



**IMPROVING EXISTING TREATMENTS
BY UNDERSTANDING BRAIN
PROCESSES UNDERLYING BEHAVIOR**

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WHO AM I AND HOW DID I GET WHERE I AM?

- Interest in changing health behavior
- Trained in systems neurobiology, cell biology, pharmacology and anatomy
 - Research focus in stress, pain and opioid systems
- Taught at medical school, found neuroscience research findings were rarely used
- Turned to health services research to study how to change health care and health care systems to fit with what we know about how the brain works and thus people behave.



STRATEGY

- Reexamine clinical problems and clinical perspectives on how to address them by considering relevant neuroscience data on the problem and its treatment.
- Hypothesis: Bringing a non-clinical perspective onto clinical problems in behavioral health may resolve clinical controversies and identify new methods to address issues.
- Areas of interest
 - Treatment of substance use disorders, particularly opioid use disorders
 - Use of opioids for the treatment of chronic pain
 - Effects of psychosocial treatments on health behavior
 - Use of data and technology to modify clinical behaviors



Setting

- United States Veterans Health Administration
- Federally-funded national system of health care facilities to provide health care to qualifying military Veterans
- 141 health care systems providing care at over 1500 sites
- ~5.6 million unique patients seen per year
- National office sets and implements policy for all facilities
- National research program focuses on improving care for high impact conditions in the Veteran population



EXAMPLE 1: OPIOID PRESCRIBING FOR CHRONIC PAIN IN PRIMARY CARE

- Highly prevalent:
 - 18% of VA patients have an opioid prescription in a given year. Roughly 40% of prescriptions are chronic (more than 90 days in the year).
- Problems with adverse events:
 - Opioid overdose has nearly overtaken auto accidents as the primary cause of accidental death in the U.S.
- Lack of data on long-term efficacy of opioids for chronic pain conditions
 - Almost no research on effectiveness of opioid medication for pain beyond 12 weeks.



CLINICAL PRACTICE GUIDELINES

- VA/DoD Clinical Practice Guidelines for Opioid Therapy for Chronic Pain (2003, 2010)
- Provide expert consensus based recommendations regarding care practices to reduce risk and improve effectiveness of opioid therapy
 - Examples:
 - Routinely conduct urine drug screens for illicit substances and opioid medications before prescribing
 - Only prescribe opioids to patients with active substance use disorder if they are receiving SUD treatment
- But guideline recommendations are poorly followed in primary care practice



WHY?

- Providers say:
 - Not enough time
 - Not educated in pain management
 - Patients make them uncomfortable or scared
 - Suggest that patients bully them into giving medications
 - Feel threatened and driven to prescribe
 - But also scared of legal ramifications of prescribing
- Providers don't know what to do, have plenty of other useful things they could attend to instead, and don't like interactions with pain patients



WHAT DO PATIENTS THINK ABOUT THEIR CARE?

- Patients often say:
 - They want to keep their prescriptions going, even though their pain severity scores remain high when on them
 - Doctors don't listen, just give them pills
 - Don't want to refuse pills because clinician seems so excited about them
 - Like to share with family and friends so that they can help others with their pain
- Among a sample of ~200 patients receiving opioids from their primary care clinician, oversampled for mental health risk factors associated with misuse, over a third reported under-using or not using their opioid prescription.



WHY MIGHT CLINICIANS PRESCRIBE OPIOIDS OFTEN AND CARELESSLY ?

- Neuroscience findings emphasize that:
 - Observing people in pain activates neural pain pathways similar to being injured yourself
 - Being around people in pain is painful
 - Reducing on-going pain activates reward circuits and is reinforcing
 - People will be drawn to repeat behaviors that immediately reduced activity in neural pain pathways previously
 - Stress increases the value of or drive to obtain immediate rewards
 - When one is stressed or in pain, they will be highly driven to get relief immediately



IMPLICATIONS

- Providers should find pain patients painful to be around, and be subconsciously and powerfully driven to find a way to immediately reduce their pain or get them to leave.
- Suggests that if clinicians find writing opioid prescriptions reduces patients' distress or ends the visit, opioid prescribing could become rewarding and habitual to the provider.
- Suggests that opioid prescribing decisions may be highly emotionally driven.
- This would suggest that interventions that effectively address habits rather than lack of knowledge may be needed to improve prescribing.



A DIFFERENT PERSPECTIVE?

- Clinical perspective suggested:
 - More training for primary care clinicians
 - Providing more time with patients
 - Developing methods to screen out “problem” patients
- Neuroscience perspective suggested:
 - Use of methods to address clinicians’ prescribing “habit”
 - Slow down prescribing decisions
 - Make it more difficult to prescribe
 - Make prescribing less rewarding
 - Increase salience of longer-term risks of prescribing
 - Provide more effective alternatives for providing patients with short-term relief
- Change the system rather than ask the patients and providers to act in opposition to their behavioral drives



HOW MIGHT WE IMPROVE OPIOID THERAPY GUIDELINE ADHERENCE?

