The Translational Research Institute on Pain in Later Life (TRIPLL) at Cornell University

- NIA funded Edward R. Roybal center established in response to the plight of millions of older adults experiencing persistent pain.
- Mission: To improve the prevention and management of pain in later life; thereby increasing the health and well-being of older adults.
- Supports translational research on aging and pain in greater NYC area.

Get Involved with TRIPLL

- Email Cara Kenien at cak2017@med.cornell.edu to join our email list and become an affiliate; joining gives you access to:
  - TRIPLL's monthly newsletter.
  - Information about upcoming Work-in-Progress Seminars, webinar and funding announcements, and conference opportunities.
  - Networking opportunities.

Visit http://tripll.org for more information.

PAIN IN THE OLDER ADULT: HOW TO IMPROVE PAIN CARE QUALITY AND OUTCOMES

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Overview

- Review epidemiology & impact of chronic pain in later life
- Highlight initiatives to improve pain management
  - Review evidence regarding effectiveness
- Describe several barriers to improving pain care quality
- Present 4 strategies that could help to improve quality of pain care

Disclosures

Definitions & Prevalence Estimates

Pain that persists beyond the expected time of healing (≥3 months)

Prevalence estimates

Community-dwelling older adults	18-50%
Assisted living/home care recipients	42-68%
Nursing home	50-82%

Common Pain Disorders by System

System	Pain Problem
Derm	Pressure ulcers, cellulitis, scleroderma
GI	Appendicitis, diverticulitis, IBD
CV	ACS, angina, advanced heart disease
Pulm	Pleurisy, pneumothorax, advanced COPD
Rheum	Gout, pseudogout, osteoarthritis, rheumatoid arthritis
Endocrine	Diabetic neuropathy
Renal	Kidney stones, cystitis, ESRD
ID	Herpes zoster, HIV/AIDs neuropathy
Neuro	Parkinson's disease, post-stroke pain, headache
Musculoskeletal	Low back, tendonitis, bursitis
Oncology	Cancer treatments
Miscellaneous	Surgery, sickle cell

Pain As a Cause of Poor Self-Rated Health

- Population-based study (N= 4,542); ages 15-75
- Prevalence of chronic pain — 35%
- Prevalence of poor self-rated health — 8%

	Adj OR (95% CI)
Age per year	1.02 (1.01-1.03)
1 Chronic condition (vs. none)	2.90 (2.11-3.99)
≥2 Chronic conditions (vs. none)	5.23 (3.47-7.90)
Pain several times a week (vs. none)	2.62 (1.76-3.90)
Daily pain (vs. none)	11.82 (8.67-16.10)

Mantyselka et al. JAMA 2003;290:2435-42.

Pain Causes ADL Disability

- Women's Health and Aging Study; 1,002 women aged 65+ ; ≥1 ADL deficit

	Walking across the room	Doing House-work	Dress-ing	Trans-ferring
Weakness	10.2%	13.1%	19.6%	25.1%
Fatigue	0%	11.2%	3.7%	0%
Shortness of breath	6.9%	11.4%	2.8%	0%
Balance problem	23.4%	9.4%	5.1%	5.5%
Pain	46.5%	45.9%	54.4%	58.0%

Leveille & Fried. J Gen Intern Med 2002;17:766-73.

Pain Causes Incident ADL Disability

- 2-year longitudinal study, ages 80+ (N=248)
- 50% reported daily pain at baseline
- 38% with incident ADL disability

	OR (95% CI)
Daily pain (vs. none)	1.99 (1.01-4.28)
≥2 sites of pain (vs. none)	2.34 (1.11-4.94)
Moderate to severe pain (vs. none)	6.94 (2.10-15.39)

Landi et al. J Pain and Symptom Manage 2009;38:350-57.

