

# ***Evidence-Based Pain Medicine for Primary Care Physicians***

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### **Educational Objectives**

By completing this educational activity, the participant should be better able to:

1. Implement best practices, alternative treatment options, and multi-modal approaches to pain management including physical therapy, psychotherapy, and other treatments.
2. Utilize safe and effective pain management related to the prescription of opioids and other controlled substances.
3. Discuss the standards of care pain treatment, identification of drug-seeking behavior in patients, effectively communicate with patients regarding the prescription of an opioid or other controlled substances.
4. Appropriately prescribe and monitor controlled substances.

### **Speaker Disclosure**

Dr. Owen has disclosed that neither he nor members of his immediate family have a relevant financial relationship with an ineligible company.

## Evidence-Based Pain Management for the Primary Care Provider

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## Conflicts of Interest

No Conflicts of Interest

Disclaimer:

- This lecture is not a presentation by the TDI, DWC, OMA

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## Lecture Objectives

- Describe what is pain and suffering.
- Risk factors for transitioning from acute to chronic pain.
- Risk factors for delayed/failed recovery.
- Define chronic pain and chronic pain syndrome (CPS).
- Describe factors that drive disability perception.
- Describe common psychosocial comorbidities in CPS population.
- Discuss theoretical mechanism driving chronic pain.
- Discuss the Traditional Medical Model vs. Biopsychosocial Model.

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## Lecture Objectives

- Describe EBM treatments for acute and chronic pain.
- Describe EBM using the biopsychosocial model.
- How to motivate compliance with behavioral changes.
- How opioids interfere with effective recovery from an injury.
- Risk factors for aberrant drug taking factors.
- How effective is chronic opioid therapy.

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## Standard of Care

- The standard of care is what a reasonable and prudent clinician would do in the same or similar clinical situation.
- A reasonable and prudent clinician would use the peer-reviewed best evidence as a foundation for making clinical decisions.

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## What is Pain? What is Suffering?

- Pain is defined as an unpleasant sensory and emotional experience with actual or potential tissue damage or described in terms of such damage
- Activity induced in the nociceptor and nociceptive pathways by a noxious stimulus is not pain, which is always a psychological state...
  - AMA Guides to the Evaluation of Disease and Injury Causation, Second Edition page 390.
- Suffering is one's inability to cope with adversity

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## Audience Polling Question #1

Regardless of the cause of pain, pain is always an emotion (a psychological state).

1. True
2. False

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## Transition from Acute to Chronic Pain

- Past traumatic life events (Adverse childhood events)
- Family history of compensation
- Previous work-related injury with extended lost time
- Geographic factors
- History of substance abuse
- Negative pain beliefs (fear of pain)
- Maladaptive pain coping behaviors (catastrophizing, fear avoidance, etc.)
- Nonorganic signs
- Functional impairment
- General health status
- Presence of psychiatric comorbidities

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## Delayed/Failed Recovery Risk Factors

- Psychophysiology
  - Genetic epigenetic attributes
  - Tendency towards neuroplasticity
  - Endocrine
  - Immune function
- Adverse childhood experiences
- Health cognitions
  - Beliefs, appraisals, attitudes, expectations, catastrophization, fear-avoidance, health locus of control, fallibility, etc.

AMA Guides Newsletter Part 1: Psychological factors in delayed and failed recovery and unnecessary disability.

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## Audience Polling Question #2

Risk factors for transitioning from acute to chronic pain and delayed/failed recovery are:

- A. Genetics
  - B. Type of impairment
  - C. Premorbid psychosocial
  - D. Worker's compensation vs. non-worker's compensation
1. A and C are correct
  2. B and D are correct
  3. A, B, and C are correct
  4. D is correct
  5. All are correct

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## Chronic Pain vs. Chronic Pain Syndrome

