Multidiscplinary Pain Management in Complex Older Adults

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Conflict of Interest Disclosure

- No Conflict of Interest

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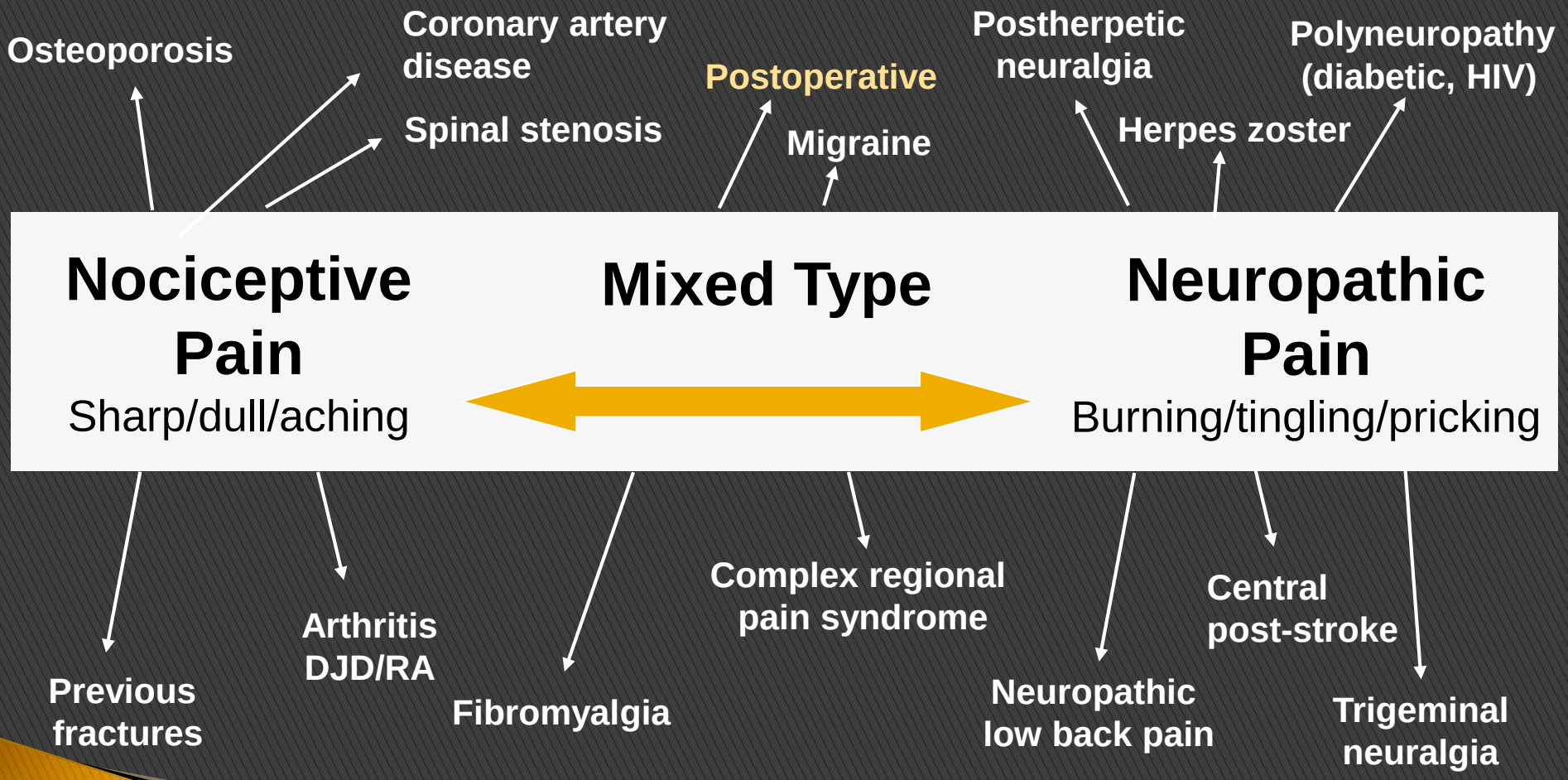
  - National Institutes for Health
    - National Center for Complementary and Integrative Health (NCCIH)
    - National Institute of Nursing Research (NINR)
    - National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
  - American Pain Society
  - Pfizer

Challenges to Pain Management in Complex Older Adults

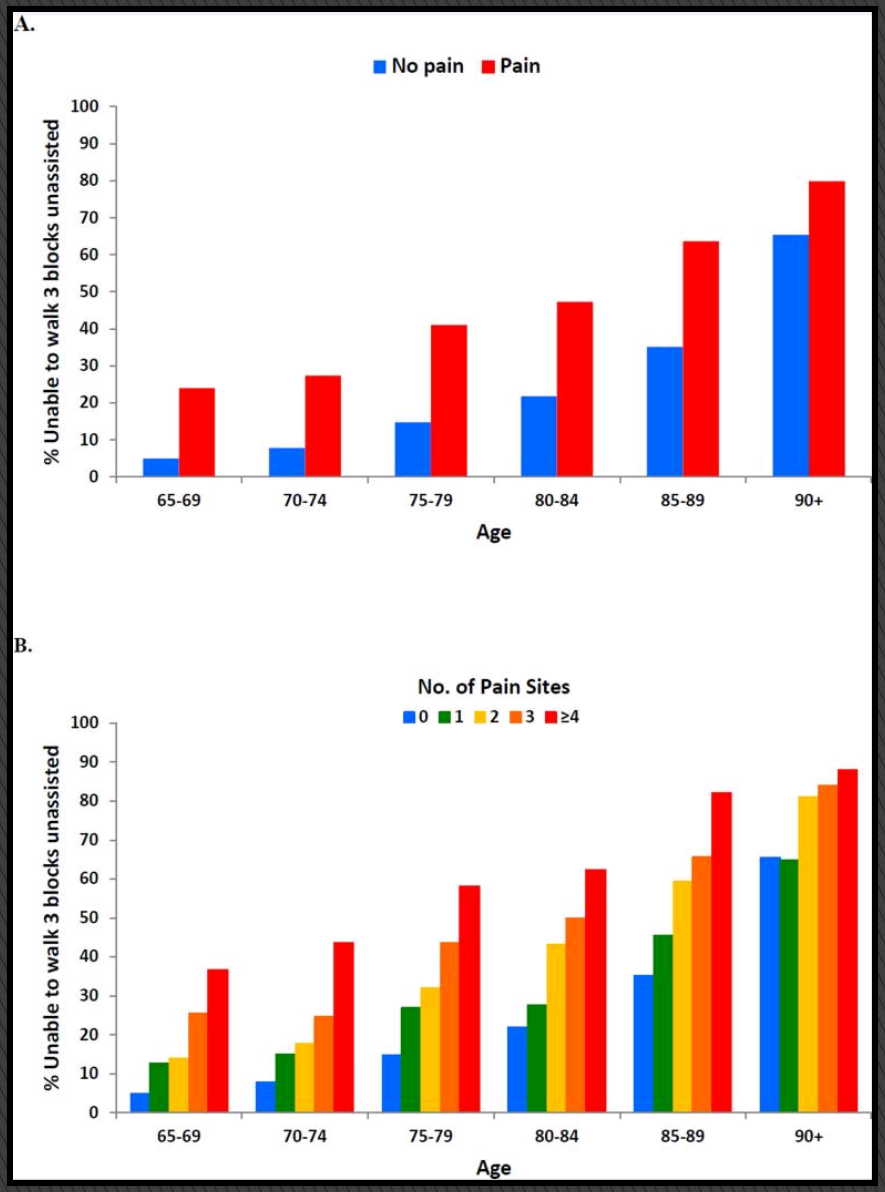
- Physiological
  - Pharmacokinetic Changes/Polypharmacy
  - Co-morbidities
  - Physical Frailty/Inactivity
  - Cognitive Deficits/Dementia
- Psychological
  - Attitudes to Pain/Fear
  - Catastrophizing/Anxiety
  - Depression/Hopelessness/Pessimism
- Health Care Systems
  - Access/Cost