- Focus on system-level interventions rather than focusing on teaching providers what to do.
- Example 1: Develop computerized decision support systems to help primary care clinicians with opioid prescribing
 - Make it easier for clinicians to follow guideline recommendations, and harder to ignore them.



GOALS OF COMPUTERIZED DECISION SUPPORT

- Tell clinicians what to do
 - Address lack of knowledge
 - Reduce discomfort around saying no by reducing clinician ownership of the decision
- Make it easier to do what they are supposed to do
 - Streamline good practice processes
 - Provide reminders and detailed instructions about how to follow good practices in the local setting
 - Provide information to prioritize good practice processes
 - For example, warning about specific patient risks, alerts when a patient has an opioid prescription
- Make it harder to do risky prescribing practices
 - Increase conflict around taking clinical short-cuts, by alerting clinicians of reasons why that might be risky



ATHENA-OPIOID THERAPY Decision Support System

○ Features include:

- Patient specific recommendations
 - Warnings about patients at high risk for misuse
 - Specific drug dosing recommendations
- Highlighted opioid therapy-relevant patient information
- Checklist of good clinical practices
- Standardized pain assessment with write-back to medical record
- Tools
 - Patient education materials
 - Drug conversion calculator
 - Referrals for mental health & behavioral treatments, exercise programs and self-help
 - Guidelines for use of non-opioid pain medications
 - Suggested responses to aberrant medication use behaviors



ATHENA Opioid Therapy for Chronic Non-Cancer Pain

Disclaimer: Complete clinical information may not be available to the Athena Opioid Therapy application herein displayed. Please use the information you have about the patient together with your clinical judgment to decide on the best therapy for this patient's chronic pain.

Tools as drop down menus

Summary Assessment **Orders: Urinary Drug Screens/Meds/Consults** Education & Agreements Documentation

Recommendations for Chronic Pain Back to Recommendations

Cautions

- COPD
- Current or past drug-induced mental disorder
- Depression
- Age >=65 years

Patient data

Drug	Daily Dose	Start	End
hydrocodone/a...	20.0		
hydrocodone/a...	20.0		
hydrocodone/a...	20.0		
hydrocodone/a...	20.0		
hydrocodone/a...	20.0		

Treatment Checklist

- Conducted Pain Assessment
- Ordered a Urine Drug Screen
- Educated Patient to Call Ahead for Refills (7-10 days Before Running Out)
- Had Patient Sign Pain Management Agreement
- Documented Pain Assessment, UDS, Patient Education, Pain Management Agreement

Checklist

Opioid Therapy Options

- OPTION: Increase dosage of short-acting opioid (hydrocodone/acetaminophen)**
- OPTION: Switch from hydrocodone/acetaminophen to morphine SA**
- Relative contraindications for hydrocodone/acetaminophen: Obstructive Pulmonary Disease, Drug Induced Mental Disorder, Depression
- Compelling indications for morphine SA: short acting rx for >2 months
- Relative contraindications for morphine SA: Obstructive Pulmonary Disease, COPD, Current or past drug-induced mental disorder, Depression
- Opioids are respiratory depressants and should not be used in the presence of hypercapnia and hypoxia on arterial blood gas determination.
- Formulation: morphine SA 15mg
Suggested schedule:
First week: 1 x 15 mg tab bid (30 mg/day)
Second week: 1 x 15 mg tab tid (45 mg/day)
Third week: 2 x 15 mg tab bid (60 mg/day)
Comments: Followup with patient by phone at end of 2-3 weeks. Titrate to level necessary for adequate pain relief.
- Tell patient not to dissolve, chew, or crush tablets.
- OPTION: Maintain current therapy.**
- OPTION: Discontinue opioid therapy. Evaluate for opiate dependence. Click for taper schedule.**
- Tell patient not to dissolve, chew, or crush tablets.**

Misuse Warning

- Close m
- Opioids hypoxia
- Opioids
- Clinical Ale
- Slow ini

Patient specific guideline- based recommendations for opioid therapy, alerts if patient is high risk for misuse and more!

ATHENA Opioid Therapy for Chronic Non-Cancer Pain

Feedback for researchers

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Summary Assessment **Orders: Urinary Drug Screens/Meds/Consults** Education & Agreements Documentation

Recommendations for Chronic Pain Management Back to Recommendations

Cautions

- COPD
- Current or past drug-induced mental disorder
- Depression
- Age >=65 years

Opioids Allergies

Drug
hydrocodone/a...
hydrocodone/a...
hydrocodone/a...
hydrocodone/a...
hydrocodone/a...

Treatment Checklist

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- Tell patient not to dissolve, chew, or crush tablets.

OPTION: Maintain current therapy.

OPTION: Discontinue opioid therapy. Evaluate for opiate dependence. Click for taper schedule.

Tell patient not to dissolve, chew, or crush tablets.

Miscellaneous Warnings

Close monitoring of opioid therapy in this patient is necessary (click to see reasons).

- Opioids are respiratory depressants and should not be used in the presence of hypercapnia and hypoxia on arterial blood gas determination.
- Opioids may worsen depression and should be used when benefits outweigh risks.

Clinical Alerts

Slow initiation or titration schedules are recommended for elderly patients.