Pain Causes Impaired Physical Functioning

- 18-month prospective study (N=659), ages 70+; participants independent in basic ADLs
- 32% with 1-3 months back pain 14% with ≥ 4

	Number of Months with Activity Restricting Back Pain			
	0	1-3	≥4	P value
Rapid gait	−1.26	−1.62	−3.47	0.045
Chair stands	0.65	0.52	−0.85	0.026

Reid et al. J Gerontol Med Sci 2005;60A:793-97.

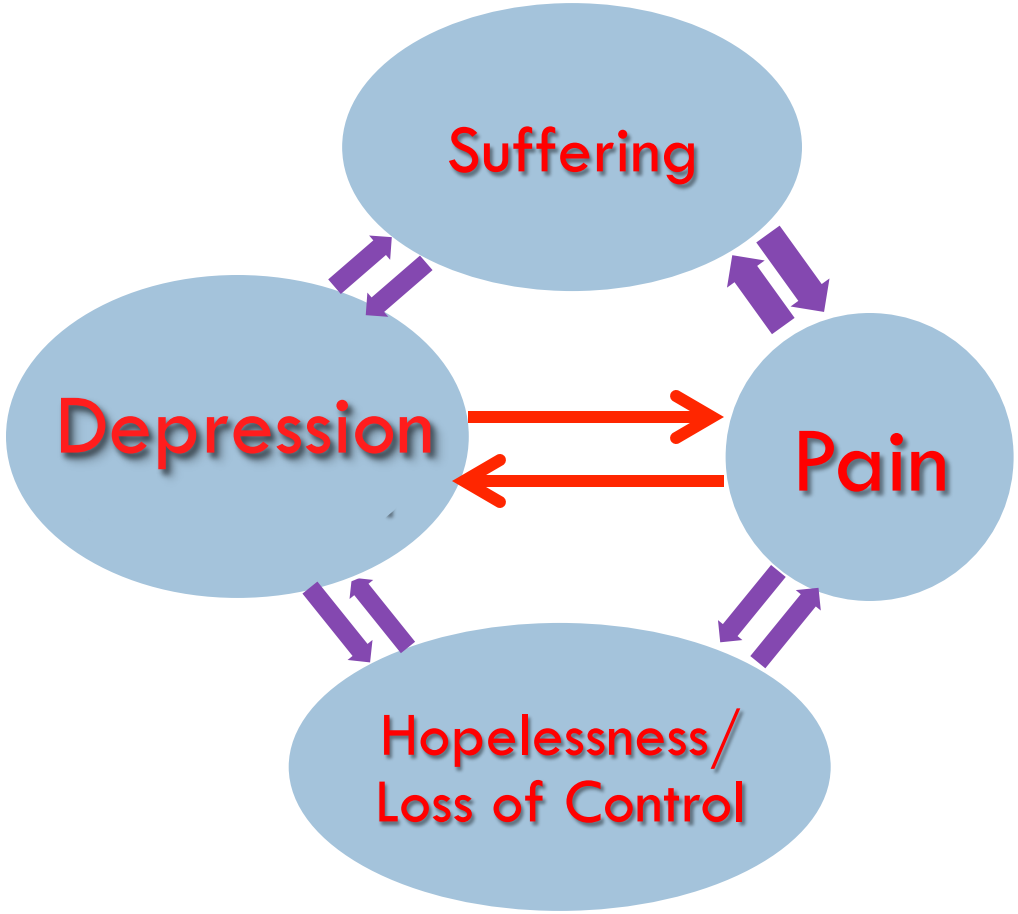
Severe Pain Confers Mortality Risk

- Case control study: All subjects 65+, residents of Ontario, 1,354 suicides

	OR (95% CI)
Ischemic heart disease	0.92 (0.76-1.12)
Parkinson's disease	1.11 (0.65-1.89)
Chronic lung disease	1.30 (1.06-1.58)
Congestive heart failure	1.36 (1.00-1.85)
Psychoses	2.60 (1.93-3.50)
Depression	3.94 (3.27-4.75)
Severe pain	4.07 (2.51-6.59)

Jurrlink et al. Arch Intern Med 2004;164:1179-84.