- Chronic pain is pain that persists after tissue healing (3 to 6 months). Key concept is tissue has healed!
- Chronic Pain Syndrome (CPS) is someone with chronic pain who is unable to function.
- Specifically, CPS refers to persistent pain that usually has **no identifiable source** and is associated with **abnormal illness behaviors**, including expressions of pain (e.g. moaning, groaning, gasping, grimacing) that are grossly disproportionate to any underlying cause; substance abuse involving prescription drugs, non-prescription drugs, and alcohol; self-imposed prolonged excessive disuse; **self-limitation of social and recreational activities**; and a **self-perception of total occupational disability**.
- Source: Official Disability Guides

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## Disability Perception

- Disability perception (belief) has never correlated with physical injury
- Strongly associated with unhealthy thinking patterns and unstable psychosocial issues
- Therefore, need to consider appropriate management

Chou, et al. Will this patient develop persistent disabling low back pain? JAMA. 2010;303(13):1295-1302.  
AMA Guides to the Evaluation of Disease and Injury Causation, Second Edition.  
AMA Guides to the Evaluation of Work Ability and Return to Work, Second Edition.

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### Audience Polling Question #3

Disability perception strongly correlates with physical impairments.

1. True
2. False

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### Incidence of Psychosocial Comorbidities in CPS

- Chronic pain syndrome
  - 80% depressed
  - 70% anxiety/panic attacks
  - 30-60% personality disorders
  - >25% incidence of addiction
  - 10% qualify as pain related to underlying psychological, emotional, or behavioral factors
  - Majority with poor coping skills

Manchikanti et al. Understanding psychological aspects of chronic pain in interventional pain management. *Pain Physician* 2002;5(1):57-82.

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### Physicians Often Poorly Account For Psychosocial Issues

- Patients complaining of severe pain and disability are at greatest risk of abnormal drug-taking behaviors.
- Those reporting the greatest pain and disability are most likely to be prescribed opioids.
- This is why mental illness is strongly associated with chronic opioid use for pain.

Daube et al. The spine surgeon's ability to assess psychological distress. *J Bone Joint Surg Am*. 2010;92:2878-83.  
Owen et al. Evidence-based pain management for the primary care. *Proc (Bayl Univ Med Cent)*. 2016;31(1):37-47.

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### Audience Polling Question #4

Physicians are good at identifying the presence of psychosocial without using psychometric testing.

1. True
2. False

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### Mechanisms of Action for Chronic Pain

- Two theoretical models:
  - Traditional Medical Model aka Biomedical model
  - Neuroplasticity

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### Treatment Models

Traditional Medical Model aka Biomedical Approach

- Assumes that pain is caused only by a **physical pain generator**
- Results in chasing numerous theoretical pain generators
- Failure to find and cure a pain generator leads to further patient frustration
- Treatments are passive and do not require patient participation
- "...the traditional and **outdated** biomedical approach..." AMA Guides to the Evaluation of Permanent Impairment, Sixth Edition page 32.

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## Traditional Medical Model (TMM)

- TMM attributes symptoms to physical factors. Psychosocial factors are ignored.
- TMM believes in outdated concepts as degenerative disc disease and "discogenic" causes for low back pain
- TMM results seemingly endless diagnostics, drugs, and interventions
- Failure of TMM leads to unnecessary expense

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## Audience Polling Question #5

Evidence-based Medicine describes the Traditional Medical Model as an ineffective and outdated model for the treatment of chronic pain.

1. True
2. False

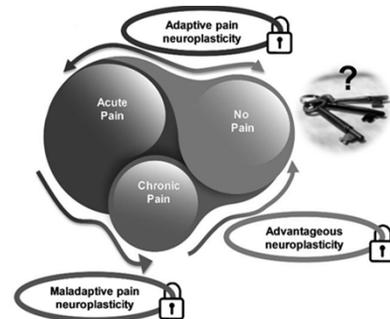
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## Neuroplasticity

- Negative influences results in physical changes to the brain that include:
  - Axonal sprouting
  - Production of new receptors and transmitters that are abnormal for that nerve cell's usual function
  - Abnormal regulation by third party players such as glial cells

Siddall P, et al. Neuroplasticity and pain: What does it all mean? *MJA*. 2013;198(4):177-178.

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## Audience Polling Question #6

Maladaptive neuroplasticity is considered an alternative explanation for the explanation of chronic pain.

