

**Think INSIDE the Box: Getting Your Rehab
Message into the Minds of Referring MDs**

**8th Annual Medical Rehabilitation Education Conference
New Orleans, Louisiana**

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Disclosure

We have no vested or financial interest(s) or relationship(s) with the manufacturer(s) of commercial product(s) or provider(s) of commercial services or commercial supporters.

We received grant support from the Illinois Department of Public Health Office of Women's Health to undertake this research.

Think INSIDE The Box

Our
Our story begins~

Project developed out of IPLAN (2005-2010)

--What is IPLAN?

- The Illinois Project for Local Assessment of Needs**
- A community health assessment and planning process conducted every 5 years by local health jurisdictions in Illinois.**

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- **IPLAN uses a standardized process**
- **The essential elements of IPLAN are:**
 - an organizational capacity assessment;
 - a *community health needs assessment*;
and
 - a community health plan, focusing on a minimum of three priority health problems.

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For 2005-2010, the three targeted health problems identified by the community-based IPLAN Committee for Peoria County were **hip fractures**, CVD and infant mortality.

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Hip fractures most commonly occur from

- a fall or**
- from a direct blow to the side of the hip**
- in severe cases of some illnesses, it is possible for the hip to break with the patient merely standing on the leg and twisting.**

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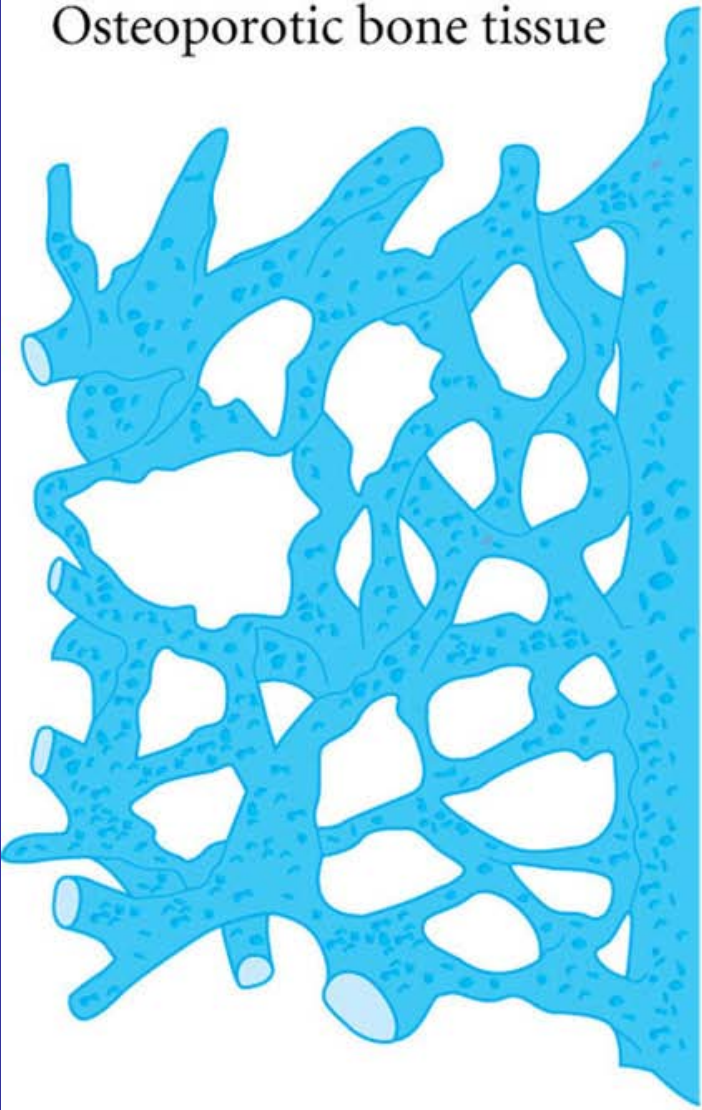
Think INSIDE The Box

Some medical conditions such as osteoporosis, cancer, or stress injuries can weaken the bone and make the hip more susceptible to breaking.