Common Pain Conditions in Older Adults

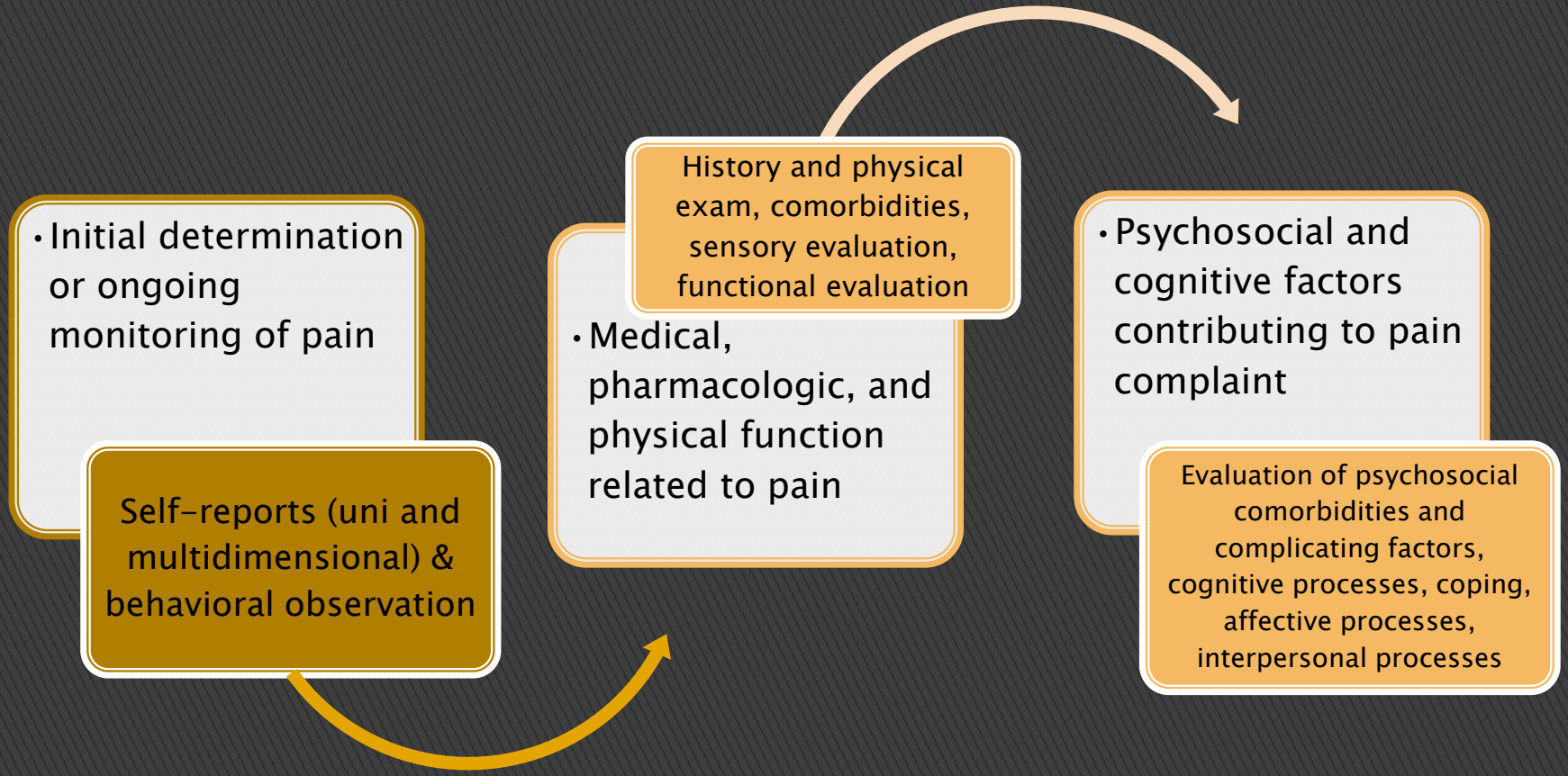


American Geriatrics Society (AGS) Panel on Persistent Pain in Older Persons. 2002 *J Am Geriatr Soc*.

- In-person interviews national sample 7601 adults > 65 yrs
- Bothersome pain in last month = 52.9%
  - No change across age group accounting for cognitive performance, dementia, proxy report, residential care status
  - Highest in women, obese, musculoskeletal conditions, depression
- 74.9% multiple sites of pain
- Associated with decreased physical function


A.
No pain
Pain
% Unable to walk 3 blocks unassisted
100
90
80
70
60
50
40
30
20
10
0
65-69
70-74
75-79
80-84
85-89
90+
Age
B.
No. of Pain Sites
0
1
2
3
≥4
% Unable to walk 3 blocks unassisted
100
90
80
70
60
50
40
30
20
10
0
65-69
70-74
75-79
80-84
85-89
90+
Age

Domains of Comprehensive Pain Assessment in Older Adults



Hadjistavropoulos et al., 2007. Interdisciplinary expert consensus statement on assessment of pain in older persons. Clin J Pain, 23(1):S5

Pain Treatment in Elders with Dementia

- Phone interviewed 203 Veterans with dementia and pain + reviewed medical records to score 15 quality indicators of pain assessment & management

Table 2. Degree of pain documented in the medical chart closest to baseline assessment (n = 203)

Pain level	%
Little to no pain (0)	63.6
Mild pain (NRS 1–3; VDS 1–2; faces 1–2)	14.3
Moderate pain (NRS 4–7; VDS 3; faces 3)	17.2
Severe pain (NRS 8–10; VDS 4–6; faces 4–6)	4.9

NRS = Numerical Rating Scale; VDS = Verbal Descriptor Scale.