Multiple Negative Feedback Loops



↓ Sleep
↓ Appetite
↓ Physical/social activity
↓ Immune function

Negative effect on functional status/ quality of life

Outcomes Judged Most Important by Older Adults

Table. Proportion of Participants With Different Health Outcome Rankings, Organized by Health Outcome Ranked as Most Important

Health Outcome Ranking				
First (Most Important)	Second	Third	Fourth	No. (%)[a]
Independence				270 (76)[b]
	Pain relief	Symptom relief	Staying alive	104 (39)[c]
	Symptom relief	Pain relief	Staying alive	76 (28)[c]
	Staying alive	Pain relief	Symptom relief	38 (14)[c]
	Staying alive	Symptom relief	Pain relief	22 (8)[c]
	Pain relief	Staying alive	Symptom relief	19 (7)[c]
	Symptom relief	Staying alive	Pain relief	11 (4)[c]
Staying alive				40 (11)[b]
	Independence	Pain relief	Symptom relief	13 (33)[c]
	Independence	Symptom relief	Pain relief	13 (33)[c]
	Pain relief	Independence	Symptom relief	7 (18)[c]
	Pain relief	Symptom relief	Independence	5 (13)[c]
	Symptom relief	Independence	Pain relief	2 (5)[c]
Pain relief				26 (7)[b]
	Independence	Symptom relief	Staying alive	11 (42)[c]
	Symptom relief	Independence	Staying alive	7 (27)[c]
	Independence	Staying alive	Symptom relief	4 (15)[c]
	Symptom relief	Staying alive	Independence	3 (12)[c]
	Staying alive	Symptom relief	Independence	1 (4)[c]
Symptom relief				21 (6)[b]
	Independence	Pain relief	Staying alive	11 (52)[c]
	Staying alive	Independence	Pain relief	4 (19)[c]
	Independence	Staying alive	Pain relief	3 (14)[c]
	Pain relief	Independence	Staying alive	2 (10)[c]
	Pain relief	Staying alive	Independence	1 (5)[c]

[a] Percentages do not add up to 100% because of rounding.
[b] Percentage of total participants (N=357).
[c] Percentage of health outcome ranked first.

Fried TR et al. Arch Intern Med. 2011;171(20):1856-58.

Patient's Perspective on Pain

"It's simply unbearable. You try to focus on other things/activities but the pain is always there. I have days when I think it is no longer worth living. The medications only help a little and cause more problems and don't seem to provide real relief. I am frustrated beyond words by having to live with pain on a daily basis."

