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Managing Falls Risk: Screening Tools, Interventions & Developing Continuity of Care

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Objectives

- Describe risk factors for falls specific to the home care setting
- Review screening tools available to identify individuals at risk of falling
- Identify appropriate home and community based interventions to minimize falls risk
- Discuss community resources and interventions to address falls risk available in North Carolina
- Describe potential continuity of care models to minimize falls risk and decline and maximize successful aging

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Falls in North Carolina

Falls are the leading cause of unintentional injury for individuals over 65

Leading cause of hospital discharges

- 34,460 falls vs. 2,107 MVA (2004)

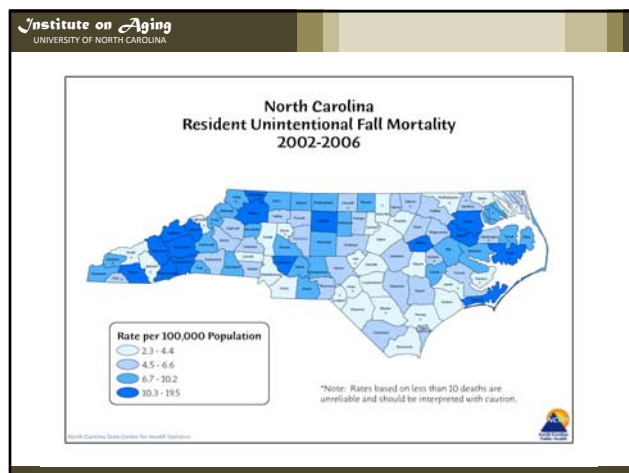
Leading cause of ED visits

- 40,718 falls vs. 5,218 MVA (2006)

The most expensive injury

- \$325,160,400 vs. \$26,567,000 (2007)

SCHS, 2007



The Problem with Falls

Community Dwellers

- 30% over age 65 will fall this year (NSC, 2003)
- 10% of falls result in fracture (Campbell, 1990, Tinetti, 1998)
- Fall related injuries increase with age (Sattin, 1992)

Nursing Homes

- 50% of all residents will fall each year (Rask, 2003)

Medicare Population (Shumway-Cook, 2009)

- 6.86 million fell in 2002 (22.1%)
- 3.1 million people were recurrent fallers
- 2.2 million had an injurious fall (32.3%)

The Problem with Falls – Home Health

- 27% - 42% of home health patients fall annually (Fletcher, 2002; Cesari, 2002)
- More home health dollars are spent on fallers (Shumway-Cook, 2009)
 - 0 falls = \$215
 - 1 fall = \$388
 - > 1 fall = \$666
- 15% of all hospital re-admissions during the first month post discharge due to a fall (Mahoney, 2000)



Why do older adults fall?

Normal Physiologic Changes in Aging

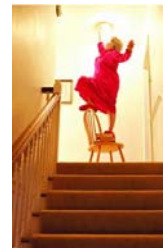
- Vestibular System
- Visual System
- Proprioception

Epidemic of Chronic Disease

Myths that falls are

- Unavoidable
- A normal part of aging

Can Falls Be Prevented?



A Complex Problem

What we can't fix:

- 15% of falls result from an external event
- 15% of falls are due to a single, identifiable cause (Parkinson's Disease, Syncope)

What we can fix:

- 70% of falls result from multiple interacting risk factors (Campbell, 2007)
- Injurious falls typically due to multiple risk factors (Cummings, 1995)

Most Falls Can Be Prevented



A Complex Problem - Interventions

Multi-factorial Interventions - Outpatient Setting

- Decrease falls rates 30 - 40% (Tinetti, 1994; Hogan, 2001; Niklaus, 2003)
- May be most effective for frail or high risk individuals (Stevens, 2005; Costello, 2008)
- May not significantly change risk factors (Cochrane, 2009)

Single Factor Interventions – Outpatient Setting

- Decrease falls rates 30-40% (Campbell, 2007)
- Significantly improves risk factors (Cochrane, 2009)

Multi-Factor Interventions: Home Health?