Li et al (2015). *Dement Geriatr Cogn Disord*

Pain Treatment in Elders with Dementia

Table 3. Strength of current pain medication (n = 203)

Medication type	%	Total, %
NSAID/acetaminophen, PRN	30.0	
NSAID/acetaminophen, scheduled	2.5	32.5
Weak opioid, PRN	13.8	
Weak opioid, scheduled	3.0	16.8
Strong opioid, PRN	0.5	
Strong opioid, scheduled	1.0	1.5
Other	8.9	
No pain medication prescribed or reported	40.3	

PRN = As needed.

Table 2. Degree of pain documented in the medical chart closest to baseline assessment (n = 203)

Pain level	%
Little to no pain (0)	63.6
Mild pain (NRS 1–3; VDS 1–2; faces 1–2)	14.3
Moderate pain (NRS 4–7; VDS 3; faces 3)	17.2
Severe pain (NRS 8–10; VDS 4–6; faces 4–6)	4.9

NRS = Numerical Rating Scale; VDS = Verbal Descriptor Scale.

Li et al (2015). *Dement Geriatr Cogn Disord*

Pain Treatment in Elders with Dementia

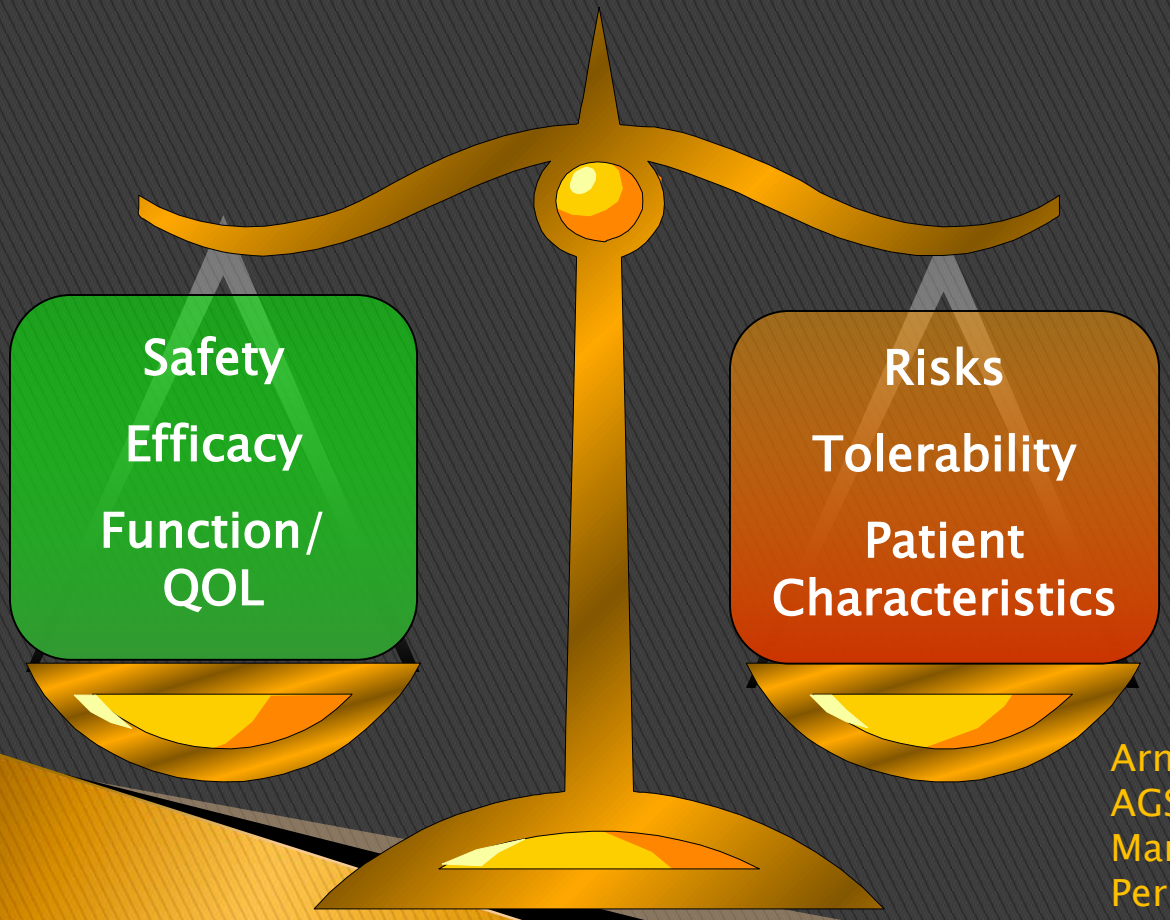
Table 5. ACOVE quality indicators for osteoarthritis and Minimum Data Set quality indicators for pain (modified by Cadogan et al. [21])

Quality indicators	n	Passed, %
If an elder has pain or is diagnosed with chronic pain, then s/he should be evaluated for depression by a primary care physician within 1 month	91	35.2
If an elder is screened for pain, then a quantitative pain assessment using a standard pain scale should be used (with its use not precluded but modified for cognitive impairment)	203	94.1
If a patient has cognitive impairment, pain scales should be appropriately modified (e.g. measure behavioral characteristics)	203	2.0
If oral pharmacologic therapy is initiated to treat symptomatic osteoarthritis, then acetaminophen should be the first drug used	64	76.6
If oral pharmacologic therapy for symptomatic osteoarthritis is changed from acetaminophen to a different agent, then there should be evidence that the elder has had a trial of maximum dose acetaminophen	35	37.1

Li et al (2015). *Dement Geriatr Cogn Disord*

Treatment Considerations for Persistent Pain in Older Adults

Goal: Optimal Pain Relief



*Interdisciplinary

*Quality assessments

*Optimize nondrug approaches

*Balance risk/benefits and optimize use of tx

*Minimize ADR/misuse/abuse

*Monitor & document outcomes

Arnstein & Herr, *J Geron Nsg*, 2013
AGS Panel on the Pharmacological Management of Persistent Pain in Older Persons. *JAGS,* 2009
Bruckenthal P, et al. *Pain Medicine.* 2009