1. True
2. False

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## Biopsychosocial Model

- **Symptoms are based on interaction of factors**
  - Biomedical: Physical, ongoing tissue injury
  - Psychological: Mood, personality, behavior, beliefs, coping
  - Social: Cultural, familial, socioeconomic, vocational
- The biopsychosocial approach to chronic pain and disability is currently viewed as the **most heuristic perspective** to the understanding, assessment, and treatment of chronic pain disorders, and has replaced the outdated biomedical reductionist perspective.
  - AMA Guides to the Evaluation of Permanent Impairment, Sixth Edition page 32.
- Management: Rehabilitation, health literacy, adjustment, compliance, self-care
  - Borrelli-Carrio F, et al. The biopsychosocial model 25 years later: principles, practice, and scientific inquiry. *Ann Fam Med*. 2004;2:576-582.

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## Diathesis-Stress Model

- Diathesis-stress model is a psychological theory that attempts to explain a disorder, or its trajectory, as the result of an interaction between a pre-dispositional vulnerability and a stress caused by life experiences.

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## Resilience

- Psychological resilience is the ability to emotionally cope with a crisis or return to pre-crisis status quickly.
- Resilience exists when a person uses mental processes and behaviors in promoting personal assets and protecting self from the negative effects of stressors.

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## Audience Polling Question #7

Which of the following statements are true?

- A. Psychosocial comorbidities are common in a low functioning patient with chronic pain.
  - B. The presence of psychosocial comorbidities increases the risk of delayed/failed recovery from an injury.
  - C. The presence of psychosocial comorbidities magnifies the perception of disability.
  - D. Good resilience is associated with a faster recovery and less disability.
1. A and C are correct
  2. B and D are correct
  3. A, B, and C are correct
  4. D is correct
  5. All are correct

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## Transtheoretical Stage of Change

- Transtheoretical model posits that health behavior change involves progress through six stages of change:
  - Precontemplation
  - Contemplation
  - Preparation
  - Action
  - Maintenance

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## Motivational Interviewing

- Evidence-based counseling method that helps people resolve ambivalent feelings and insecurities
- Involves basic principles:
  - Express empathy via active listening
  - Develop discrepancy b/t Pt. goals or values and current behavior
  - Avoid argument and direct confrontation
  - Try to find emotional motivation to change, logic doesn't work

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## Transtheoretical Stage of Change



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### Audience Polling Question #8

Motivational Interviewing (MI) is an evidence-based technique to improve patient compliance for behavioral changes.

1. True
2. False

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### Common Maladaptive Coping Mechanisms

- Fear-avoidance
- Catastrophization
- Injustice (includes entitlement and victimization)
- Disability conviction
- Lack of acceptance
  
- All based on foundation of cognitive distortions
  - A form of distorted thinking (cognitive distortions) that aggravates pain.
  - Black & white thinking, overgeneralization, mental filtering, discounting the positive, jumping to conclusions, magnification, emotional reasoning, "should" statements, personalization/blaming

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"It is much more important to know what sort of a patient has a disease than what sort of a disease a patient has."  
— Sir William Osler

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### Audience Polling Question #9

Which of the following are common maladaptive coping mechanisms?

- A. Fear-avoidance
  - B. Catastrophization
  - C. Injustice (includes entitlement and victimization)
  - D. Disability conviction
1. A and C are correct
  2. B and D are correct
  3. A, B, and C are correct
  4. D is correct
  5. All are correct

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### EBM Treatments Magnitude of Effect

<b>Small:</b>	• 0.5-1/10 VAS	5-10 on ODI	1-2 on RDQ	0.2-0.5 SMD
<b>Moderate:</b>	• 1-2/10 VAS	10-20 on ODI	2-5 RDQ	0.5-0.8 SMD
<b>Large/Substantial</b>	• >2/10 VAS	>20 ODI	>5 RDQ	>0.8 SMD

VAS = visual/verbal analog scale; ODI = Oswestry disability index; RDQ = Roland Morris disability; SMD = standard mean difference

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### Noninterventional Nonpharmaceutical Treatments CLBP

<b>Exercise:</b>	<b>Pain reduction</b>	<b>Functional improvement</b>
Exercise v. usual care	Small	Small
Tai chi v. wait list or none	Moderate	Small
Yoga v. usual care	Moderate	Moderate
Motor control ex v. min RX	Moderate	Small

Chou et al. Nonpharmacologic therapies for LBP: A systematic review for ACOP clinical practice guideline. *Ann Int Med.* 2017;493-505.