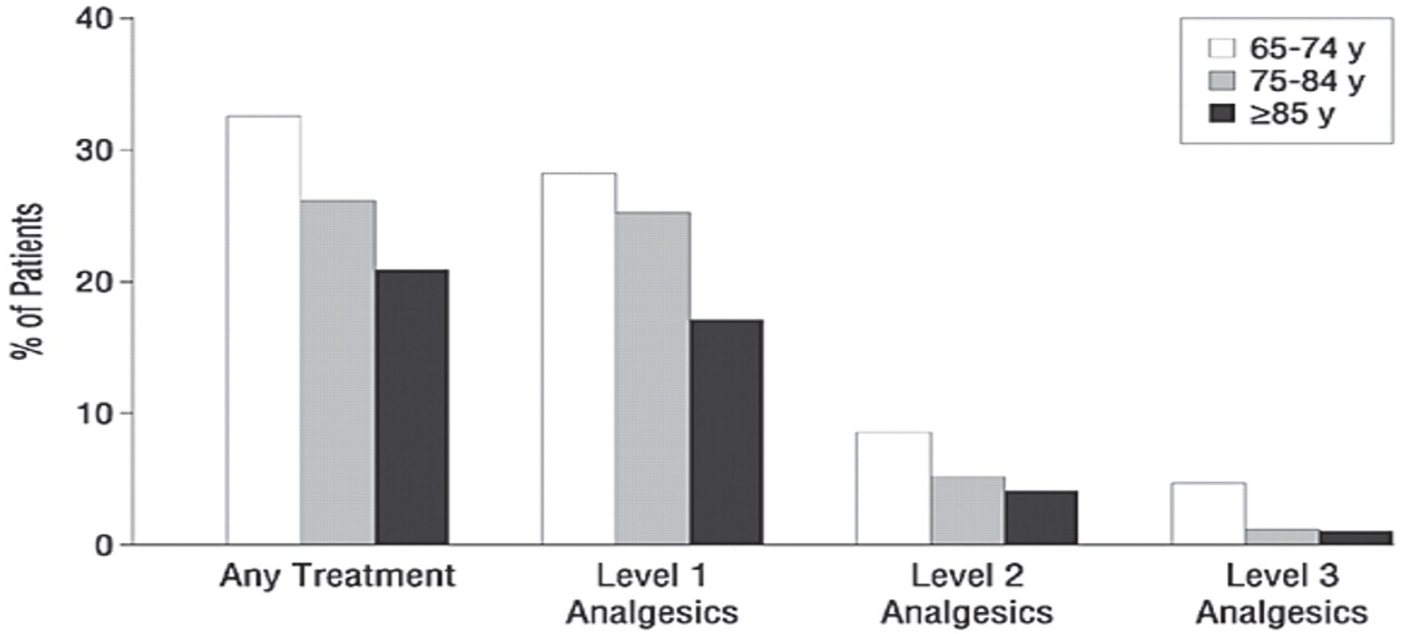
86 year old male with
postherpetic neuralgia

What Do We Know About Healthcare Providers' Responses to Pain?

- Routinely underassessed and undertreated
  - Most important risk factors: advancing age and minority status
  - Occurs in all health-care settings

Management in Frail Community-Dwelling Older Adults

- 1,341 adults (65+) receiving home care services
- Prevalence of daily pain = 41%



Landi et al. Arch Intern Med 2001;161:2721-24.

Efforts to Address the Problem

- Mandated assessments
- Guidelines

Mandated Pain Assessments

- VA (1999): Pain as 5th Vital Sign; 1st step in improving pain management process
- JCAHO (2000): Assess and document pain; educate staff, patients/families about pain; initiate quality improvement pain projects
- California law (2001): Requiring all health facilities to adopt pain as 5th vital sign & document assessments in medical record

Guidelines

	Year
American Geriatrics Society	1998
Agency for Healthcare Quality & Research	2000
American College of Rheumatology	2000
World Health Organization	2008
American Academy of Family Physicians	2009

Effectiveness of Existing Interventions?

- Mandated assessments over past decade
- Pain guidelines released
- Advocacy
  - Public awareness campaigns
  - Legislative initiatives

VA-Based Study

- Assessed adherence to pain management standards in primary care (2006-07)
  - 140 primary care patients with pain scores ≥4
- Employed quality indicators to assess pain care:

Presence (absence) of pain noted in record?	73%
Character of pain noted?	14%
Assessed degree of pain control?	24%
Intensified treatment or started new treatment?	15%

Zubkoff et al. J Gen Intern Med. Published Online March 14th, 2010.

Non-VA Based Study

- Assessed for change in pain management practices in New Jersey teaching hospital
- Medical record review (N=408); 72 hour period; 3 time points (2001, 2002, 2004)
- Number of numeric pain scores ↑ 77%
- Median no. pain assessments/pt ↑ 36%
- No change in pain scores
- No change opioid dose

Narasimhaswamy et al. J Gen Intern Med 2006;21:689-93.