Kenosha Study – Intermediate Intensity, Community-Based, Multi-Factorial Intervention (Mahoney, 2007)

- 349 high risk older adults (age \geq 65 years)
- Screened for risk factors:
 - Medications
 - Vision
 - Balance
 - Neurologic
 - Cognition
 - Mood
 - Function
 - Home Hazard

Multi-Factor Interventions: Home Health?

Interventions

- Recommendations
 - Discuss medications with physician, improve lighting, home safety, safe techniques when performing mobility tasks, use assistive device
- Referrals
 - Physical therapy, occupational therapy, ophthalmologist, counseling
- Caregiver education and training
 - Home safety, falls prevention, safe performance of mobility tasks, increased supervision

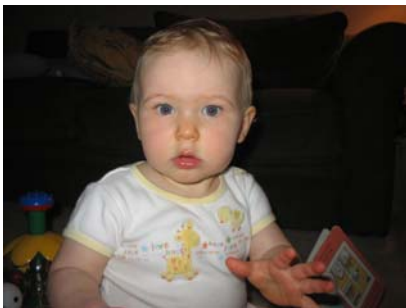
Multi-Factor Interventions: Home Health?

Outcomes

- No significant differences between rate of falls (2.21 vs. 1.88 falls per patient year)
- No significant differences between hospitalization rates (0.63 vs. 0.66)
- No significant differences between SNF admissions (0.41 vs. 0.29)

Subjects with cognitive impairment who lived with someone had the lowest rate of falls, hospital admissions, and nursing home admissions

We were shocked, too.....



Isn't this supposed to work?

It works if it happens.....

- Adherence rates ranged from 32% to 93%
- 84% referred to physical therapy
 - 2/3 actually went
- Of the 2/3 that received physical therapy
 - 50% received one-time balance exercise instruction in course of PT
 - Few received a home exercise program
 - Limited progression of balance exercises



No standardization of frequency, intensity and duration of physical therapy to minimize falls risk

Effective Multi-factorial Interventions

Key components **implemented**, not recommended

- Medication Review with modification or withdrawal
 - Psychotropic Medications
- Vision Assessment and Referral
- Home Hazard Assessment and Intervention
 - Lighting, clear pathways, grab bars
 - Specific for visually impaired or high risk
- Exercise Interventions
 - Strength and balance training

The Multi-disciplinary Home Health Team

The Best Active Defense Against High Risk Falls



The Greatest Risk of a Fall

The first month after discharge from a hospital

- The falls rate during the first 2 weeks after hospitalization significantly higher than at 12 weeks (8.0 vs. 1.7 per 1000 person-days)
- 15% of re-hospitalizations happen in first month

Pre-Hospital Risk factors

- Dependency in ADLs, use of a standard walker, **2 or more falls**, prior hospitalizations

Post-Hospital Risk Factors

- Tricyclic antidepressant, delirium, poor balance

(Mahoney, 2002)

Home Health – The Perfect Storm

Physiology of Aging

- Sarcopenia
- Changes in cognition
- Slowed reaction time
- Less reserve

Hospitalization

- Pharmacy
- Delirium
- Recovering from insult
- Deconditioned
- Chronic Health Conditions
- Limited Continuity of Care



Home Health – Early Intervention

Triage for falls risk

Address medical issues

- Delirium, Depression, Anxiety, Cognition Changes
- Polypharmacy
- Incontinence
- Vision

Focus on safety and caregiver training

Minimize balance and gait training until appropriate

Gait and balance?