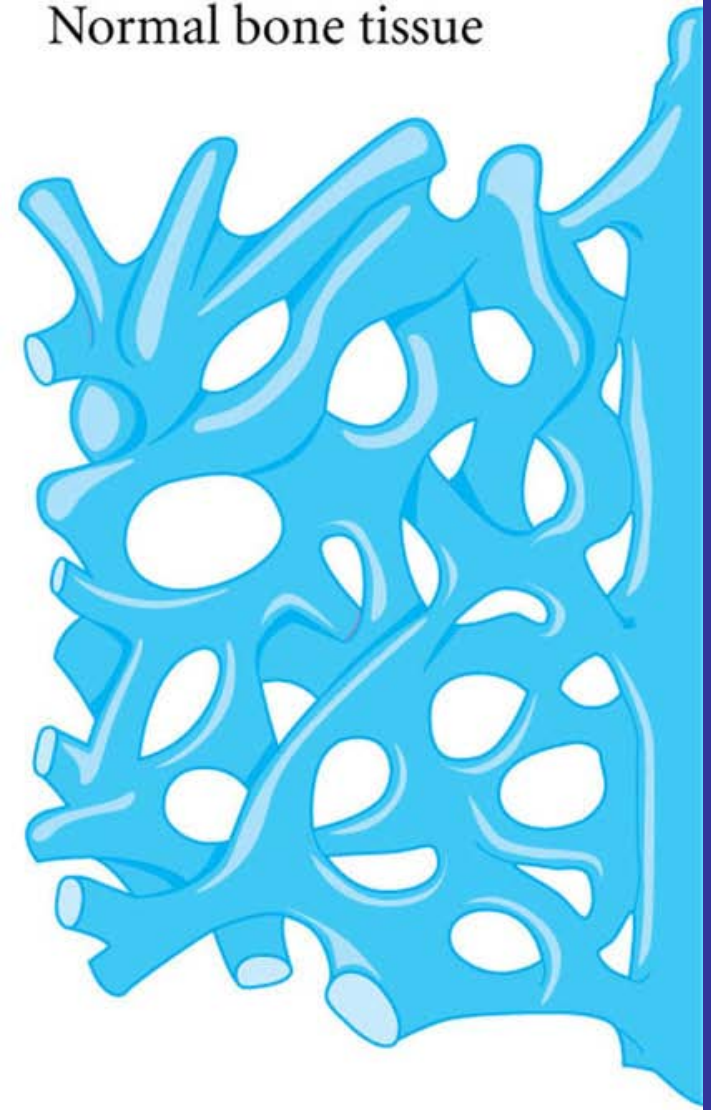
→ Osteoporosis, or ‘porous bone,’ is a disease characterized by low bone mass and structural deterioration of bone tissue, leading to bone fragility and an increased risk of fractures of the hip, spine, and wrist.

→ Osteoporosis occurs when the body fails to form enough new bone, when too much old bone is reabsorbed by the body, or both.

Osteoporotic bone tissue



Normal bone tissue



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Osteoporosis is the most common type of bone disease.

→ An estimated 10 million *Americans* have osteoporosis.

→ Another 18 million have low bone mass (osteopenia) which may eventually lead to osteoporosis if not treated.

→ About 1 out of 5 American women over the age of 50 have osteoporosis.

→ About half of all women over the age of 50 will have a fracture of the hip, wrist, or vertebra (bones of the spine).

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→ Throughout life, old bone is removed (resorption) and new bone is added to the skeleton (formation).

→ During childhood and teenage years, new bone is added faster than old bone is removed and bones become larger, heavier, and denser.

→ Bone formation outpaces resorption until peak bone mass (maximum bone density and strength) is reached around age 30.

→ After that time, bone resorption slowly begins to exceed bone formation.

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- For women, bone loss is fastest in the first few years after menopause, and it continues into the postmenopausal years.
- Osteoporosis will develop when bone resorption occurs too quickly or when replacement occurs too slowly.
- Osteoporosis is more likely to develop if a person did not reach optimal peak bone mass during bone-building years.

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The leading causes of osteoporosis are:

- Too little calcium and other micro-nutrients in the diet
- A drop in estrogen in women at the time of menopause and a drop in testosterone in men.
- Excess corticosteroid levels due to ongoing use of medicines for asthma, certain forms of arthritis or skin diseases, and COPD.
- Hyperthyroidism
- Hyperparathyroidism
- Rheumatoid arthritis and other inflammatory conditions

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- **Being confined to bed**
- **Family history of osteoporosis**
- **Absence of menstrual periods**
- **Early menopause**
- **Eating disorders**
- **Low body weight**
- **Use of certain medications, including anti-seizure drugs, certain chemotherapy treatments for breast cancer, and long-term use of SSRIs, heparin, methotrexate, and aluminum containing antacids**

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- **Certain medical conditions that interfere with calcium absorption (Crohn's disease, Cushing syndrome, celiac disease)**
- **History of previous fracture as an adult**
- **Drinking large amount of alcohol**
- **Caffeinated soda intake**
- **Smoking**

Risk factors that are not controllable:

- **Gender, race, age, frame-size, family history**

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To reach optimal peak bone mass and continue building new bone tissue during aging, several factors should be considered.

An inadequate supply of calcium over a lifetime contributes to the development of osteoporosis.