Postop Resting Pain

Preop Variables	n	Mild Pain (vs. None)			Moderate/Severe Pain (vs. None)		
		Odds Ratio	95% CI	p-value	Odds Ratio	95% CI	p-value
Age (ref: +5 years)	215	0.86	0.72, 1.03	0.102	0.80	0.68, 0.94	**0.008**
BMI	208	1.49-2.20	0.33,9.48	0.29-0.58	0.85-1.92	0.21, 6.70	0.31-0.81
Sex (Female/Male)	215	0.86	0.43, 1.71	0.660	0.77	0.41, 1.45	0.418
Education (College-HS)	195	0.51	0.20, 1.32	0.165	2.01	0.92, 4.41	**0.082**
Marital Status	199	1.77	0.85, 3.68	0.126	1.93	0.99, 3.75	**0.054**
OA grade (2-3/4)	195	1.70	0.77, 3.74	0.190	1.79	0.86, 3.70	0.119
Pain duration (+36mos)	190	1.01	0.89, 1.14	0.914	1.03	0.92, 1.16	0.573
Depression	199	1.34	0.42, 4.19	0.633	3.55	1.38, 9.14	**0.009**
Anxiety	199	1.02	0.98, 1.06	0.478	1.05	1.01, 1.09	**0.006**
Pain Catastrophizing	198	1.02	0.99, 1.06	0.207	1.03	0.99, 1.06	**0.093**
Movement Pain (ROM)	215	1.03	0.96, 1.11	0.387	1.11	1.04, 1.17	**0.001**
Resting Pain	215	1.03	0.92, 1.16	0.578	1.28	1.16, 1.42	**<0.0001**
Von Frey Pain Intensity	211	1.07	0.92, 1.24	0.390	1.16	1.02, 1.32	**0.023**
Heat Pain Threshold	182	1.03	0.91, 1.16	0.656	0.92	0.83, 1.03	0.145
Pressure Pain Threshold	215	1.02	0.82, 1.27	0.853	0.84	0.67, 1.05	0.117
Opioid Intake	207	1.00	0.95, 1.05	0.952	0.97	0.93, 1.02	0.230
Non-opioid intake	211	0.54	0.14, 2.11	0..375	0.91	0.64, 1.30	0.602

Rakel et al (2012). *Pain*

Postop Resting Pain

Predictors - Logistic Regression

Preop Variable	Mild Pain (vs. None)			Moderate/Severe Pain (vs. None)		
	Odds Ratio	95% CI	p-value	Odds Ratio	95% CI	p-value
Resting pain (ref: none)						
Mild Pain	1.06	0.48, 2.34	0.882	2.86	1.29, 6.35	0.010
Moderate/Severe Pain	0.98	0.25, 3.79	0.974	**9.31**	3.19, 27.2	<.0001
Depression	1.32	0.41, 4.22	0.639	**2.87**	1.04, 7.97	0.042
Age (ref: + 5 yrs)	0.87	0.72, 1.06	0.162	0.86	0.71, 1.03	0.106

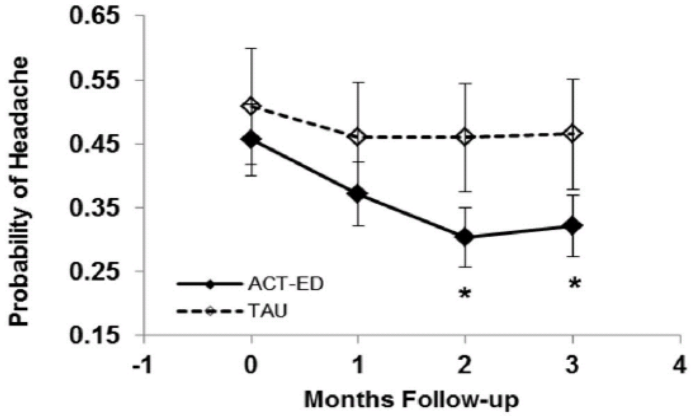
Rakel et al (2012). *Pain*

Acceptance and Commitment Therapy (ACT) for Migraine Pain

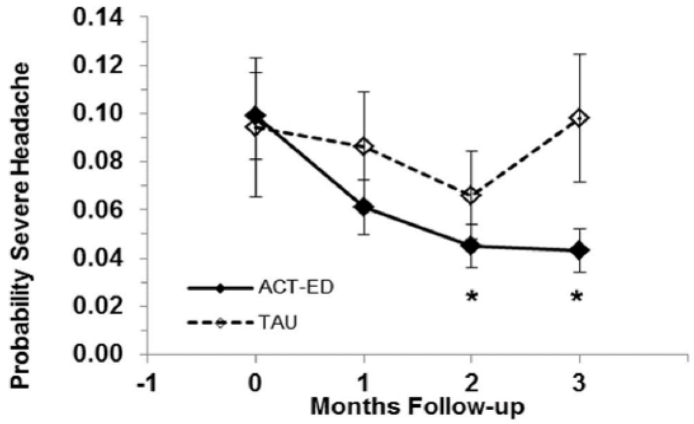
- Migraine with depression
- Focus on managing psychological triggers, such as stress and depression
- 1-day behavioral intervention (ACT plus Education), aimed at enhancing psychological flexibility and improving headache outcomes
- N=60 randomized to ACT+Ed or TAU

Dindo et al, 2014, *Headache*

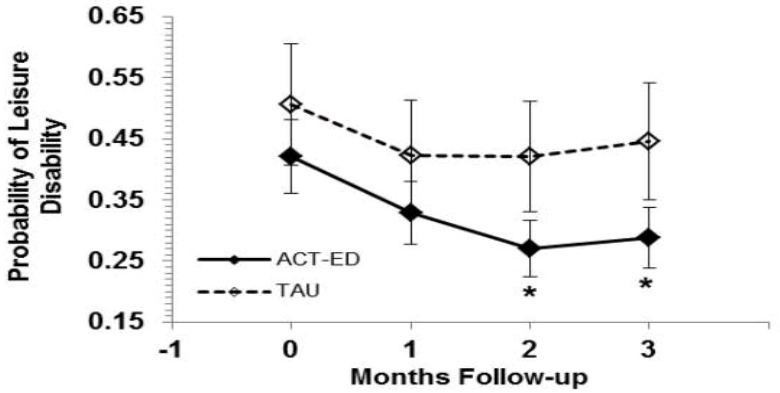
a.


Probability of Headache
0.65
0.55
0.45
0.35
0.25
0.15
-1
0
1
2
3
4
Months Follow-up
ACT-ED
TAU
*
*

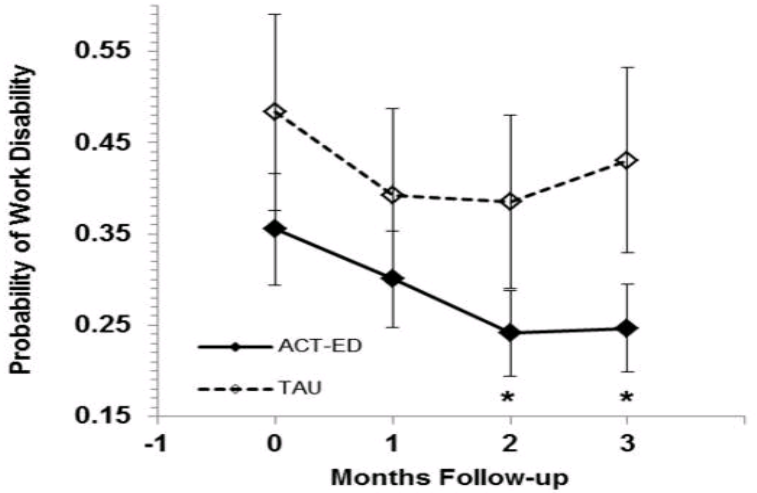
b.


