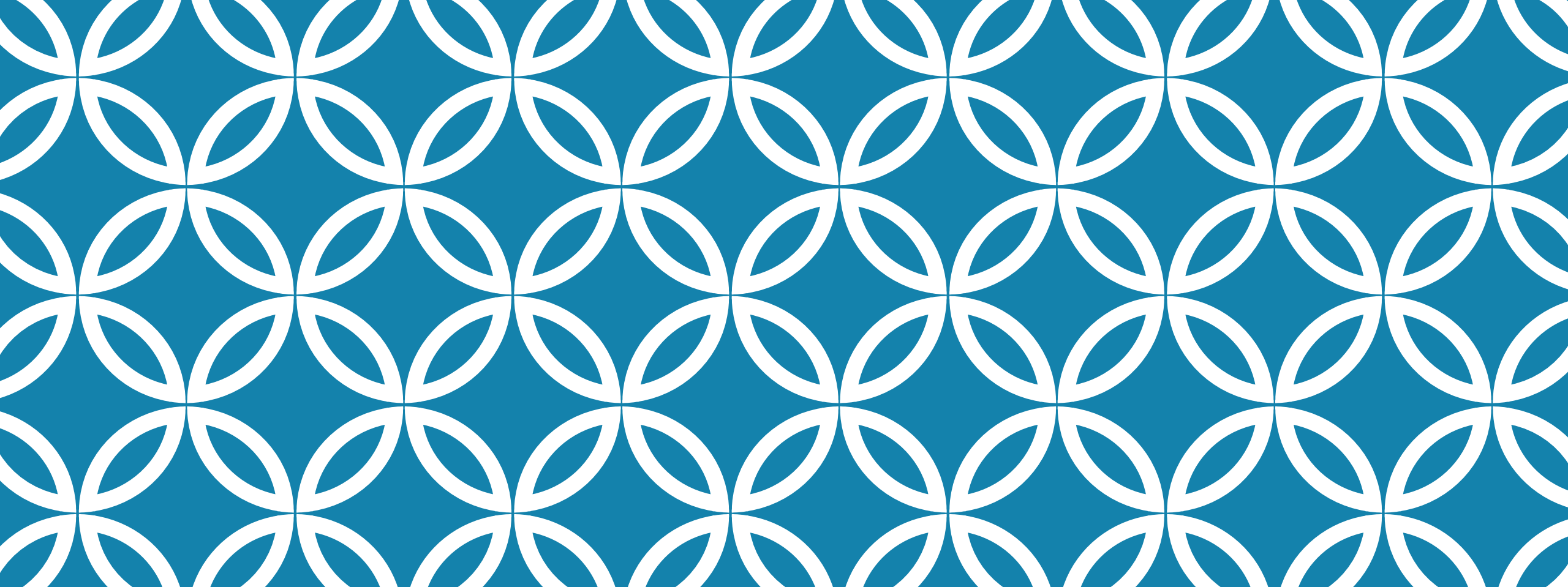
- ❖ EFFICACY, SAFETY, COST, CONVENIENCE, INDIVIDUAL FACTORS
- ❖ ORAL BISPHOSPHONATES INITIALLY
  - ❖ WORKS, INEXPENSIVE, LONG-TERM SAFETY DATA AVAILABLE
- ❖ IV BISPHOSPHONATES
  - ❖ CONVENIENT, GOOD FOR THOSE WHO CANNOT TOLERATE PO

# TREATMENT SIDE EFFECTS

❖ ESOPHAGITIS

❖ OSTEONECROSIS OF THE JAW

❖ ATYPICAL LEG FRACTURES



**THANK YOU FOR YOUR TIME!  
QUESTIONS?**



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