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- **Calcium needs change during one's lifetime.**
 - **Biochemical demand for calcium is greater during childhood and adolescence.**
 - **Demand also is greater during pregnancy and breastfeeding.**
 - **Postmenopausal women and older men also need to consume more calcium.**
 - **During aging, the body becomes less efficient at absorbing calcium and other nutrients.**
 - **Older adults with chronic medical problems may use medications that may impair calcium absorption.**

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- **Vitamin D plays an important role in calcium absorption and bone health.**
 - Synthesized in the skin through exposure to sunlight (15 minutes per day).**
 - Food sources include egg yolks, saltwater fish, and liver.**
 - Studies show that vitamin D production decreases in the elderly, those who are housebound, and for people in general during the winter. They may need vitamin D supplements (400 to 600 IU daily).**

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Any questions so far?

Just covered osteoporosis as a risk factor for hip fractures

A word about medications

What about balance, falling and hip fractures?

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What do we know about the epidemiology of accidental falls in older adults?

Note—previously reported on our Community Falls Prevention Program and the off-shoot women's exercise program.

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- **One third of people 65 years and older fall each year.** (Confirmed Ganz, Bao, Shekelle, & Rubenstein, JAMA, 2007)
- **Falling is seriously underreported.** (Studies by Dijkhuis, Zwerling, Parrish, Bennett, Kemper, AJE, 1994; Edelberg, Lyman, Wei, Aging, 1998)
- **10%-15% of falls result in injury serious enough for hospitalization.** (Reported in Tinetti, NEJM, 2003)

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- **40% of those seriously injured will die from the fall's complications.** (Gillespie et al., Cochrane, 2003)
- **Falls are the #1 cause of accidental death for individuals over 65.** (NVSS, accessed June, 2007)
- **Falls are the 7th leading cause of death overall for those 65 and older.** (NVSS, accessed June, 2007)

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- **Falls are responsible for 40% of traumatic injury in persons over 65.** (NCHS, 2005)
- **90% of all hip fractures sustained by elderly adults are a result of falls.** (Newton et al., 2006)
- **Rate of falling rises with age: 50% of those 80 years and older will fall each year.** (Reported in Cavanaugh & Blanchard-Fields, 2011)

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- **50% of nursing home residents fall each year. 40% of these persons are repeat fallers.** (Reported in Tinetti et al., NEJM, 1994)
- **A person who has fallen has 3 times the chance of going to live in a nursing home compared to an older adult who has not fallen.** (Reported in Tinetti et al., NEJM, 1994)

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Risk Factors for Falling

Environmental dangers

Nutritional deficiencies

Acute medical conditions

→ Chronic medical conditions (e.g. osteoporosis)

Medication (individual and combined)

De-conditioning

Age-related changes

Unsafe choices

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In addition to physical complications, falling takes a toll on an individual's sense of self and independence.

- **25% of persons who have fallen will limit their daily activities because of fear of falling again.**
- **Reduced physical activity leads to weakness and increased chance of more falls.**

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- **Excessive dependence on family and friends; increased risk of depression, isolation.**
- **Changes in gait or movement habits, ironically putting them at higher risk for an accident. (Baby steps, furniture walking, etc.).**

The reality is that a bad fall is the beginning of the end for many older adults.

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The Community Fall Prevention Program

- **Designed to reduce the likelihood older people will fall at home.**
- **17 year effort in cooperation with the Central Illinois Agency on Aging.**
- **Assessments provided to over 2,000 households.**
- **Must be 60 years of age or older.**
- **Must live within one of six counties: Peoria, Tazewell, Woodford, Marshall, Stark or Fulton, all located in Central Illinois**

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- **Must be *frail, disabled or otherwise at risk of falling*. Those living in skilled nursing or institutional settings are not eligible.**
- **Must be willing to use the equipment, such as a tub safety bench.**
- **Program does not pay for any items Medicare will cover.**
- **Cannot include cost-prohibitive renovations (like wheelchair ramps).**

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Occupational therapist makes home visits, focuses on the bathroom or rooms in which serious falls are most likely to happen, recommends appropriate assistive equipment.

One surprising result that led to additional study, persons who were overweight or obese were more likely to fall.

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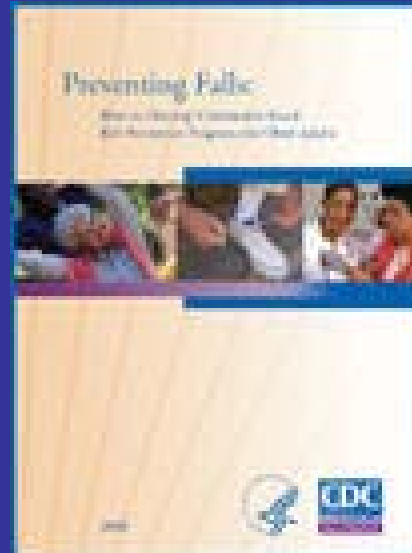
- On March 6, 2008, the Centers for Disease Control and Prevention released two reports. The first:

Preventing Falls What Works:

A CDC Compendium of Effective-based Interventions from Around the World

- Can be accessed from the Centers for Disease Control and Prevention (CDC) website
<http://www.cdc.gov/ncipc/preventingfalls/>

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Result of two-stage meta analysis conducted by the Rand Corporation and the CDC.