Probability Severe Headache
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-1
0
1
2
3
Months Follow-up
ACT-ED
TAU
*
*

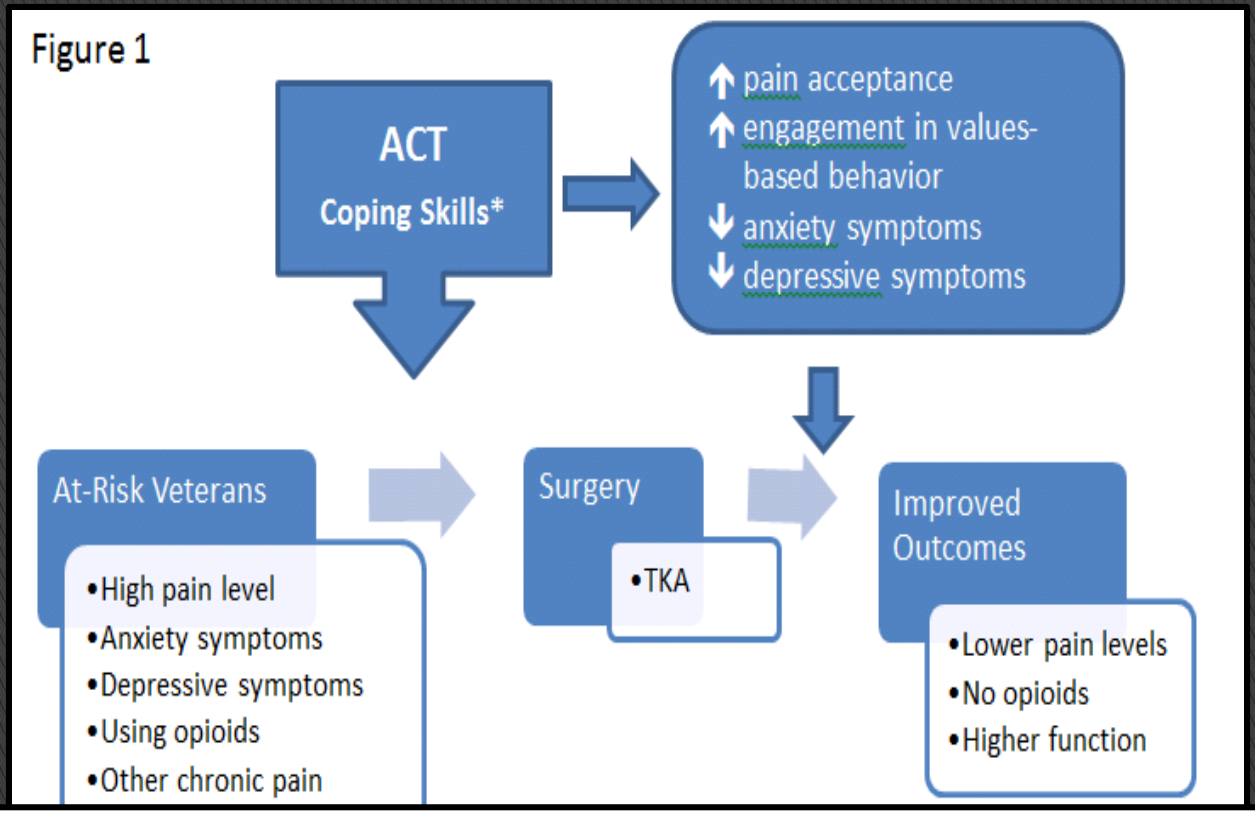
a.


Probability of Leisure Disability
0.65
0.55
0.45
0.35
0.25
0.15
-1
0
1
2
3
Months Follow-up
ACT-ED
TAU
*
*

b.


Probability of Work Disability
0.55
0.45
0.35
0.25
0.15
-1
0
1
2
3
Months Follow-up
ACT-ED
TAU
*
*

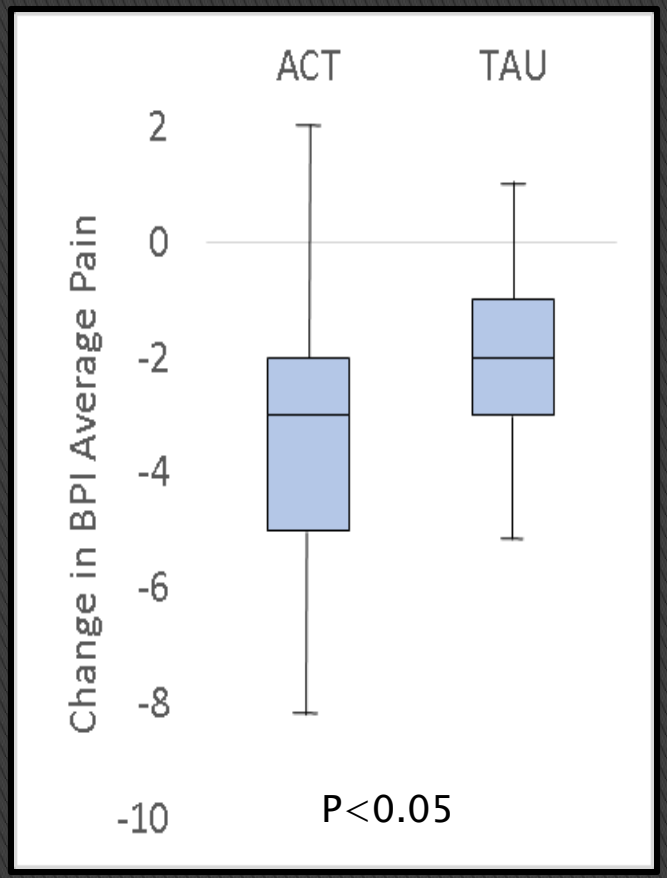
Acceptance and Commitment Therapy (ACT) Before Total Knee Arthoplasty