Pain Management among Hospitalized Dementia Patients

- Examined pain management practices for older adults admitted with pain problem (e.g., hip fx) AND dementia diagnosis
- Mean # assessments/day recorded by RNs = 4 (vs. <1 for MDs)
- % on standing analgesic regimen: 15%
- % Discharged with pain score ≥6: 25%

Mehta, Reid, et al. Pain Medicine 2010;11:1516-24.

Are We Winning the "War on Pain?"

- Increase in pain assessments (mostly by nurses)
- No change in intensity or quality of pain management interventions or pain-relevant outcomes (function, pain scores)

Barriers to Improving Pain Care Quality

- Inadequate provider training
  - National Centers of Excellence in Pain Medicine (2012 NIH initiative)
- No accountability, whose job is it?
- Provider/patient/family beliefs & attitudes
- Symptom or disease?

Provider/Patient/Family Beliefs

- Provider level
  - Fear of causing harm
  - Subjectivity of pain
- Patient/Family level
  - Fear of experiencing harm from analgesic use
  - Stigma associated with opioid use
  - Family members fear harm from pain meds

Spitz and Reid. BMC Geriatrics 2011;11:35.

Is Chronic Pain a Symptom or Disease?

- Clinically viewed as symptom of underlying disease
  - Disease often difficult to discern
  - OK to treat pain as symptom in palliative/ hospice
  - Most MDs voice problems with treating pain as symptom in context of chronic disease management

Spitz and Reid. BMC Geriatr 2011;11:35.

Is Chronic Pain a Symptom or Disease?

- Nociceptive inputs can trigger increases in excitability of central nociceptive neurons (central sensitization)
  - Neural rewiring (or remodeling) on account of pain signals
  - Mediated by alterations in gene expression
  - Alterations can be permanent (nonstop pain memory)
- Functional brain imaging active area of research
- Future pain biomarkers?

Tracey and Bushnell J Pain 2009;10:1113-20.

Steps Needed to Improve Pain Care Quality in Later Life

1. Improve translation of existing interventions with established efficacy

2. Identify new targets for intervention

3. Develop new approaches to deliver pain care

4. Generate age-appropriate evidence base

- Treatment studies involving older adults with multi-morbidity & on multiple medications