- Poor gait risk for falls – but can you fix it?
- Walking associated with falls risk (Mahoney, 2007)
- Falls rates lowest in frail elders with poor balance and unable to stand unassisted (Lord, 2003)



Objective 1: Risk Factors For Falls



General Risk Factors for Falls

- | | |
|-----------------------|--------------------------|
| 1. Muscle Weakness | 6. Visual Deficit |
| 2. History of Falls | 7. Arthritis |
| 3. Difficulty Walking | 8. Impaired ADLs |
| 4. Polypharmacy | 9. Depression |
| 5. Poor Balance | 10. Cognitive Impairment |
| 6. Assistive Device | 11. Age > 80 years |

Home Health Risk Factors

Recurrent Faller

Previous Fall	Polypharmacy
Difficulty Walking	Environmental Hazards
Gender	Vision
Cognitive Impairment	Depression and Anxiety
Difficulty in ADLs	Living Alone*

(Fletcher, 2002, Cesari, 2002, Chang, 2007, Iinattiniemi S., 2009)

Addressing Risk Factors

The first two weeks post hospital discharge:

- **CRISES MANAGEMENT**

From two weeks post until home health discharge:

- **Identify patient barriers to guide interventions**

Live alone or with caregiver
Cognitive impairment
Falls risk

- **Use screening tools to identify interventions**

Fix what is fixable (modifiable risk factors)

- **Develop plan for continuity of care**

Objective 2: Screening Tools

Multifactorial Screening Tools

- Falls Risk Assessment (FRA)
- Falls Risk Assessment Tool (FRAT)
- Falls Risk for Older People – Community (FROP-Com)
- ACOVE-3 Guidelines
- OASIS-C

Falls Risk Assessment

Fleming, PJ. Utilization of a Screening Tool to Identify Homebound Older Adults at Risk for Falls: Validity and Reliability. Home Health Care Services Quarterly, 25;2006:1 – 24.

www.stopfalls.org

Provider Resources

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Falls Risk Assessment

16 Item reliable and valid tool to identify homebound older adults at risk of falling

- History of falls/recurrent
- Fear of falling
- Balance (poor static / dizzy)
- Use of Assistive Device
- Limitations in LE ROM (self-report stiffness in joints)

PER OASIS-B

- Vision
- Incontinence
- Medications (> 4 or 2 high risk)
- Environmental Hazards
- Mental Status
- ADLs
- Transfers
- Ambulation
- LE Strength

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Falls Risk Assessment (Fleming, 2006)

Only significant predictor of falls

- History of recurrent falls
- Presence of 8 or more risk factors

Clinical Utility

- Multi-factorial and includes key items linked to falls risk
- Intervention linked to risk factor
- Several items replicated in OASIS-B

Clinical Concerns

- No classification into high risk or low risk
- Scoring system does not identify specific impairment

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Falls Risk Assessment Tool

Reliable and valid developed by Peninsula Health Falls Prevention Service (Australia) to assess risk in seniors living in aged-care facilities

http://www.health.vic.gov.au/agedcare/maintaining/falls/providers/rac/plans_frat.htm

3 Part Tool

- Part 1 – Falls Risk Status
- Part 2 – Risk Factor Checklist
- Part 3 – Action Plan

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Working together to prevent falls

FALLS RISK ASSESSMENT TOOL (FRAT)

UR NUMBER

SURNAME

GIVEN NAMES

DATE OF BIRTH

Please fill in if no patient/resident label available

(see instructions for completion of FRAT in the FRAT PACK-Falls Resource Manual)

RISK FACTOR	LEVEL	RISK SCORE
RECENT FALLS <small>(To score this, complete history of falls episode)</small>	none in last 12 months	2
	one or more between 3 and 12 months ago	4
	one or more in last 3 months	6
	one or more in last 3 months whilst inpatient / resident	8
MEDICATIONS <small>(Sedatives, Anti-Depressants, Anti-Painkillers, Diuretics, Anti-hypertensives, hypnotics)</small>	not taking any of these	1
	taking one	2
	taking two	3
	taking more than two	4
PSYCHOLOGICAL <small>(Anxiety, Depression, Jitters, Fear, or Judgment exp. re mobility)</small>	does not appear to have any of these	1
	appears mildly affected by one or more	2
	appears moderately affected by one or more	3
	appears severely affected by one or more	4
COGNITIVE STATUS <small>(AMTS: Hockinson Abbreviated Mental Test Score)</small>	AMTS 9 or 10 (see hand)	1
	AMTS 7-8	2
	AMTS 6-8	3
	AMTS 4 or less	4
<small>(Low Risk: 6-11 Medium Risk: 12-15 High Risk: 16-20)</small>		RISK SCORE
		/20