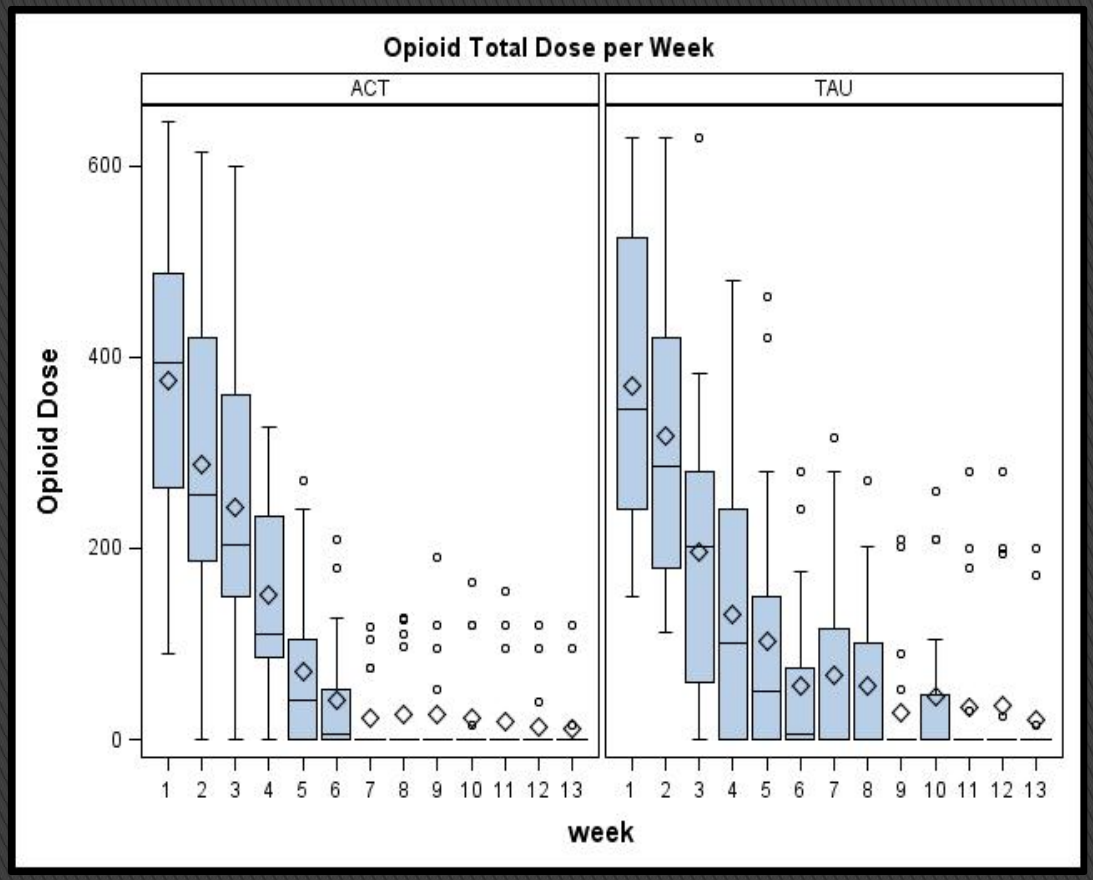


Hazard ratio Opioid cessation:

change in CPVI-Mean Success (per +0.5): 1.30 (95% CI: 1.06, 1.60) p=0.011

change in CPVI-Discrep (per +0.5): 0.78 (95% CI: 0.62, 0.99) p=0.039


ACT
TAU
Change in BPI Average Pain
2
0
-2
-4
-6
-8
-10
P<0.05


Opioid Total Dose per Week
ACT
TAU
Opioid Dose
600
400
200
0
1 2 3 4 5 6 7 8 9 10 11 12 13
week

Exercise

- Walking programs
  - chronic musculoskeletal pain
  - low back pain
  - knee osteoarthritis pain
- Aquatic exercise
  - mixed chronic pain diagnoses
- Other types of exercise (strengthening/resistance, stretching)
  - non-specific low back pain
  - knee osteoarthritis
- Type of exercise is not as important as participation in regular exercise program
- At least 3 sessions/week of moderate activity produces analgesia

Table 4. Self-reported pain: standardized mean difference (SMD) and 95% confidence intervals (95% CI).

Study	Exercise (n)	Control (n)	Favours Exercise / Favours Control	SMD (95% CI)
Bautch, 1997	15	15		-1.20 (-0.41, -1.98)
Deyle, 2000	33	36		-0.93 (-0.43, -1.43)
Ettinger (A), 1997	144	75		-0.53 (-0.24, -0.81)
Ettinger (R), 1997	146	75		-0.36 (-0.08, -0.64)
Fransen, 2001	83	43		-0.62 (-0.24, -0.99)
Hopman-Rock, 2000	45	37		-0.20 (0.23, -0.64)
Kovar, 1992	47	45		-0.59 (-0.17, -1.01)
Maurer, 1999	49	49		-0.19 (0.21, -0.58)
Minor, 1989	49	19		-0.27 (0.27, -0.80)
O'Reilly, 1999	108	72		-0.32 (-0.02, -0.62)
Peloquin, 1999	59	65		-0.40 (-0.04, -0.76)
Rogind, 1998	11	12		-0.50 (0.33, -1.34)
Schilke, 1996	10	10		-1.06 (-0.11, -2.01)
Van Baar, 1998	54	59		-0.55 (-0.17, -0.92)
Overall	853	612		-0.46 (-0.35, -0.57)

-1 -.5 0 .5 1

Fransen et al, 2002

Exercise + Cognitive Therapy

- Non-specific chronic neck pain
- Multimodal exercises with psychologist-lead cognitive-behavioural therapy sessions versus general physiotherapy
- Once a week for ten weeks (both groups)

Table 3. Changes over time within and between groups ($n = 170$).

	Group	Pretraining[a]	Posttraining[a]	Follow-up[a]	Time effect[b]	Group effect[b]	Interaction effect[b]
Primary outcome							
Neck Disability Index (0–100)	Multidisciplinary	41.9 (40.7; 43.2)	24.3.(22.4; 26.2)	21.7 (19.7; 23.6)	<0.001	<0.001	<0.001
	General exercise	41.1 (39.8; 42.3)	36.7 (34.8; 38.6)	37.3 (35.4; 39.3)			
Secondary outcomes							
Tampa Scale for Kinesiophobia (13–52)	Multidisciplinary	28.0 (26.2; 29.7)	18.2 (16.6; 19.8)	16.8 (15.3; 18.2)	<0.001	<0.001	<0.001
	General exercise	28.2 (26.5; 30.0)	28.3 (26.7; 29.8)	29.1 (27.7; 30.6)			
Pain Catastrophizing Scale (0–52)	Multidisciplinary	20.4 (19.0; 21.9)	13.4 (12.9; 14.8)	12.2 (10.9; 13.5)	<0.001	<0.001	<0.001
	General exercise	20.8 (19.4; 22.2)	20.2 (18.8; 21.6)	21.2 (19.9; 22.5)			
Numerical Rating Scale (0–10)	Multidisciplinary	6.0 (5.7; 6.2)	2.1 (1.8; 2.3)	2.1 (1.8; 2.3)	<0.001	<0.001	<0.001
	General exercise	6.1 (5.9; 6.3)	5.3 (5.1; 5.6)	5.6 (5.3; 5.8)			

[a]Estimated marginal means (95% CI).
[b]*P*-value (linear mixed model).

Monticone et al (2017), *Clinical Rehab*

Exercise + Cognitive Therapy

Table 4. Changes over time within and between groups in terms of Short-Form Health Survey ($n = 170$).

