

THE ROAD LESS TRAVELED:

Building Bones for Christ

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In God's Image

Ut in omnia glorificatur Deus - That in everything
God may be glorified

Objectives



- ❑ Discuss best way to make decisions
- ❑ How we make decisions effects communication with others
- ❑ Review decisions of characters in the scripture
- ❑ My journey through various decision cross roads
- ❑ Osteoporosis and community health

Goals

- Minimize fear factor and increase faith when making decisions
- Help encourage you to make decisions that
 - ▣ please our Lord
 - ▣ keep focus on building the kingdom based on our unique gifts
 - ▣ challenge us to grow in our faith and image of God
- Reflect how different styles of decision making effect our communication and relationships
- Inform you about osteoporosis and health care reform

Integrating our Faith into Life

WORLD VIEW

- ❑ Money, recognition
- ❑ Service to promote self
- ❑ Teaching evaluations
- ❑ Reward: Tenure, Promotion

GOD VIEW

- ❑ Evangelism
- ❑ Service minded heart
- ❑ Teaching the gospel and mentoring- show fruits of the spirit
- ❑ Reward: God's approval (Mt 25:23)

How To Choose From Many Options



The Road Not Taken (Robert Frost)

Two roads diverged in a yellow wood
And sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could
To where it bent in the undergrowth;

Then took the other, as just as fair
And having perhaps the better claim,
Because it was grassy and wanted wear;
Though as for that, the passing there
Had worn them really about the same,

The Road Not Taken

And both that morning equally lay
In leaves no step had trodden black.
Oh, I kept the first for another day!
Yet knowing how way leads on to way,
I doubted if I should ever come back.

I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood and I—
I took the one less traveled by,
And that has made all the difference.

The Road Not Taken

- ❑ Frost faces a decision as to what road to take.
- ❑ He thinks that both roads are equally good.
- ❑ The color yellow may symbolize that fear is involved in the decision process.
- ❑ Frost probably makes no decision because he is paralyzed by fear.
- ❑ Frost claims that when he tells others about his decision, he plans to tell people that he chose the road less traveled.
- ❑ Why is taking the road less traveled better than taking the more traveled road?
- ❑ This means our road will show that we are “Being in the world but not of the world (Romans 12:2)”.

First Decision

- ❑ We must decide if we will follow Christ as our Lord and Savior
- ❑ Putting us on the less traveled road
- ❑ A road where were our goal is to glorify God and grow in the image of God
 - ❑ obedience
 - ❑ reproduce fruit (evangelism, building up others)
 - ❑ manifest fruits of the spirit (love, joy, peace, patience, kindness, goodness, faithfulness, gentleness, self control)

Road Less Traveled

- ❑ “The truth is that our finest moments are most likely to occur when we are feeling deeply uncomfortable, unhappy, or unfulfilled. For it is only in such moments, propelled by our discomfort, that we are likely to step out of our ruts and start searching for different ways or truer answers.”
— M. Scott Peck
- ❑ When on an uncomfortable journey, we usually depend more on God and grow more mature in our faith.

Making Decision- Things to Over Come



- ❑ The fear of unknown, change, or mistake
- ❑ The influence of the world's endpoints for success
- ❑ Selfishness
- ❑ Need for large amount of data

Fear of Regret Hindering Decisions

- Frost's poem suggests :
 - ▣ people may regret the road they chose because they may think that the other road leads to a better experience.
 - ▣ how often do we reflect on the choices we made and wonder if the other choice would have been better?
- If we use God as our navigator, we will rarely look back at our choices with regret

Making A Decision- Removing Fear

“I am the LORD your God, who teaches you what is best for you, who directs you in the way you should go” (Isaiah 48:17)

“For I know the plans I have for you,” says the Lord.
“They are plans for good and not for disaster, to give you a future and a hope” (Jeremiah 29:11)

Making A Decision - What Is God's Will

- Pray
- Read Scripture
- Review the circumstances
- Council from wise individuals grounded in scripture
- How God spoke to various people in history
 - ▣ imagine all their thoughts
 - ▣ empathize with how they would have felt
 - ▣ how you may respond in that situation

Examples From Scripture

- Poor decisions: Adam and Eve, Jonah
- Good decisions: Abraham, Noah, Moses, Mary
 - ▣ Road less travelled
 - ▣ obedience, discipline, courage, and patience



Are we able to recognize when Satan is at work confusing our decisions?