Automatic High Risk Status: (if ticked then circle HIGH risk below)

Recent change in functional status and / or medications affecting safe mobility (or anticipated)

Dizziness / postural hypotension

FALL RISK STATUS: Circle 1: LOW / MEDIUM / HIGH → **List Fall Status on Care Plan / Flow Chart**

IMPORTANT: IF HIGH, COMMENCE FALL ALERT

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PART 2: RISK FACTOR CHECKLIST

Vision	Reports / observed difficulty seeing - objects / things / finding way around	Y/N
Mobility	Mobility status unknown or appears unsafe / impulsive / forgets gait aid	
Transfers	Transfer status unknown or appears unsafe w/ over-reaches, impulsive	
Behaviours	Observed or reported agitation, confusion, disorientation	
Activities of Daily Living (A.D.L.s)	Difficulty following instructions or non-compliant (observed or known)	
	Observed risk-taking behaviours, or reported from referer / previous facility	
	Observed unsafe use of equipment	
Environment	Unsafe footwear / inappropriate clothing	
Nutrition	Difficulties with orientation to environment (i.e. areas between bed / bathroom / dining room)	
	Underweight / low appetite	
Continence	Reported or known urgency / nocturia / accidents	
Other		

PART 2: UNIFORMED

HISTORY OF FALLS See <http://www.unc.edu/aging/assess/patienthistory/> for info. / report recent falls

Falls prior to this admission: (Date or relevant facility address during current stay:)

(Checked, check most recent below)

CIRCUMSTANCES OF RECENT FALLS: Information obtained from _____

(Circle below) (Where? / Comments)

Last fall: Time age _____ Trip / Slip / Lost balance / Collapsed / Leg gave way / Dizziness _____

Previous: Time age _____ Trip / Slip / Lost balance / Collapsed / Leg gave way / Dizziness _____

Previous: Time age _____ Trip / Slip / Lost balance / Collapsed / Leg gave way / Dizziness _____

→ **List History of Falls on Alert Sheet in Patient/Resident Record**

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Falls Risk Assessment Tool

Falls Risk Screen –

Categorize into high, medium, low

- Records falls in community and hospitalization
- Medications linked to falls risk
- Cognitive issues (anxiety, depression, etc.)
- Cognitive Status (can substitute MMSE)

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Falls Risk Assessment Tool

Risk Factor Checklist

- Vision
- Mobility
- Transfers
- Behaviors
- ADLs
- Environment
- Nutrition
- Continence
- Other

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Falls Risk Assessment Tool

Better at predicting non-fallers than fallers

Clinical Utility

- Provides a specific score and classification
- Identifies specific risk factors
- Focuses on medical issues
- Incorporates an action plan based on risk factors

Clinical Concerns

- Does not directly translate to OASIS documentation – may require more paperwork

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Falls Risk for Older People – Community

Russell, MA. Development of the Falls Risk for Older People in the Community (FROP-COM) Screening Tool. Age and Ageing. 2009;38:40-46.

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Falls Risk for Older People – Community

Sensitive and specific tool to identify older community dwelling adults at risk of a fall
Validated with older adults discharged from emergency room
Three Items