	Group	Pretraining[a]	Posttraining[a]	Follow-up[a]	Time effect[b]	Group effect[b]	Interaction effect[b]
Physical function (0–100)	Multidisciplinary	49.4 (47.1; 51.7)	80.1 (77.5; 82.7)	86.4 (83.7; 89.0)	<0.001	<0.001	<0.001
	General exercise	51.1 (48.8; 53.4)	62.0 (59.4; 64.6)	64.5 (61.9; 67.2)			
Physical role (0–100)	Multidisciplinary	41.2 (37.8; 44.6)	80.1 (76.1; 84.1)	87.5 (83.7; 91.3)	<0.001	<0.001	<0.001
	General exercise	44.1 (40.7; 47.5)	63.3 (59.3; 67.4)	65.1 (61.3; 68.9)			
Bodily pain (0–100)	Multidisciplinary	45.6 (42.3; 48.9)	71.6 (68.6; 74.7)	77.6 (74.4; 80.7)	<0.001	<0.001	<0.001
	General exercise	46.7 (43.4; 50.0)	56.4 (53.4; 59.5)	54.8 (51.6; 58.0)			
General health (0–100)	Multidisciplinary	39.2 (36.2; 42.2)	72.9 (70.2; 75.6)	78.2 (74.8; 81.5)	<0.001	<0.001	<0.001
	General exercise	38.8 (35.8; 41.8)	57.8 (55.1; 60.5)	59.1 (55.7; 62.4)			
Vitality (0–100)	Multidisciplinary	54.7 (51.5; 57.9)	78.8 (76.2; 81.4)	80.9 (78.0; 83.8)	<0.001	<0.001	<0.001
	General exercise	55.0 (51.8; 58.2)	63.5 (60.9; 66.1)	62.3 (59.3; 65.2)			
Social function (0–100)	Multidisciplinary	55.4 (52.8; 58.0)	79.6 (76.8; 82.3)	83.2 (80.6; 85.9)	<0.001	<0.001	<0.001
	General exercise	55.4 (52.8; 58.0)	64.6 (61.8; 67.4)	63.3 (60.7; 66.0)			
Emotional role (0–100)	Multidisciplinary	46.3 (42.9; 49.7)	80.9 (76.6; 85.1)	82.8 (78.7; 86.8)	<0.001	<0.001	<0.001
	General exercise	43.9 (40.5; 47.3)	59.0 (54.7; 63.4)	53.4 (49.4; 57.5)			
Mental health (0–100)	Multidisciplinary	51.3 (48.8; 53.9)	84.8 (82.5; 87.2)	88.2 (85.7; 90.7)	<0.001	<0.001	<0.001
	General exercise	52.0 (49.4; 54.5)	62.7 (60.3; 65.1)	67.9 (65.4; 70.4)			

Monticone et al (2017), *Clinical Rehab*

Exercise + Cognitive Therapy

Clinical message

- A group-based multidisciplinary rehabilitation programme consisting of multimodal exercises integrated with cognitive-behavioural therapy was superior to group-based general physiotherapy in improving disability, pain and quality of life of subjects with chronic neck pain.
- These effects were maintained for at least 12 months.

Transcutaneous Electrical Nerve Stimulation (TENS)

- Mixed evidence – likely due to:
  - Inadequate dosing
  - Continuous use
  - Outcome measurement
- Optimal dosing/parameters are critical
  - High amplitude (strong but comfortable)
  - High frequency if on opioids
  - Preventing tolerance to TENS
    - Intermittent use
    - Increasing dose (amplitude)
    - Modulated frequency
- Movement pain

Sluka et al, 2013, *Physical Therapy*
Vance et al, 2014, *Pain Manag.*

Chronic Pain Treatment Practices in U.S. Outpatient Settings

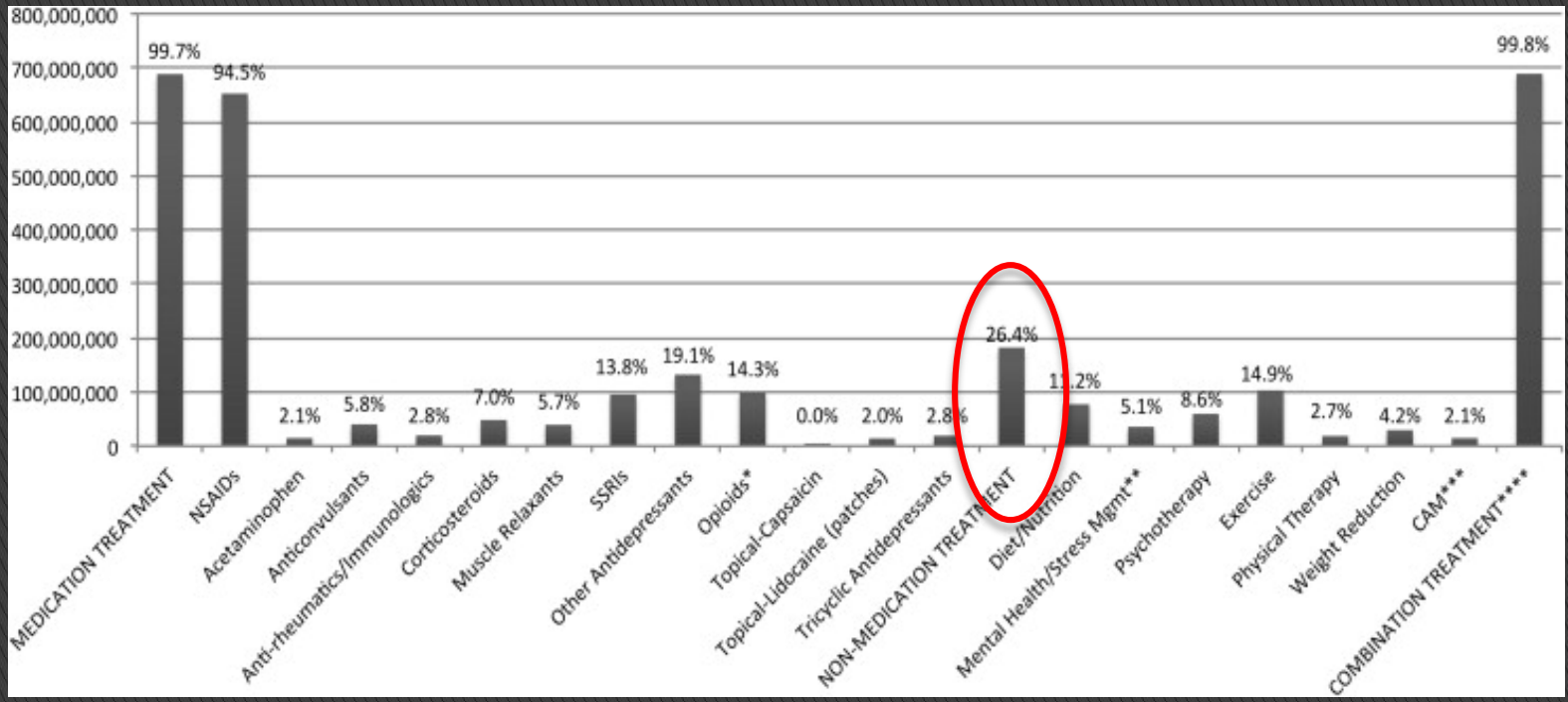
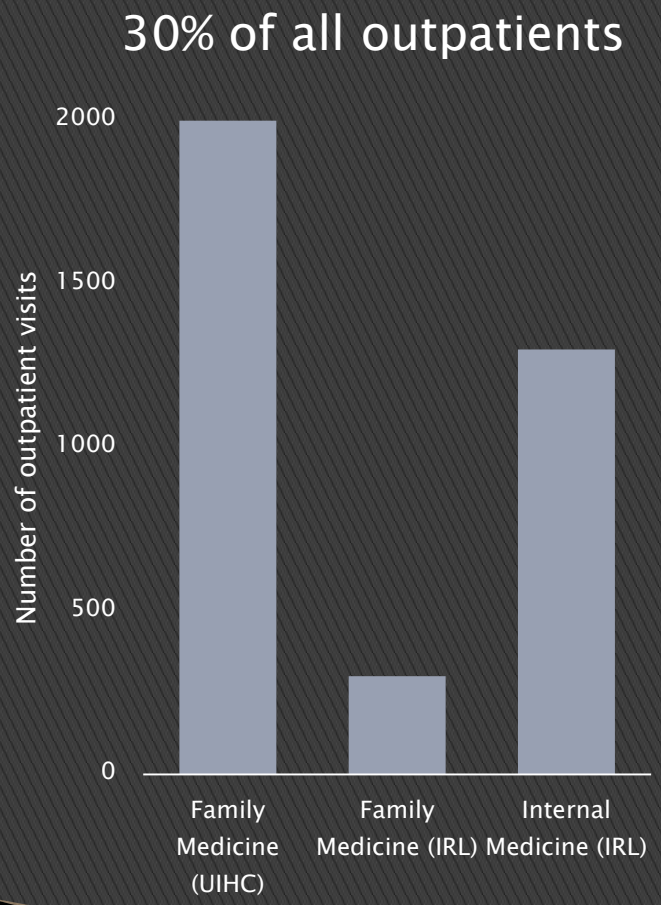