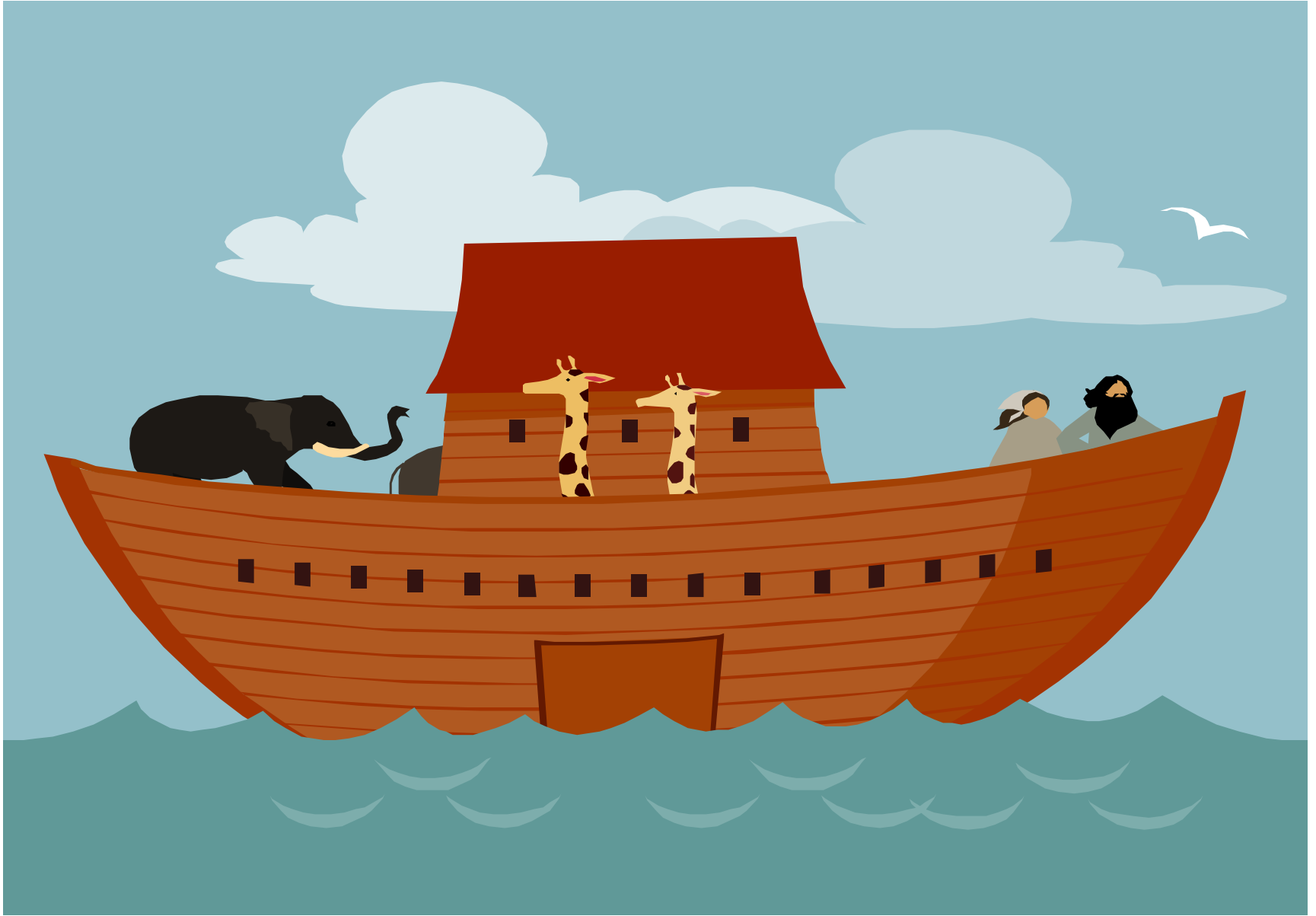


Even when we have legitimate reason to be fearful, we should have faith. God of second chances allowing course correction.



Abraham
and Isaac

Can we recognize God's voice and follow obediently
when the instructions do not seem
Logical?



Are we able to be patient and work a lifetime to see the implementation of God's plan?

Face Decisions with Eye on the Lord

- “We can do all things through Christ who strengthens us” (Philippians 4:13)
- Peter was able to walk on water when he kept his focus on Jesus (Matthew 14:22-33)
- The LORD shall preserve thee from all evil: He shall preserve thy soul. The LORD shall preserve thy going out and thy coming in from this time forth, and even for evermore (Psalm 121:7-8)

Choosing the Road

- Clear choice: circumstances narrow the choices, and our prayers, bible readings, and advice from biblically based mentors all align.
- Unclear choice: even when we have tried very hard to seek God's will. Not being able to make a choice can leave us paralyzed and stuck feeling anxious.
 - ▣ do not second guess the options (Frost's poem)
 - ▣ wait on the Lord for clear instructions (patience and trust)

People Make Decisions Differently

- Gut feeling vs Weigh and analyze pros and cons
- Differences can bring conflicts between
 - family members
 - coworkers
 - students



My Journey

- Choose Pharmacy over Nursing
- Change from Epilepsy to Sleep
- Prioritized family over career advancement
- Current research choices
 - ▣ epilepsy and osteoporosis
 - ▣ osteoporosis and public health
 - ▣ federally Qualified Health Center (FQHC)
 - with nursing school in urban Newark, NJ
 - Trenton, NJ – prove value of pharmacist

Balancing the Expectations of our Lord and a Secular Employer

- Pray weekly as I set up my schedule
- Look for teachable moments
- Pray throughout the entire day
 - ▣ before entering a patient room
 - ▣ before a lecture
 - ▣ when doing research
 - ▣ accepting new project

Building Bones for Christ

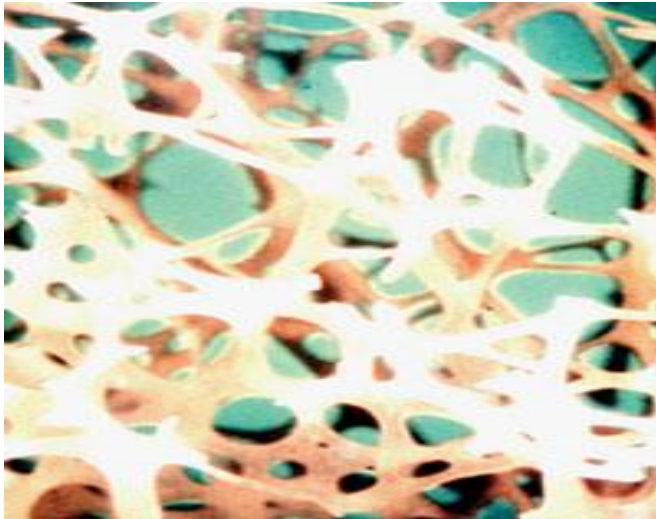
- The road I am currently traveling
 - ▣ building the bones of patients to prevent them from fracture
 - ▣ building up the stature of students to be strong and caring clinicians
 - ▣ building up the pharmacy profession to get reimbursed in new health care models