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## Noninterventional Nonpharmaceutical Treatments CLBP

Technique	Pain reduction	Function improvement
Massage v. usual care Con: passive modality	No effect	Unable to estimate
Spinal manip v. sham	No effect	Unable to estimate
Spinal manip v. inert	Small	No data

Chou et al. Nonpharmacologic therapies for LBP: A systematic review for ACOP clinical practice guideline. *Ann Int Med.* 2017;493-505.

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## Biopsychosocial Treatments CLBP

Technique	Pain reduction	Functional improvement
Mindfulness stress reduction v. wait list or placebo	Small	Small
Biofeedback	Moderate	No effect
Operate v. wait	Small	No effect

Chou et al. Nonpharmacologic therapies for LBP: A systematic review for ACOP clinical practice guideline. *Ann Int Med.* 2017;493-505.

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## Biopsychosocial Treatments CLBP

Technique	Pain reduction	Functional improvement
CBT v. wait	Moderate	No effect
Progressive relaxation v. wait	Moderate	Moderate
IFRPMP v. no IFRPMP v. usual care	Moderate Moderate	Small Moderate

Chou et al. Nonpharmacologic therapies for LBP: A systematic review for ACOP clinical practice guideline. *Ann Int Med.* 2017;493-505.

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## Audience Polling Question #10

It is believed that Mindfulness therapy and Cognitive Behavioral Therapy work by causing adaptive neuroplasticity.

1. True
2. False

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## Acupuncture

- ODG:
- Recommended for MPS, migraines, chronic LBP
  - 3-4 visits over 2 weeks. If positive response, 4-8 visits over 3-4 weeks
- Treatment does not rely on pain generators
- Pros:
  - Decrease pain over sham
  - Low risk
- Cons:
  - Passive modality
  - No improvement in function

Chou et al. Nonpharmacologic therapies for LBP: A systematic review for ACOP clinical practice guideline. *Ann Int Med.* 2017;493-505.

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## FRPMP

- 65 studies
- Mean duration of pain is 85 months (over 7 years)
- Average surgeries is 1.8
- 52% on compensation
- 85% on meds
- 75% improved function
- 68% RTW v 36% in control group (twice as likely to RTW)
- 65% reduction in med use
- Decreased post-treatment healthcare utilization
- Improved mood

Flor et al. Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain.* 1992;42:221-230.

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## Opioids for Acute v Chronic Pain

- Per CDC, post-op and acute pain 2-3 days, no more than a week
- Reserve opioids for objective tissue damage, fractures, lacerations, post-op
- Avoid opioids for sprains/strains
  
- Chronic pain is pain that persists after tissue healing, typically considered 3 months post-injury
- The following slides refer to opioids in the treatment of chronic pain
- Avoids opioids for chronic pain

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## Opioids

### Risk factors for aberrant drug taking behaviors

- Family or personal history of ETOH or drug addiction
- Nicotine dependency
- Depression and/or anxiety
- Impulse control problems (ADD, OCD, bipolar, schizophrenia, personality disorders)
- Hypervigilant state (PTSD, abuse history)
- Somatoform disorders
- Multisite pain (> 3 body parts)
- Age 16-45

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## Opioids Efficacy

- Epidemiology Study in Finland
- Patients on COT associated with increased pain, disability, increased healthcare utilization, and negative influence on quality of life
- Conclusion: COT does not seem to fulfill any key expected outcomes

Eriksen J, et al. Critical issues on opioids in chronic non-cancer pain: An epidemiological study. *Pain*. 2006;172:172-179.

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## COT and Analgesia

- A 12-point reduction in pain for strong opioids and 10.6-point reduction for weak opioids
- Drop out rates were high in the pharmacology studies

Reinecke et al. Analgesia efficacy of opioids in chronic pain: recent meta-analysis. *BJ Pharmacology*. 2015;172:324-333.