Research Initiatives

TRIPLL

TRANSLATIONAL RESEARCH INSTITUTE ON PAIN IN LATER LIFE

National Institute on Aging Funded Center

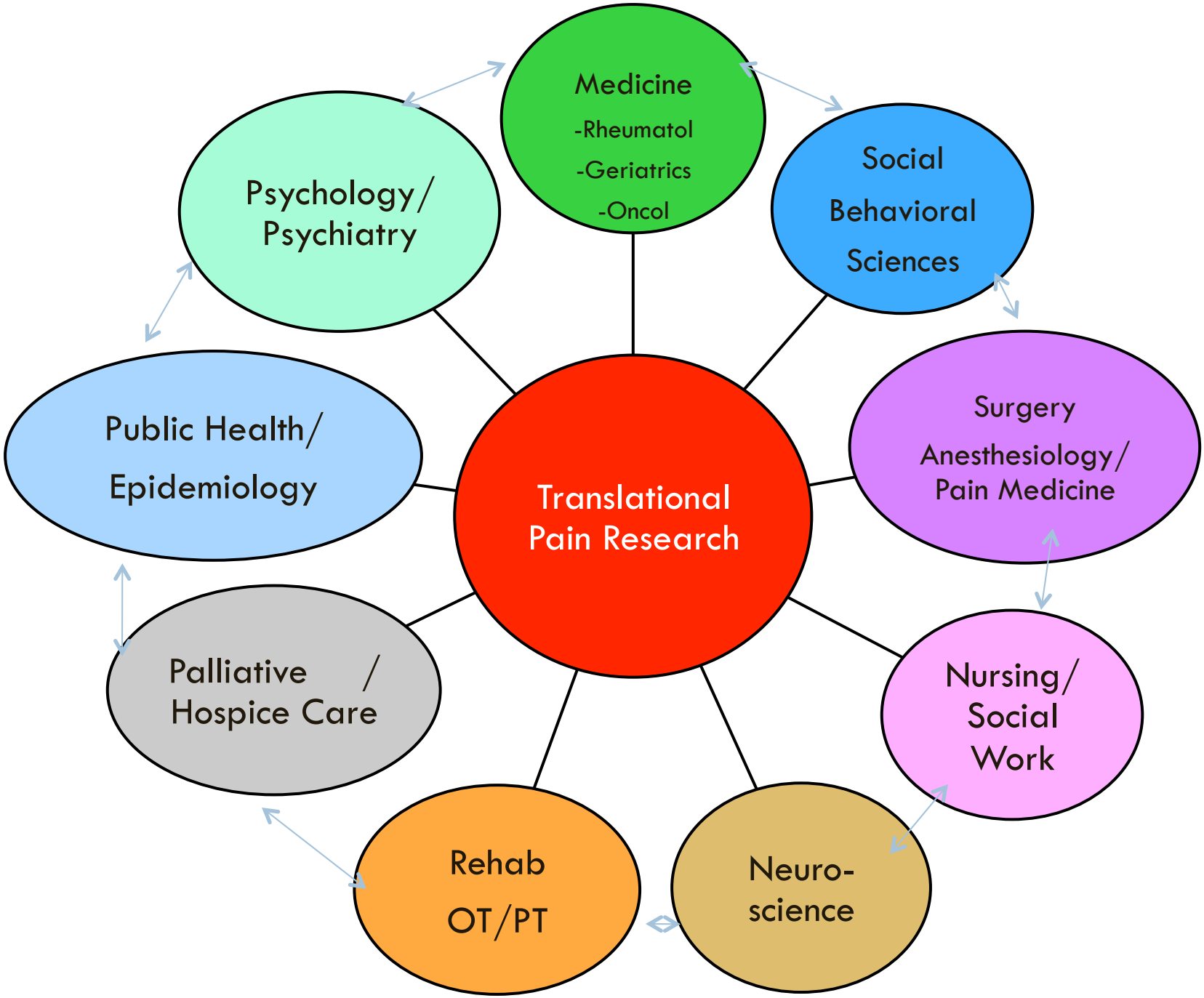
TRIPLL's Goals

- Support translation of medical, public health, behavioral, & rehabilitative research into treatments, programs, & policies that improve health & well being of older adults with pain

- Develop & maintain effective infrastructure for conducting translational research on aging & pain

TRIPLL Partners

- Weill Cornell Medical College
- Cornell University
- Hospital for Special Surgery
- Columbia University
- VNS of NYC & Center for Home Care Policy and Research
- New York City's (NYC) Council of Senior Centers and Services
- NYC Department for the Aging


Medicine
-Rheumatol
-Geriatrics
-Oncol
Psychology/
Psychiatry
Social
Behavioral
Sciences
Public Health/
Epidemiology
Translational
Pain Research
Surgery
Anesthesiology/
Pain Medicine
Palliative / Hospice Care
Nursing/
Social
Work
Rehab
OT/PT
Neuro-
science

Maintain Community-Based Research Infrastructure

- Council of Senior Centers & Services: Coordinates activities of 265 member NYC elder service agencies, collectively provide services to over 300,000 older NYC residents
- Visiting Nurse Service of New York: Largest provider of home care services in country, average daily patient census ≅ 30,000
- New York Association of Homes/Services for the Aging and New York State Health Facilities Association: Manage care delivered in 95% of New York City's 180 nursing homes

Failure to Translate Effective Treatments into Practice

- Exercise programs have established efficacy for chronic back pain, osteoarthritis, but are not widely disseminated
- Cognitive-behavioral programs have established efficacy for diverse chronic pain disorders; lack of persons skilled in delivering intervention constitutes major barrier
- Self-management pain programs (Arthritis Self-Help Program) evidence-based, but few older adults have taken course