Definitions

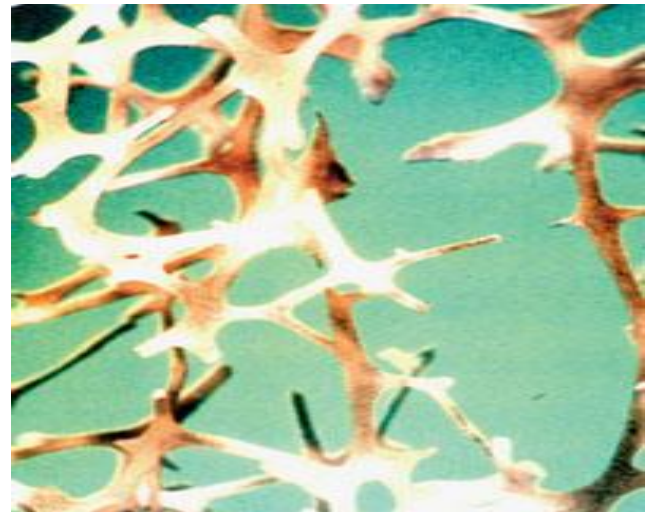
Seizure: Abnormal electrical discharge in the brain

Epilepsy: Chronic disorder of recurrent seizures

Osteoporosis: Compromised bone strength predisposing a person to increased fracture



Healthy Bone



Osteoporotic Bone

Osteoporosis



Background: Falls and Fractures

- Most osteoporotic fractures occur after a fall
 - ▣ up to 20% of hip fracture patients die within one year
 - ▣ 33% of people are totally dependent on others for their care following hip fracture
- In 2005, there were over 2 million fractures due to osteoporosis, costing more than \$19 billion
- Fracture rate in epilepsy patients is 2 to 6 times higher than normal patients.

Bone Health and Osteoporosis: A report of the Surgeon General. U.S. Department of Health and Human Services. 2004

Project Healthy Bones. New Jersey: State of NJ Department of Health. 2010 <http://www.state.nj.us/health/senior/osteo/project.shtml>

Burge R., et al. *Journal of Bone and Mineral Research*. 2007;22(3):465-475.

Souverein PC., et al. *Epilepsia*, 2005; 6(2):304-310.

6Vestergard P, et al. *Acta Neurol Scand*, 1999; 99: 269-275.

Osteoporosis Risk Factors

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Postmenopausal women

Older age

Family history

Ethnicity

Fracture history

Inactive lifestyle

Low sex hormone

Secondary causes

Diet

Alcohol

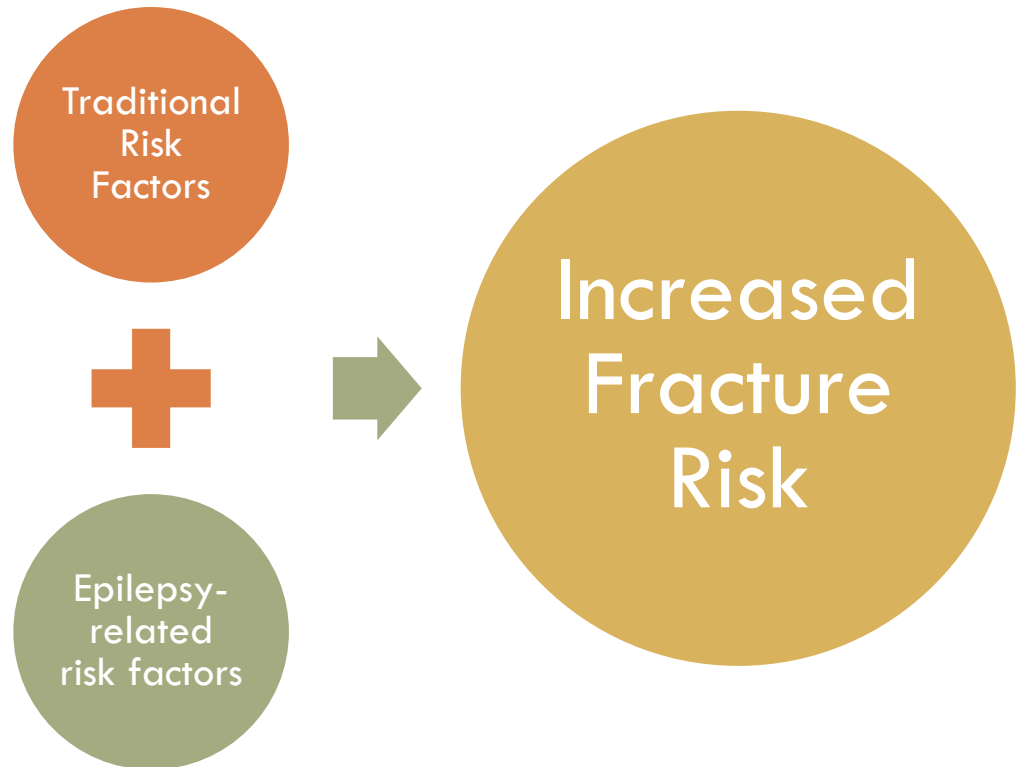
Low body mass index

Falls risk

Additional Risk Factors in Epilepsy

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- Antiepileptic drugs (AEDs)
 - ▣ Vitamin D deficiency
 - ▣ Reduced bone mineral density (BMD)
 - ▣ Balance impairment
 - ▣ Hormonal changes in women
- Uncontrolled seizures



8. Pack AM, et al. Epilepsy and bone health in adults. *Epilepsy & Behavior*. 2004;5:S24-29.

9. Verrotti A, et al. Bone and calcium metabolism and antiepileptic drugs. *Clinical Neurology and Neurosurgery*. 2010;112:1-10.