- Falls in the previous 12 months
- Poor balance
- Difficulty performing ADLs

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		SCORE
History of falls (0-3points)		
<ul style="list-style-type: none"> • Number of falls in the past 12 months? 	<input type="checkbox"/> Nil in 12 months (0) <input type="checkbox"/> 1 in the last 12 months (1) <input type="checkbox"/> 2 or more in 12 months (2) <input type="checkbox"/> 1 or more requiring hospitalisation (3)	[]
Balance (score 0-3 points)		
<ul style="list-style-type: none"> • Does the individual, upon observation of walking and turning, appear unsteady or at risk of losing their balance? (NOTE: Rate with usual walking aid. Tick one only, if level fluctuates, tick the most unsteady rating) 	<input type="checkbox"/> No unsteadiness observed (0) <input type="checkbox"/> Yes, minimally unsteady on walking or turning (1) <input type="checkbox"/> Yes, moderately unsteady on walking or turning (needs supervision) (2) <input type="checkbox"/> Yes, consistently and severely unsteady on walking or turning (needs constant hands on)	[]
<ul style="list-style-type: none"> • Prior to this fall, how much assistance was the individual requiring for personal care activities of daily living (eg dressing, grooming, toileting)? (NOTE: If no fall in last 12 months, rate current function) 	<input type="checkbox"/> none (completely independent) (0) <input type="checkbox"/> supervision (1) <input type="checkbox"/> some assistance required(2) <input type="checkbox"/> completely dependent (3)	[]

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FROP-COM

Score of 3 – 4 greatest sensitivity and specificity
Clinical Utility

- Fast
- More appropriate for higher functioning older adults

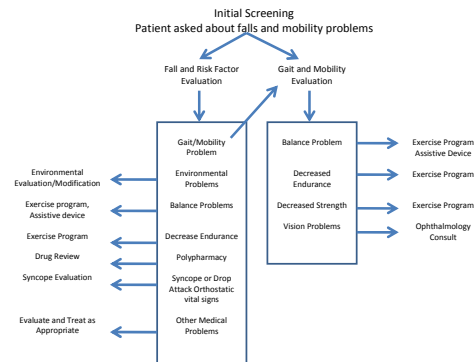
Clinical Concerns

- Not multi-factorial
- Does not identify specific problems

ACOVE-3 Guidelines

Chang, JT. Quality Indicators for Falls and Mobility Problems in Vulnerable Elders. JAGS. 2007;55:S327-S334.

Guidelines developed specifically for physicians to identify individuals at risk of a fall and implement appropriate interventions



ACOVE-3 Guidelines

Clinical Utility

- Multi-factorial
- Identifies key risk factors specific for frail elders
- Algorithm for appropriate interventions
- All recommendations are evidence-based
- Standard of care for physician practice

Clinical Concerns

- No scoring guide
- Need to follow patient to see improvement

OASIS-C

Items associated with falls risk:

M1032 Risks for Hospitalization

- 3 – History of falls (2 or more or one injurious)
- 4 – Taking five or more medications
- 5 – Frailty Indicators

M1036 Risk Factors

- 3 – Alcohol Dependency
- 4 – Drug Dependency

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OASIS – C

Sensory Status	Neuro/Emotional
M1200 Vision	M1700 Cognitive Function
M1210 Hearing	M1710 Confusion
M1240 Pain	M1720 Anxiety
Elimination Status	M1730 Depression
M1610 Incontinent	M1740 Demonstrates cognitive, psychiatric, or behavioral symptoms

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OASIS-C

General Impairment in ADLs/IADLs

- M1830 Bathing
- M 1850 Transfers
- M1860 Ambulation/Locomotion

Medication

- M2000 Drug Regime Review

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OASIS – C

What is missing from a “formal multi-factorial falls risk assessment”?

- Balance assessment
- High risk drugs

The OASIS-C is a multi-factorial assessment

- Now, what to do with the information to prevent falls

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A comment on physical assessments

- Questionable validity with this population
 - Validated on community dwelling older adults
- EPESE battery probably the best predictor of function
 - Gait speed the most important predictor of decline

(Guralnik, 2002)

Objective 3: Interventions

“Preventing falls in populations requires selection of the population most likely to benefit, and selection of the particular interventions shown to have been effective in this group.” John Campbell, 2007