[1]Hayden et al. Ann Intern Med 2005;142:776-85. [2]Morley et al. Pain 1999;80:1-13.
[3]Lunde et al. J Clin Psychol Med Settings 2009;16:254-62

Translating Effective Treatments into Practice

- TRIPLL investigators translated cognitive-behavioral + exercise self-management program for use by seniors with back pain
  - Implemented in NYC senior centers
- Associated with clinically and statistically meaningful reductions in
  - Perceived disability due to pain
  - Pain scores
  - Self-efficacy to manage pain

Beissner, Reid et al. J Aging Phys Activity 2012;20:246-65.

Translating Effective Treatments into Practice

- Recognizing dearth of providers trained to deliver CBT self-management techniques (e.g., relaxation, visualization, deep breathing, goal setting)
  - Successfully translated 6-session CBET protocol to be delivered by physical therapists (PTs)
- Ongoing AHRQ funded RCT
  - Trained half (≈200) of all PTs practicing in VNSNY
  - Enrolling 600 home care patients with activity-limiting pain (half randomized to care delivered by PTs trained in protocol)
  - Outcomes: Pain, perceived disability due to pain, physical function, & QOL

Beissner, Bach, Reid et al. J Geriatr Phys Ther. 2012 Sep 12. [Epub ahead of print]

Translating Effective Treatments into Practice

- Translated Arthritis Self-Help Program (ASHP) for optimal use by minority communities in NYC
  - Rationale: Fewer than 2% of US adults have participated in program
  - Minority status risk factor for pain under-treatment
- Adapted ASHP after getting extensive feedback from ASHP participants
  - Modifications included adding exercise component, more information on traditional pain remedies, education on diet, dealing with difficult emotions

Parker, Reid et al. Fam Comm Health 2012;35:236-245.

Translating Effective Treatments into Practice

- Conducted comparative effectiveness study of adapted (vs. original) ASHP protocol to determine
  - (1) adapted ASHP improved participant attendance and adherence and (2) beneficial outcomes of standard ASHP were maintained in adapted program
  - Drop-out rates range from 10-50% in standard program (average 25%)
- Enrolled individuals attending NYC senior centers (N=201) stratified by race/ethnicity: African American, Hispanic, & non-Hispanic whites; (mean age = 73)

Reid et al. 2013 (under review)

Translating Effective Treatments into Practice

- Adapted program had better attendance (4.7 vs 3.2, $p < 0.01$) vs. standard program
- Adapted program associated with fewer drop outs (7% vs. 26%, $p < 0.001$)
- Affect and perceived disability due to pain scores improved in adapted vs. original program ($p < 0.05$)
  - All other outcomes equivalent
  - Positive effects found in all 3 race/ethnicity groups

Reid et al. 2013 (under review)

Translating Effective Treatments into Practice

- Working with NYC community partners using train-the-trainer model to build capacity to disseminate adapted ASHP
- Undergoing discussions with Brookdale Senior Living to disseminate program in CCRCs

New Targets for Intervention: Pharmacologic

- Historical focus: Activating opiate receptors and inhibiting prostaglandin synthesis
  - Side-effect profiles continue to limit use
- Analgesics remain mostly widely prescribed therapy by MDs; and most commonly endorsed treatment by older patients
- New targets:
  - Sodium and calcium channel blockers
  - Glutaminergic channel modulators
  - Nicotinic acetylcholine receptors
  - Cannabinoids
  - Monoclonals targeting nerve growth factor
  - Gene therapies stimulating enkephalin synthesis

New Targets for Intervention: Nonpharmacologic

- Pain beliefs?
  - High prevalence of specific beliefs that likely negatively impact on pain Rx engagement/adherence[1]
    - Pain is accepted part of aging (type of ageism)
    - Once you get pain it will only get worse
    - Exercise hastens disease progression
- Work planned to quantify prevalence of beliefs in primary care based population of older adults and examine associations between level of belief endorsement and willingness to engage/adhere with pain treatments

[1]Thielke, Sale & Reid J Fam Pract 2012;61:666-670.