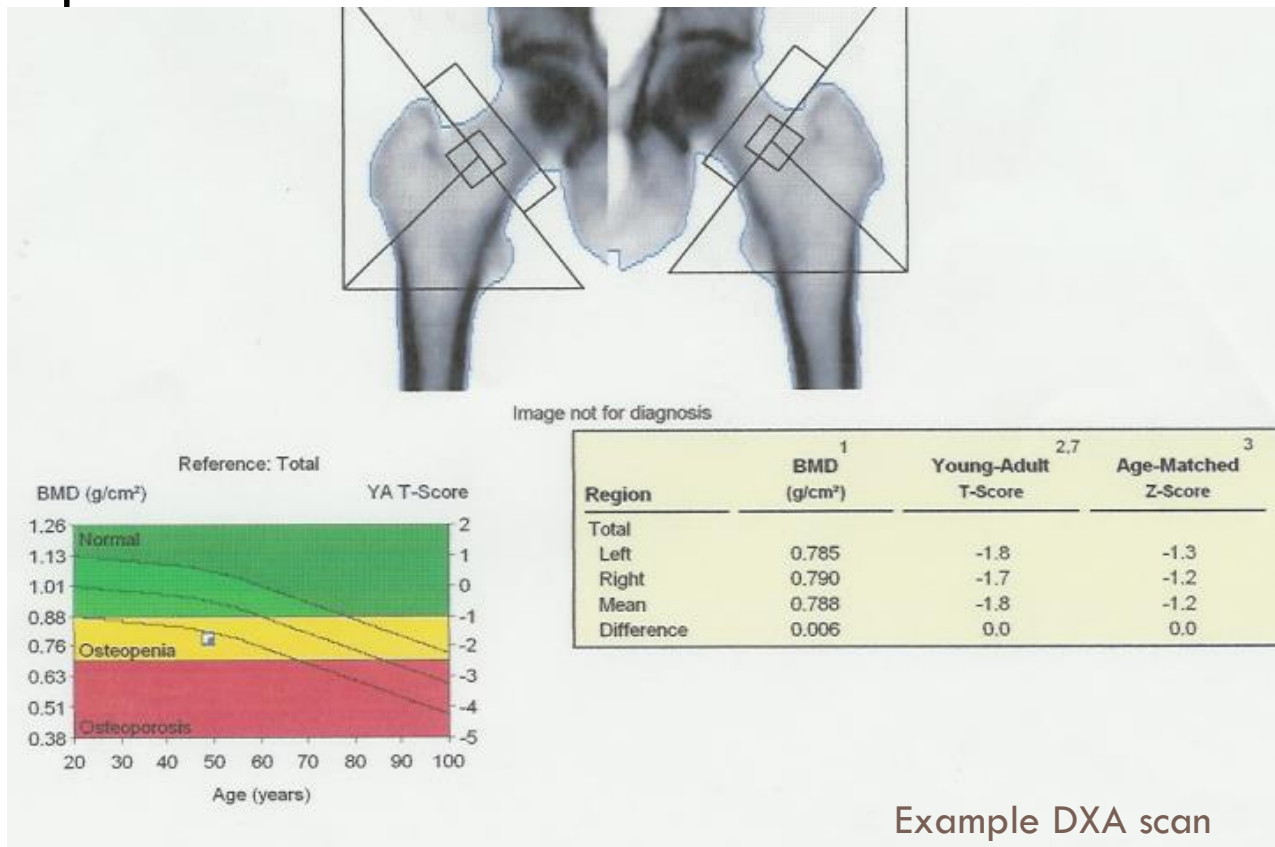
10. Petty SJ, et al. Balance impairment in chronic antiepileptic drug users: a twin and sibling study. *Epilepsia*. 2010;51(2):280-288.

11. Vestergaard P, et al. Fracture risk is increased in epilepsy. *Acta Neurologica Scandinavica*. 1999;99:269-275.

Dual Energy X-Ray Absorptiometry (DXA)

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Central DXA measures Bone Mineral Density (BMD) in the lumbar spine and femoral neck



Dual Energy X-Ray Absorptiometry (DXA or Bone mineral density test)

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Postmenopausal Women and Men > 50 years old

T-score	Classification
T-Score > -1.0	Normal
-1.0 > T-Score > -2.5	Osteopenia
T-Score < -2.5	Osteoporosis

Premenopausal Women and Men < 50 years old

Z-score	Classification
Z-score > -2.0	“within expected range for age”
Z-score ≤ -2.0	“below expected range for age”


12. The International Society for Clinical Densitometry. Official Positions & Pediatric Official Positions. Middletown, CT: 2007.

13. National Osteoporosis Foundation. Clinician's guide to prevention and treatment of osteoporosis. Washington, DC: NOF, 2009.

WHO: FRAX[®] Tool

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Percent risk of fracture in the next 10 years

Country : UK **Name / ID :** **About the risk factors** 

Questionnaire:

1. Age (between 40-90 years) or Date of birth

Age: Date of birth: Y: M: D:

2. Sex

☐ Male ☐ Female

3. Weight (kg)

4. Height (cm)

5. Previous fracture

☐ No ☐ Yes

6. Parent fractured hip

☐ No ☐ Yes

7. Current smoking

☐ No ☐ Yes

8. Glucocorticoids

☐ No ☐ Yes


9. Rheumatoid arthritis

☐ No ☐ Yes

10. Secondary osteoporosis ☐ No ☐ Yes

11. Alcohol 3 more units per day ☐ No ☐ Yes


12. Femoral neck BMD

Select 

Clear

Calculate

BMI

The ten year probability of fracture (%) 