- **Included (mostly) community dwelling older adults aged 65 and older.**
- **Used randomized controlled study designs.**
- **Measured falls as the primary outcome.**
- **Demonstrated statistically significant positive results in reducing falls.**

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Reviewed 14 studies focused on:

- 1. Exercise-based interventions**
- 2. Home modification interventions**
- 3. Multi-faceted interventions which included assessments of visual acuity, postural hypotension, balance, cognition, depression, medication, alcohol use, hearing**

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- **educational talks (on exercises, safe footwear and clothing, poor vision, dietary supplements, medications),**
- **home visits,**
- **booster sessions,**
- **full-range of visual services,**
- **medication adjustments,**
- **home based exercise,**
- **physical therapy sessions.**

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Doing a lot of this through Community Fall Prevention Program

As part of IPLAN, expanded our work, added the local health department and a local university as partners and began the

Building Better Bones and Balance Clinics

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Components of the BBBB Clinic

- screening,
- client education (quitting smoking, exercise, healthful eating, medication use for osteoporosis and creating safe at-home environments to reduce risk of falling)

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Health screening~

- A health screening is a program designed to evaluate the health status and potential of an individual.
- In the process it may be found that a person has a particular disease or condition or is at greater-than-normal risk of its development.

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- **Health screening may include taking a personal and family health history and performing a physical examination, tests, laboratory tests, or radiologic examination.**
- **This may be followed by counseling, education, referral, or further testing.**









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Methods

This current project focused on providing screening for osteoporosis and risk of falling to people living in one urban, two suburban and three rural communities in Central Illinois.

113 men and women participated in this program supported through a grant provided by IDPH.

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Staff from IPMR and staff from local health departments led each participant through three separate screening protocols:

- *heel scan to measure bone density,*
- *functional reach and*
- *'timed up and go.'*

Participants also received short lectures on quitting smoking, exercise, healthful eating, medication use for osteoporosis and creating safe at-home environments to reduce risk of accidental falls.

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Participants were surveyed 6 months after participation in the screening programs.

Mailed surveys were sent once to each participant.

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Survey items included:

- age
- smoker at time of screening and currently, regular exerciser at time of screening and currently
- DEXA scan since time of screening
- changes to diet since time of screening
- inquiry about medications for osteoporosis since time of screening
- changes to home environment since time of screening

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Personal Characteristics of Original Sample

N=113	82.3% female
Average age=	65.3 years (+/- 13.2 years; range = 30-88 years)
Heel scan score detected	6 persons with scores ≥ -2.50 30 persons with scores between -1.00 and -2.49
'Timed up and go' time=	(average) 10.0 (+/-3.4 seconds; range=5.7 to 27.7 seconds; n>14=9)
Functional reach=	(average) 11.3 inches (+/-2.8 inches; range=5 to 17 inches; n<6=2)
2 or more falls in last year	23 (out of 101 respondents=22.7%)
Fall with injury in last year	12 (out of 101 respondents=11.9%)

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Personal Characteristics of Respondents to 6-month follow-up Survey

N=82 (response rate is 72.6%)

Average age=64.7 years (+/-16.1 years; range=28-89 years)

Change in % of smokers=	none
Change in % of exercisers=	6%
Made appointment for DEXA=	7.5%
Made changes to diet=	48.7%
Asked MD or pharmacist about medications=	34.2%
Undertook home modification=	37.5%

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Also tried BBBB components as part of an older adult continuing education course at Bradley University.

We conclude that simple recommendations, tied to the results of **well tolerated** screening protocols that can be administered in a variety of settings in a short period of time can result in follow through on preventive healthcare recommendations.

Wondered about the success of this program in primary care offices and “Think INSIDE The Box” was developed.

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“Think INSIDE The Box”

Simple kit that includes~

- **Stop watch**
- **3 meter cord**
- **Recording sheets which contain
PQR Standards**
- **Multi-medication recording card**

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“Think INSIDE The Box”

Simple kit that includes~

- **AHRQ Fracture Prevention Treatment**
- **Referral form for Vestibular and Balance Disorders**
- **Prescription Pad for Therapy Referral**
- **Balance Rehabilitation Program Brochures**

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What's Next?

**Distribution has taken place through
IPMRs 8 outpatient clinics**

**Boxes were taken to primary care staff
with whom our employees were familiar
and had established good collaborative
relationships**

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What's Next?

All referral programs (Vestibular and Balance Services, Physical Therapy Services, etc) are heavily advertised

Follow-up to determine how these kits are used in primary care is necessary

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Questions?