Effective Community Interventions

Gillespie, LD, Cochrane Review, 2009

- Multiple component (must include strength and balance) exercise significantly reduced rates of falls (0.78) and risk of falls (0.83)
 - Group exercise
 - Tai Chi
 - Home-based exercise
- Assessment and multifactorial intervention reduced rate of falls (0.75) but not risk of falls

Effective Interventions: Community

Vitamin D did not reduce falls

- May be effective for individuals with lower vitamin D levels

Home safety interventions did not reduce falls

- May be effective only for **severe visual impairment** or those at **highest risk of falling**

Withdrawal of psychotropic medications reduced rate of falls

Physician prescribing programs reduced risk of falls

First eye cataract surgery reduced rate of falls

Effective Interventions: Home Health

Medical Risk Factors Must Be Addressed First

Assessment must be followed by intervention

Exercise Interventions - Effective

- Must occur minimum of 3x/week
- Must include strength, balance, flexibility, aerobic
- Walking alone increases falls rate and risk

Effective Interventions – Home Health

Physical Therapy Alone – Not effective

Knowledge/Education Alone– Not effective

Examples of Exercise Interventions

Otago Exercise Program

30% reduction in falls for over two years

- Designed for frail, homebound older adults
- Administered by a physical therapist (4 visits over 2 months), phone call at six months
- Strength, balance and flexibility exercises 3x/week
- Walking 2-3x/week

<http://www.learnonline.nhs.uk/NR/rdonlyres/A326EB89-E422-4BDD-AF5A474F29F5D84B/40792/Otagoexerciseprogramme.pdf>

Examples of Exercise Interventions

Strategies and Action For Independent Living
(SAIL)

Significant reduction in falls and fall injuries

- Designed for older adults eligible for home support services
- Individualized action plan that incorporates home modification, fall risk assessment, daily physical activity, falls education
- Trained community health care workers

Effective Interventions - Discussion

How Does This Effect Your Clinical Practice?

- Clear medically
- Create a safe environment
- Create an exercise program incorporating what works
- Accountability/Tracking
- Collaborate with other disciplines for best success

Help Is On The Way!



Evidence-Based Health Promotion Programs

Research interventions translated and tested in the community

Recognized and approved by the NCOA and AoA

Target community providers and include:

- A specific target population
- Specific, measurable goal(s)
- Describes a well-defined program structure and timeframe
- Specifies staffing needs/skills
- Specifies facility and equipment needs
- Builds in program evaluation to measure program quality and health outcomes

Examples of EBHP

[Active Living Every Day](#)

Behavioral change program to increase physical activity

[Chronic Disease Self-Management Program](#)

Enable participants to effectively self-manage their chronic disease

[Enhance Wellness](#)

An individualized intervention designed to promote health and limit functional decline

Examples of EBHP

[Healthy Ideas](#)

Depression intervention specific for socially isolated, home bound seniors

[Strong For Life](#)

A home-based exercise program that utilizes videotapes and therabands

[A Matter of Balance](#)

Practical coping mechanisms to reduce fear of falling

More Information on EBHP

The North Carolina Roadmap for Healthy Aging

www.aging.unc.edu/roadmap

The National Council on Aging

http://www.healthyagingprograms.org/resources/e-b_programs.pdf

National Success of EBPs

The Administration on Aging funded 24 states in 2007 to implement EBHP

- More than 11,030 older adults have participated in at least one of 7 evidence-based programs. (May 2008)
- Over 422 implementation sites from these 7 programs

Why is this important for clinicians?