without BMD

☐ Major osteoporotic

☐ Hip fracture

View NOGG Guidance

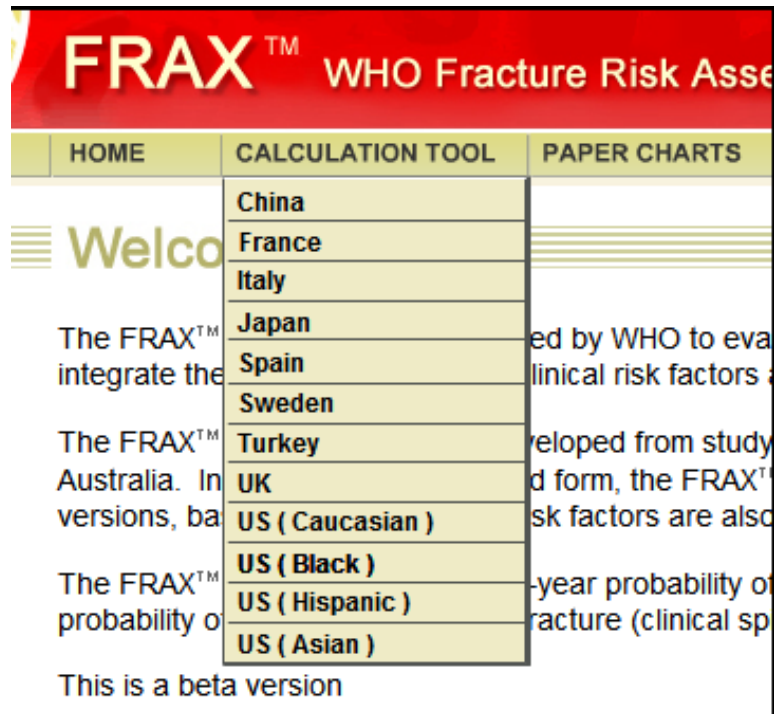
Lindy Lee

□ Secondary Osteoporosis

- Early menopause (before 45 years old)
- Prolonged absence of periods (other than pregnancy)
- Longstanding poor mobility (i.e. following stroke, Parkinson's, or spinal injury)
- Crohn's disease
- Ulcerative colitis
- Insulin-dependent diabetes
- History of overactive thyroid gland
- **Epilepsy?**

FRAX[®] Tool

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World Health Organization (WHO) Guidelines for Treatment

Fracture	Probability
Major Osteoporotic Fracture	> 20%
Hip Fracture	> 3%

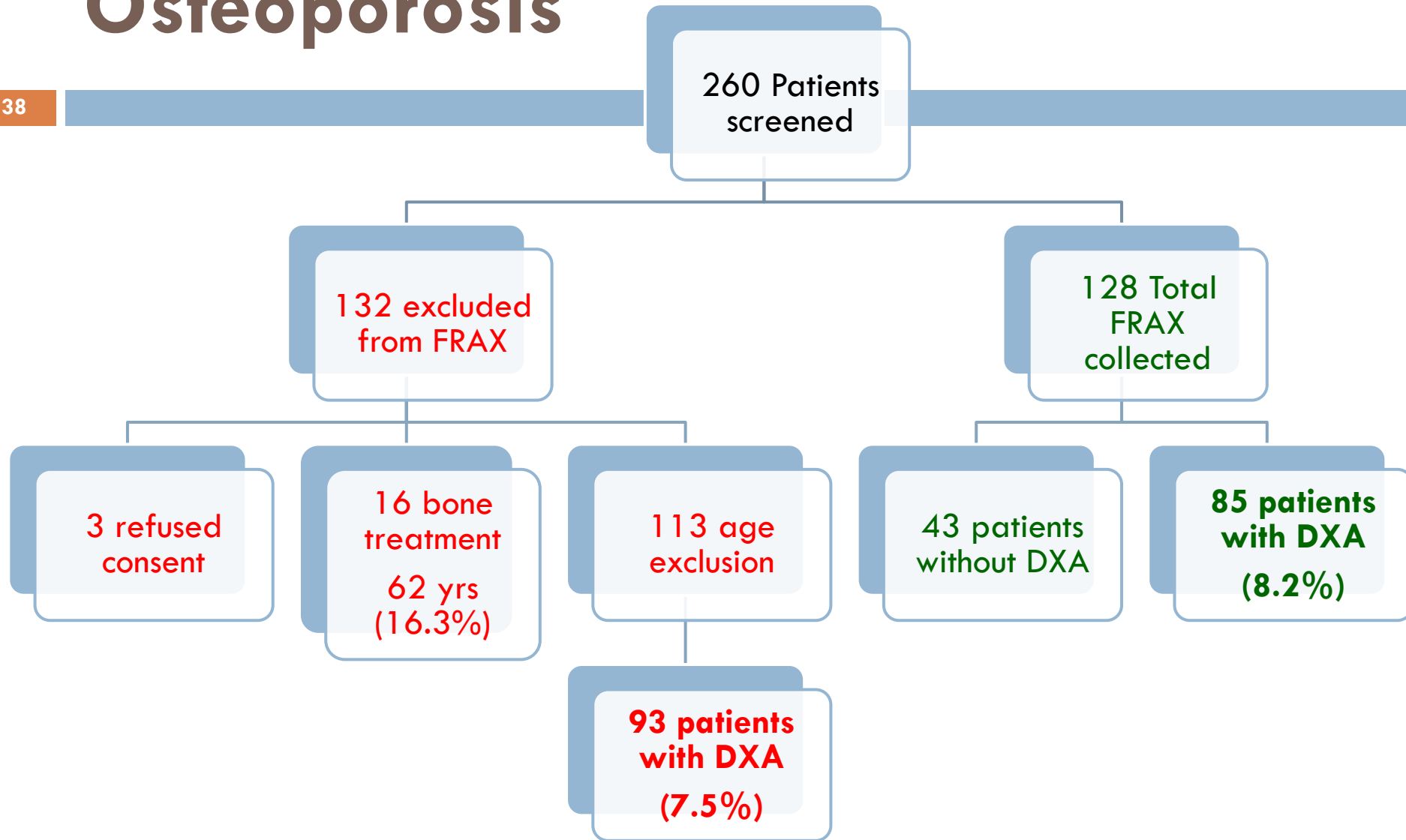
Methods FRAX vs DXA

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Inclusion Criteria	Exclusion Criteria
Between 40 to 90 years old	Prior bisphosphonates or selective estrogen receptor modulator therapy for 3 months or more
Diagnosis of epilepsy	
Currently taking anti-epileptics	
Fluent in English	Refused consent
Signed an informed consent	