Develop New Methods of Delivering Pain Care

- mHealth: Use of mobile communication devices (smart phones tables) to assist in healthcare delivery
- Rapidly evolving field in multiple areas
- Offers promising approach to improve pain care
  - Surveillance (side effects)
  - Deliver nondrug treatments
  - Improve medication adherence
  - Enhance communication
  - Socialization
-

Richardson and Reid 2013 Pain Med (provisional acceptance)

Develop New Methods of Delivering Pain Care

- Older adults with chronic pain willing to try mHealth (smart phones, tablets)[1]
  - Barriers: cost, lack of familiarity with technology
  - Facilitators: Training prior to device use and tailoring devices designed to meet functional needs of older adults
- Primary care physicians willing to use them:[2]
  - Barriers: Reimbursement, liability issues, processing of mHealth generated data
  - Facilitators: someone else to synthesize the data; data that can be incorporated into HER easily

[1]Parker, Richardson & Reid. BMC Geriatr 2013 May 6;13(1):43. [2]Levine & Reid. Eur J Pain (under review)

Develop New Methods of Delivering Pain Care

- In partnership with pharmaceutical company, investigators from Cornell (Dept. Communication) and Weill (Geriatrics) work set to begin shortly to:
  - Identify core outcomes (e.g., activity level, pain scores, affect) and ways of optimally presenting data to older adults with chronic pain
  - Establish strategies regarding how best to provide self-management education to older adults with chronic pain via smart phones/tablets
  - Determine clinicians' preferred approaches for receiving pain data generated mHealth devices

Generating An Evidence Base

- Too few studies include older adults with chronic pain
- "Comparative Effectiveness of Interventions in Chronic Pain Management"
  - PI: Dr. Charles Inturrisi in Dept. Pharmacology
- Project creating data base to examine long-term outcomes of cancer and non-cancer related pain treatments
- Patients drawn from outpatient pain clinic practices at Weill Cornell, Hospital for Special Surgery, and Memorial Sloan Kettering Cancer Center

Pain Registry Data Elements

- **Process Factors (Treatments)**
  - Medications-current and past
  - All other interventions (procedures, CAM, CBT, PT)
- **Patient Factors**
  - Diagnostic codes
  - Demographics
  - Medical, surgical, and social histories
  - Comprehensive Severity Index (CSI®) to stratify patients by severity of illness
- Many of Process and Patient Factors captured directly from Electronic Medical Record
- 2,000 patients in registry, age range 20-90; 40% are 65 or older

Outcomes

- Standardized and validated self-report outcome surveys administered prior to each patient visit:
  - Measures of pain and its interference with daily functions (Brief Pain Inventory, PBI)
  - Treatment related adverse effects (Condensed Memorial Symptom Assessment Schedule)
  - General Health Status (EQ-5D) and Aberrant drug behaviors (Opioid Research Tool (ORT)
  - Costs

Goals and Anticipated Outcomes

- Evaluate real-world chronic pain patients longitudinally to determine:
  - Benefits and harms (effectiveness) of drug treatments
  - Why patients stop certain drug treatments
  - Whether replacement treatment improves outcomes
- Identify patient characteristics associated with better treatment outcomes from individual drug (or possibly drug & nondrug) treatments
- Excellent opportunity to begin to fill knowledge gaps in treatment of later life pain

Summary

- Chronic pain continues to be significant problem for too many individuals in later life; remains major cause of disability and suffering
- Areas likely to pay dividends:
  - Translate existing evidence-based protocols for optimal use by older adults
  - Develop new drug and nondrug treatments
  - Develop new approaches for treatment delivery monitoring approaches (e.g., mHealth, telemedicine tools)
  - Generate age-appropriate evidence base

What Will Success Look Like?

Questions & Answers