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## COT and Analgesia

- Meta-regression revealed a 12.0 point greater pain relief for every 1 log unit [10 to 100] increase in morphine equivalent dose.
- "Clinically important pain relief was not observed within the dose range evaluated (40.0-240 mg morphine equivalents per day)."
- "For people with chronic low back pain who tolerate medicine, opioid analgesics provide modest short-term pain relief, but the effect is not likely to be clinically important within the guideline recommended doses. Evidence on long-term efficacy is lacking. The efficacy of opioid analgesics in acute low back pain is unknown."

Shaheed CA, et al. Efficacy, tolerability, and dose-dependent effects of opioid analgesics for low back pain: A systematic review and meta-analysis. *JAMA Int Med*. 2016;176(7):958-968.

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## Opioids vs. NSAIDs

- VA study
- Compared CP patients on opioids vs. NSAIDs
- Pain intensity did not predict opioids use
- Opioid use predicted by age, depression, personality disorder, and history of substance abuse

Breckenridge J and Clark JD. Patient characteristics associated with opioid versus nonsteroidal anti-inflammatory drug management of chronic low back pain. *J Pain*. 2003;4(6):344-350.

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## Opioids

- Early opioid use is associated with greater disability at one year F/U
  - Webster B et al., Relationship between early opioid prescribing for acute occupational low back pain and disability duration, medical costs, subsequent surgery and late opioid use. *Spine*. 2007; 32: 2127-32.
  - Franklin GM et al., Early opioid prescription and subsequent disability among workers with back injuries. *Spine*. 2008;33:199-204.
- VA Study 2018, no benefits of opioids over NSAIDs
  - Krebs et al., Effect of opioids vs nonopioid medications on pain-related function in patients with chronic back pain or hip or knee OA. *JAMA*. 2018;319(9):872-882.
- Opioids associated:
  - Hyperalgesia
  - Opioid induced mood disorder
  - Central sleep apnea MOA for lethal OD
  - Opioid induced hypogonadism
  - Decreased function
  - Increased healthcare utilization
  - Accidental lethal overdose
  - Owen et al., Evidence-based pain management for the primary care physician. *Proc (Bayl Univ Med Cent)*. 2018;31(1):37-47.

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## Opioid MED and OD

- There is no safe dose of opioids
- MED from 20 MED to 49 MED doubles OD risk
- MED 50 to 90 MED, nine times risk of OD
- Interagency Guideline on Prescribing Opioids for Pain. June 2015. Page 12-13.
- Available at:  
<http://www.agencymeddirectors.wa.gov/Files/2015AMDGOpioidGuideline.pdf>

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## Opioid OD

- **Tragically, 91% of people who survive an opioid OD are re-prescribed opioids.**
- **17% of OD are not the first OD**

Larochelle, et al. Opioid prescribing after nonfatal overdose and association repeated overdose: a cohort study. *Ann Int Med*. 2016;164:1-9.

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## Audience Polling Question #11

Chronic opioid therapy is a safe and effective way to treat chronic pain.

1. True
2. False

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## Conclusions

- Non-pharmaceutical treatments should be the primary focus
- Pharmaceutical treatments have small benefits
- Opioids have greater risk than benefit
- Disability is driven by unstable behavioral issues
- Unstable behavioral issues are risk factors to chemical cope with controlled substances
- Family and personal history of substance use disorders and unstable behavioral issues are risk factors for developing a substance use disorder with COT
- The vast majority of chronic pain patients on COT are chemically coping (best case) or will qualify for a substance use disorder (worst case)

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## Interesting YouTube Videos

- Never, Ever Give Up. Arthur's Inspirational Transformation!  
<https://www.youtube.com/watch?v=qX9FSZJu448>
- Yoga transformed his ability to function
- Monk on Fire (Tibetan Monk Self-Immolates in Protest)  
<https://www.youtube.com/watch?v=7wN0ayZZVHc&t=3s&bpctr=1569014540>
- This is 10/10 pain but no pain behaviors

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