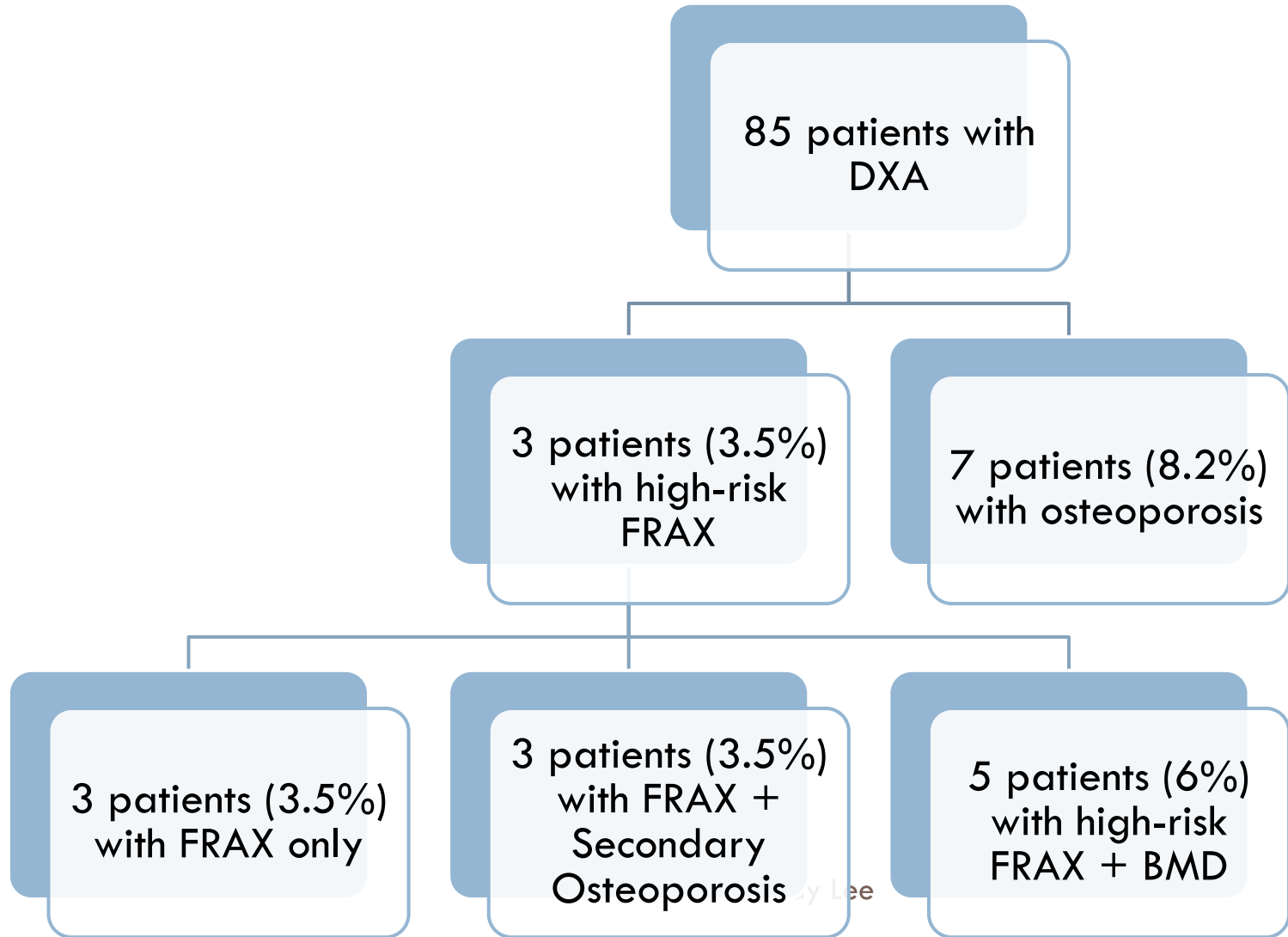
Osteoporosis

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FRAX[®] versus DXA

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Usefulness of the FRAX[®]

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- The FRAX tool identified fewer patients at risk for fracture (3.5%) than the DXA scan (8.2%)
 - ▣ age
 - ▣ spinal osteoporosis
 - ▣ premenopausal women
- Half of those with DXA had low Bone Mineral Density (early warning of osteoporosis) not picked up by FRAX[®]

Osteo - Protective Behaviors

- Are epilepsy patients compliant with behaviors that are protective for bone ?
- Patients complete Survey and order DXA scan

Outcome	Total (n)	DXA	No DXA
N	260	116	139
Age*	41.9 ± 15.5	45.2 ± 15.2	39.0 ±15.2
Female	51.5%	56.9%	46.8%
Weight (pounds)	170.6 ± 44.2	169.6 ± 44.9	173.0 ± 43.6
Height (inches)	65.6 ± 5.0	65.7 ± 4.8	65.6 ± 5.2
BMI (kg/m²)	28.2 ± 8.6	27.7 ± 6.6	28.7 ± 10.0
Years taking AED (median)	6.0	6.0	6.0
AED reducers	65.8%	67.0%	63.5%
Poor seizure* control	48.8%	40.5%	55.4%
Family History Osteoporosis	23.4% (59/252)	22.7% (25/110)	24.1% (33/137)
Fracture History	38.4% (99/258)	36.5% (42/115)	39.9% (55/138)
Number of Fractures (mean)	0.7 ± 1.1	0.6 ± 1	0.7 ±1.1

Outcome	Total	DXA	No DXA
N	260	116	139
Adequate Dietary Calcium (~1200 mg)	33.1%	31.9%	34.6%
Servings Calcium	2.3 ± 1.85	2.2 ± 2	2.4 ± 1.7
Regular intake of Calcium/Vitamin D Supplement*	25.4%	34.2%	20.2%
Adequate Weight bearing exercise	28.1%	29.3%	26.7%
Adequate Sunlight exposure	50.2%	55.4%	50.7%
Alcohol	26.2%	31.0%	23.0%
Smoking	16.5%	18.1%	15.8%
Multivitamin intake	41.9%	47.4%	36.0%
Poor Bone Health Perception	17.5%	21.1%	13.5%