It is a sure thing – refer patients to CDSMP, you are guaranteed specific outcomes

Fills a clinical gap

- Provides behavior education and facilitates permanent health behavioral change
- Builds upon what patient learns in physical therapy and reinforces health concepts
- Prepares patients for successful transitions

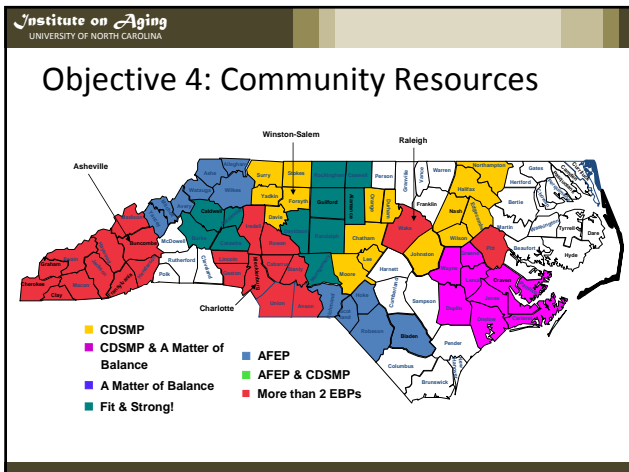
Creates continuity of care

- Can be before, during, or after PT
- A way to track patients after discharge

Why is it important for the community?

Area Agencies on Aging

- New federal mandate to offer programs proven to improve health outcomes
- % of funding based on offering EBHP
- Revolution in senior centers from bingo and bowling to health promotion and fitness
- They need business!



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Select Menu of E-B Programs in NC

- Chronic Disease Self-Management Program (CDSMP) (i.e. *Living Healthy*)
- A Matter of Balance
- Arthritis Foundation Programs
- Fit and Strong!

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CDSMP in North Carolina

Living Healthy – 3 year Grant from AOA to DAAS& DPH to implement CDSMP
Serena Weisner, Project Manager
Serena.Weisner@ncmail.net

Currently in 7 Regions

- 46 counties
- Regional Coordinators in each area
- Targeting hard-to-reach, underserved adults 60+

<http://www.ncdhhs.gov/aging/livinghealthy/livinghealthy.htm>

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CDSMP - Outcomes

Significant improvements in

- Level of exercise
- Cognitive symptom management
- Communication with physicians
- Self-reported general health
- Health distress
- Fatigue
- Disability
- Social/role activities limitations.

CDSMP – The Bottom Line

- Fewer days in the hospital
- Trend toward fewer outpatients visits and hospitalizations
- A cost to savings ratio of 1:10
- Results persist > three years

<http://patienteducation.stanford.edu/programs/cdsmp.html>

Matter of Balance

- Master Trainer Session January 2009
- 22 MOB Master Trainers in State
- Contact: Rebecca Hunter, rhh@med.unc.edu

MOB Outcomes

- 97% feel comfortable increasing activity
- 99% plan to continue exercising
- Participants demonstrated significant improvements level of falls management, falls control, level of exercise and social limitations with regard to concern about falling

(Preliminary findings, Healy, McMahon, & Haynes, 2006).

Arthritis Foundation Exercise & Aquatics

Exercise Program (AFEP)

Formerly P.A.C.E.
Meets 2 – 3 x/wk for 8 weeks
1 hr / session
Trained leader
Modifiable
ROM, strengthening, endurance

Aquatics Program (AFAP)

Meets 2 – 3 x/wk
1 hr / session
Trained leader
ROM, strengthening, endurance

Fit and Strong! Exercise & Education

People with OA have decreased *aerobic functioning* and *decreased muscle strength* compared to age-matched controls

- Decreased activity due to pain leads to de-conditioning
- Indicates new interventions must encompass
 - flexibility
 - aerobic conditioning
 - strength training

Contact: fitandstronguic@gmail.com

Objective 5: Continuity of Care Models

North Carolina Roadmap for Healthy Aging

NC Division of Aging and Adult Services

Area Agencies on Aging

County Departments on Aging

Non-profit Aging Organizations

Parks and Recreation

Faith-Based Groups

AARP

Objective 5: Clinical Discussion

- Your turn to contribute!

Acknowledgements and Support

- UNC Center for Aging and Health
- UNC Division of Physical Therapy
- Orange County Department on Aging
- UNC Institute on Aging

- UNC Chapel Hill School of Medicine - Futures Grant
- National Association for Chronic Disease Directors Senior Grant HA 2006 – II and HA 2008

Questions?



Thank You