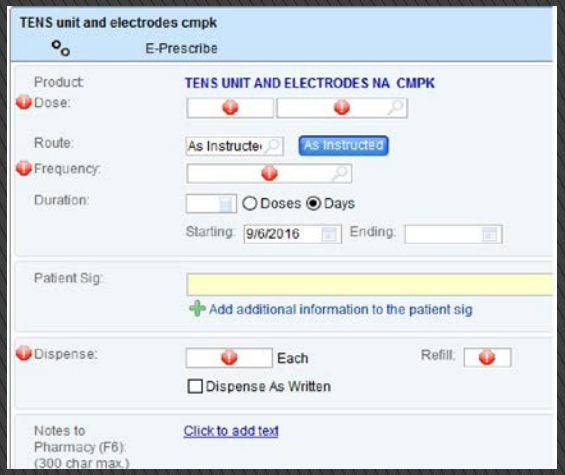
Figure 1. National treatment overview for chronic pain visits 2000–2007. Y axis represents patient visits; X axis represents type of chronic pain management. *Opioids include opioids, combination opioid-analgesics (includes tramadol); **Includes stress management, depression screening, other mental health counseling, mental health provider seen; ***Complementary alternative medicine; ****Medication or nonmedication Rx.

Rasu et al, 2013, *J of Pain*

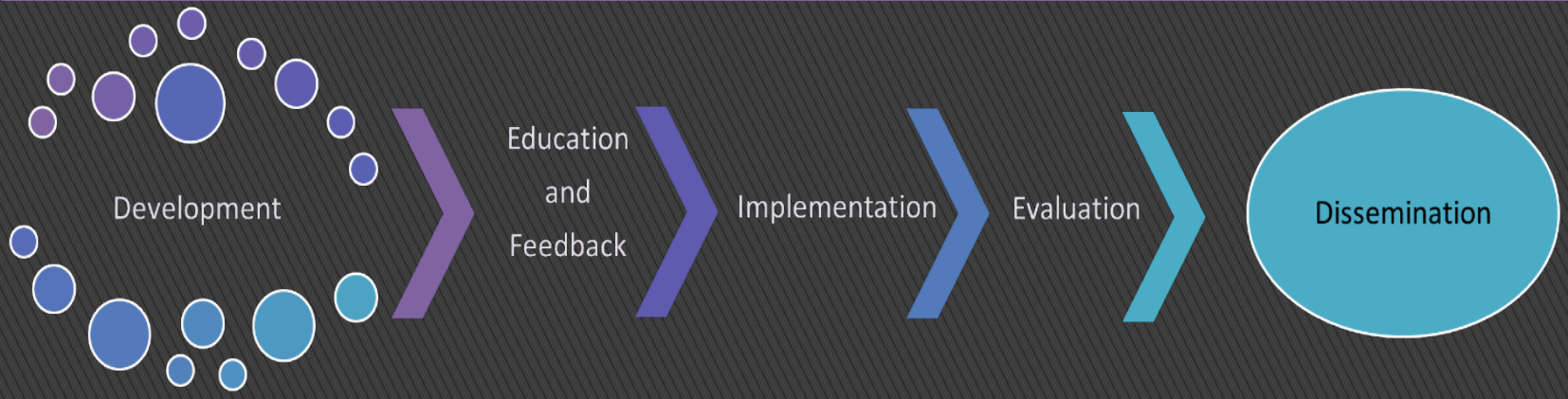
Individuals seen in Outpatient Settings with Chronic Musculoskeletal Pain



- Only 1.6% referred for exercise or “evaluate and treat” PT
- Only .9% had orders for TENS



Development Phases of an Electronic Prescription Bundle of Non-Pharmacological Strategies for Chronic Musculoskeletal Pain



Development					Education & Feedback					Implementation			Evaluation									Dissemination
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Months																							

- Non-pharm prescriptions & follow-up - similar to pharm prescriptions
  - Algorythms
  - EPIC Decision Prompts
  - Provider education/materials
  - Patient education/materials/videos

BEsT

Conclusions

- Multiple challenges to pain management in complex older adults
- Multiple pain sites = increased disability
- Pain is underdiagnosed and undertreated
  - Particularly in older adults with cognitive impairment
- Treatment requires balancing benefits/burdens
- Non-pharmacologic therapies are underutilized
- Health system barriers require a new approach
  - Group therapies
  - Education/empowerment of generalists with use of specialists as needed

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- Richard Johnston, MD
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- Nicole Bohr, RN, PhD(c)
- Shalome Tonelli, RN, PhD
- Nicholas Cooper, PT, PhD
- Carol GT Vance, PT, PhD
- Dana Dailey, PT, PhD

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More Research Needed

- Lowest efficacious dose?
- Responders to specific interventions to direct individualized care
- How to adjust care based on impairments (cognitive, sensory, etc)
- Length of effect for non-pharm strategies
- Efficacy of multidisciplinary care
- Efficacy of self-management strategies

Interdisciplinary Team

- Generalists:
  - Primary Care MD/Geriatrician/Nurse Practitioner
  - Nurse
- Specialists:
  - Pharmacist
  - Clinical psychologist
  - Physiotherapist
  - Anesthesiologist
  - Occupational therapist
  - Dietitian
  - Social Worker
  - Acupuncturist
  - Dentist
  - Kinesiologist

Wickson-Griffiths et al, 2016, *Clin Geriatr Med*