Osteo-Protective Behaviors



- ❑ Majority of patients are not engaging in behaviors that are bone-protective
- ❑ Patients do not have a clear understanding of what the status of their bone health is
- ❑ Poor seizure control may be an independent predictor for low bone mineral density in the hip

Calcium Studies

- ❑ Too much calcium lead to
 - ❑ increased kidney stones
 - ❑ death
 - ❑ impaired absorption of other minerals
 - ❑ constipation and bloating
- ❑ Best to get calcium from food and multivitamin
- ❑ Calcium supplements should be balanced with magnesium
- ❑ Absorb 600 mg at a time
- ❑ Need good vitamin D concentration to absorb calcium

Recommendations

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- Screening
 - ▣ DXA scans if multiple risk factors
 - ▣ peripheral DXA
 - ▣ FRAX tool
 - addition to clinical judgment
 - Can not afford DXA

Recommendations

- 1,000 – 1,500 mg per day of calcium (food/pills)
- Mg- half of CA dose if use supplements
- Maintain Vit D min concentration 20–30 ng/mL
- Avoid smoking and excessive alcohol
- Dietary changes (avoid excess protein, sugar, sodium, soda, caffeine)
- Avoid drugs decreasing bone (steroids, stomach acid drugs, epilepsy drugs, Depo-provera)
- Regular weight-bearing and resistance exercise

Background: Project Healthy Bones (PHB)

- ❑ Designed and maintained by the NJ State Department of Health
- ❑ 24 week exercise and education program
- ❑ Exercises designed to improve balance, strength, posture, and flexibility
- ❑ Education on fall prevention, nutrition, and osteoporosis
- ❑ Goal of PHB is to strengthen bone and reduce the risk of falls in elderly adults who have, or are at risk of having, osteoporosis

Background: PHB



- More than 2,000 older NJ residents have participated in the program as either a peer leader or class member.

- Participants performing the side leg lift

4. Project Healthy Bones. New Jersey: State of NJ Department of Health. 2010 <http://www.state.nj.us/health/senior/osteo/project.shtml>
5. Sibayan, R. The Jersey Journal. 2010. http://photos.nj.com/jersey-journal/2010/05/project_healthy_bones_at_the_b_3.html

Purpose

- Previous studies are not conclusive
 - ▣ participants in program many years
 - ▣ mostly based on feedback
 - ▣ no pre- or post- physical assessments
 - ▣ Based in the community, not assisted living home
- Goal: to assess the PHB program in an assisted living facility, adult day care, and community wellness center
 - ▣ improve balance, strength, flexibility, and posture
 - ▣ increase knowledge on osteoporosis, nutrition, fall prevention
 - ▣ improve nutrition and reduce risk of falls

Methods: Physical Fitness Tests

□ Balance

- ▣ Single Leg Stand (Eyes open & closed)
- ▣ Tandem Stand

□ Posture

- ▣ Occiput to Wall Test
- ▣ Posture Pro[®] Program

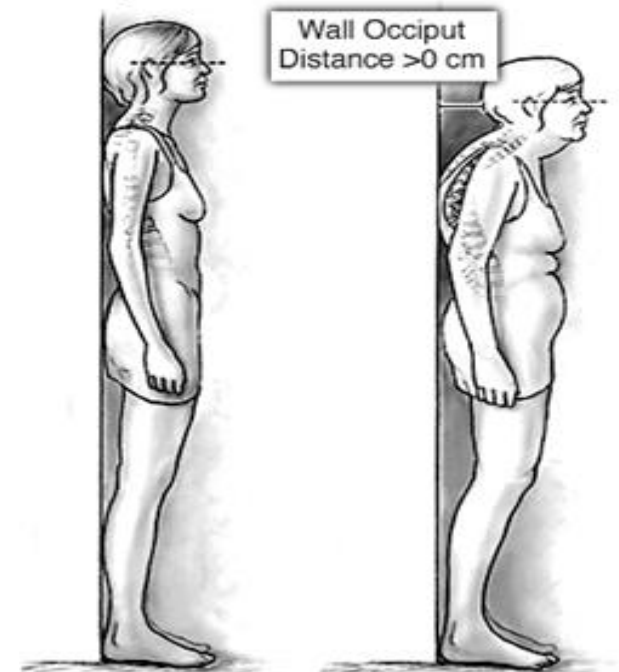
□ Fall Risk

- Functional Reach Test
- Four Square Test

□ Overall Function

- ▣ Timed Up and Go
- ▣ 30 Second Chair Stand

A - Wall Occiput Test for Occult Thoracic Vertebral Fractures
Negative Test Result Positive Test Result



Results

- Nearly all 28 patients from assisted living and community improved
- Posture, strength, and balance
- Understanding of osteoporosis
- Corrected personal dietary calcium intake (people taking too much)
- Most taking drugs that increase falls
- Some taking drugs that increase bone loss
- Minimized their risk of falls with improved measures for global elderly function tests

Decision To Do Bone Project

- ❑ Not in line with career path
- ❑ Took road less traveled
- ❑ Lead to many unexpected blessings
- ❑ Lead to expansion to other projects

Blessings from Healthy Bones

- ❑ Funding for people who needed income
- ❑ Build self-esteem for student
- ❑ Motivated seniors to work harder because in group
- ❑ State of New Jersey can promote project to other states
- ❑ Leaders teach others about bone health after study
- ❑ Teaching opportunities for multiple types of students
- ❑ Chiropractor learned about research
- ❑ Good option for low income patients
- ❑ Trainer for peer leader was great mentor

Osteoporosis in Indigent Care

- ❑ Food diaries
- ❑ Exercise: healthy bones good fit
- ❑ Remove things that increase bone loss
- ❑ FRAX calculator
- ❑ Health coach for diet corrections with restricted money

How To Choose From Many Options



Summary

- Make decisions that show obedience to God
- Consider how your decision process is different than coworkers and family
- When we reflect on our life journey and the decisions we made at various cross roads, we can see God's mercy, protection, and plan.

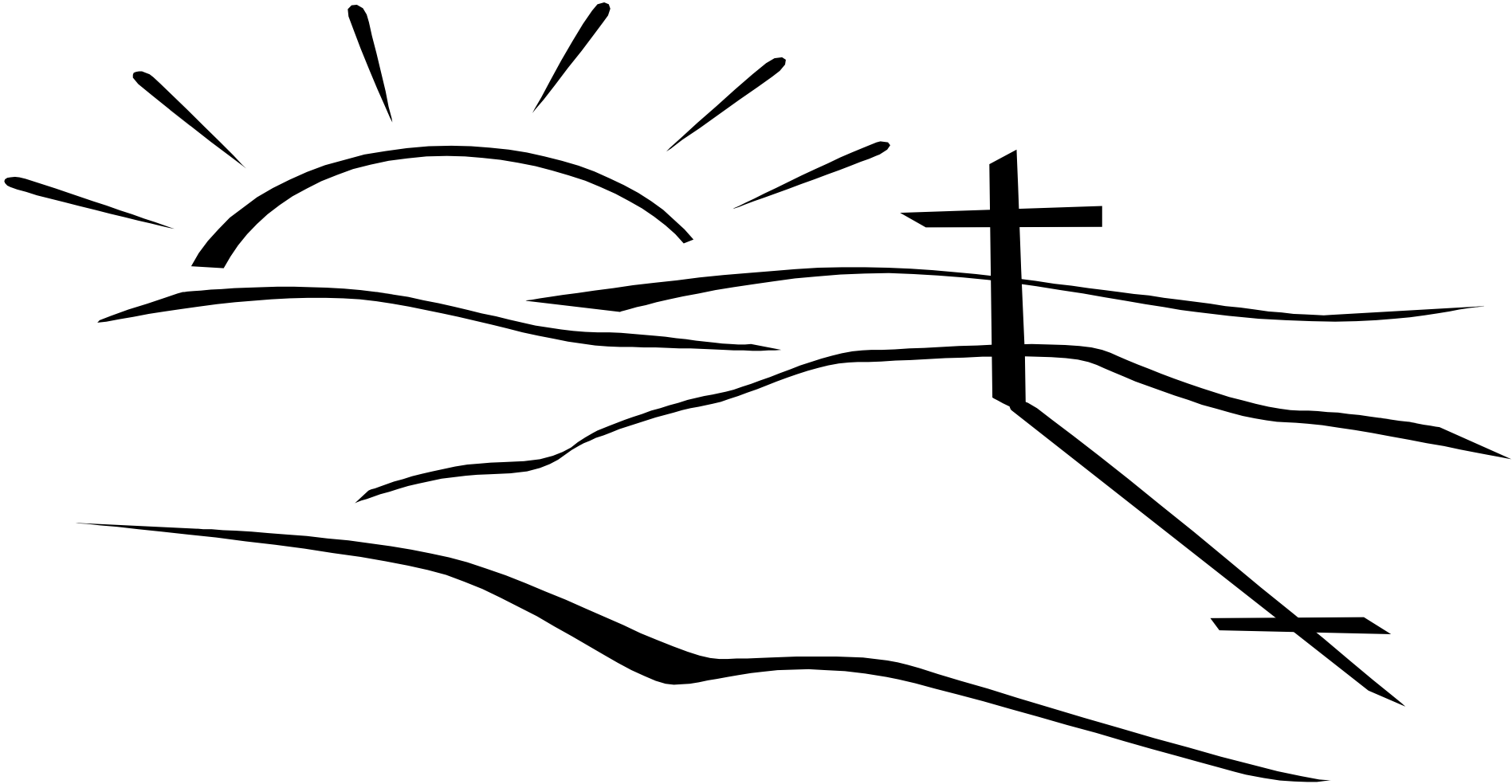
What is Your Journey Like?

- Are you at a cross roads trying to make a decision about where to go next?
- Step out of comfort zone
- Are you planting seeds that will lead others to salvation?
- Are you available to do God's work and let him mold you into his image

Road Less Traveled

- Life long journey to become more pleasing to God
- Requires total faith, obedience and patience
 - ▣ less focused on self
 - ▣ more dependent on the holy spirit

Questions



Post Presentation Questions

Sample Websites to evaluate diet

http://ods.od.nih.gov/factsheets/magnesium-health_professional/

<http://ods.od.nih.gov/factsheets/Calcium-HealthProfessional/>

<http://www.ellenskitchen.com/faqs/calcium.html>

http://huhs.harvard.edu/assets/File/OurServices/Service_Nutrition_CalciumContentOfCommonFoods.pdf

Read labels- Multiple the % calcium by 10 to get the mg per serving

I do not to purchase food that have added supplements

What I Do With My Diet

- Calculated dietary intake of Ca and Vit D over 3 days
- My multi vitamin: 400 mg D, 200 mg Ca, 50 mg Mg
- Based on diary, I generally eat (approximate calcium)
1 cup diary (300 mg), 1 cup raw dark greens (100 mg), 1 cup beans (60 mg), 1/4 cup nuts (100 mg), (other 200 mg)
- My Vit D concentration is 30 ng/mL so I purchase Calcium without Vit D. Thus, based on diet, I take 0, 300, or 600 mg of calcium tablet and 0 or 250 mg of Mg tablet depending on what I ate for the day.
- Previously my Vit D was 24 ng/mL so I supplemented 1000 mg a day for a year

No Perfect Drugs- Prevention Best

- **Bisphosphonates**- duration?, decrease resorption
- **Denosumab**- monoclonal antibody, RANKL, decrease bone resorption
- **Teriparatide**- (daily SC). Increase bone formation
- **Calcitonin**-decrease bone resorption
- **Raloxifen**- selective estrogen receptor modulator, increase bone formation
- **Strontium**- available in Europe inhibits bone resorption and increase bone formation