Detailed drug recommendation, displays when arrow is clicked

Detailed information about patient alerts

IF PATIENT IS ON OPIOIDS, WINDOW POPS UP IN FRONT OF ELECTRONIC MEDICAL RECORD

Electronic Medical Record

The screenshot displays the ATHENA Opioid Therapy for Chronic Non-Cancer Pain application. The interface includes a patient search field, a disclaimer, and a navigation bar with tabs for Summary, Assessment, Orders: Urinary Drug Screens/Meds/Consults, Education & Agreements, and Documentation. The main content area is divided into several sections:

- Recommendations for Chronic Pain Management:** A pink box lists cautions: COPD, Current or past drug-induced mental disorder, Depression, and Age >=65 years.
- Medication Table:** A table with columns for Drug, Daily Dose, Start, and End. It lists hydrocodone/a... 20.0.
- Treatment Checklist:** A list of tasks with checkboxes, including Conducted Pain Assessment, Ordered a Urine Drug Screen, Educated Patient to Call Ahead for Refills (7-10 days Before Running Out), Had Patient Sign Pain Management Agreement, and Documented Pain Assessment, UDS, Patient Education, Pain Management Agreement.
- Opioid Therapy Options:** A detailed section providing options for increasing dosage, switching to morphine SA, and maintaining current therapy. It includes relative contraindications, compelling indications, formulation details, and patient education points.
- Missed Warnings:** A section highlighting the need for close monitoring of opioid therapy in this patient.
- Clinical Alerts:** A section with a slow initiation or titration schedule recommendation for elderly patients.

STAMP DISPLAY FOR PATIENT NOT ON OPIOIDS.
IF YOU CLICK ON BOX YOU GET FULL DISPLAY
WITH ALL RECOMMENDATIONS

Electronic medical record window



Athena Opioid Therapy Applicatio...

Click To Obtain
Opioid Therapy Recommendations
for the
Treatment of Chronic Pain for
Name

PAIN ASSESSMENT TOOL, IS WRITTEN BACK TO ELECTRONIC MEDICAL RECORD AS A NOTE

ATHENA Opioid Therapy for Chronic Non-Cancer Pain

Patient name, SSN and date of birth: [Redacted] [Feedback for researchers](#)

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Summary | **Assessment** | **Orders: Urinary Drug Screens/Meds/Consults** | **Education & Agreements** | **Documentation**

Pain Assessment | **Recommendations** | [Back to Recommendations](#)

Pain Assessment

Update Today's Assessment

Average Pain Last Week * [0] | **Overall Functioning * (10=best,0=worst)** [10] | **Pain Type? *** [Intermittent] | [Update/Write back to VISTA](#)

The following questions should be answered before a patient starts opioid therapy. Check all boxes that apply. This data will be written back to CPRS and stored in Notes.

1. Pain Location

<input type="checkbox"/> Abdomen	<input type="checkbox"/> Hand	<input type="checkbox"/> Leg
<input type="checkbox"/> Arm	<input type="checkbox"/> Head	<input type="checkbox"/> Low Back
<input type="checkbox"/> Buttocks	<input type="checkbox"/> Hip	<input type="checkbox"/> Shoulder
<input type="checkbox"/> Elbow	<input type="checkbox"/> Joints	<input type="checkbox"/> Upper Back
<input type="checkbox"/> Foot	<input type="checkbox"/> Knee	<input type="checkbox"/> Other Location

Summary/Other: [Text Area]

2. Pain Date Of Onset

[Date Picker] Estimate

3. Pain quality (character)

<input type="checkbox"/> Aching	<input type="checkbox"/> Numbness	<input type="checkbox"/> Soreness
<input type="checkbox"/> Burning	<input type="checkbox"/> Pinching	<input type="checkbox"/> Squeezing
<input type="checkbox"/> Cramping	<input type="checkbox"/> Pressure	<input type="checkbox"/> Stabbing
<input type="checkbox"/> Cutting	<input type="checkbox"/> Prickling	<input type="checkbox"/> Tender
<input type="checkbox"/> Dull	<input type="checkbox"/> Pulling	<input type="checkbox"/> Throbbing
<input type="checkbox"/> Electric	<input type="checkbox"/> Sharp	<input type="checkbox"/> Tightness
<input type="checkbox"/> Heaviness	<input type="checkbox"/> Shooting	<input type="checkbox"/> Patient Unable to Describe

4. Successful treatments?

<input type="checkbox"/> Acupuncture	<input type="checkbox"/> Biofeedback	<input type="checkbox"/> Hot and/or Cold
<input type="checkbox"/> Ambulation	<input type="checkbox"/> Chiropractic Treatment	<input type="checkbox"/> Hypnosis
<input type="checkbox"/> Bed Rest	<input type="checkbox"/> Exercise	<input type="checkbox"/> Massage
<input type="checkbox"/> Medication	<input type="checkbox"/> Relaxation	

(Enter medications, separated by commas...) TENS Unit

CONVERSION CALCULATOR TOOL

ATHENA Opioid Therapy for Chronic Non-Cancer Pain

Patient name, SSN and date of birth [Feedback for researchers](#)

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Summary | **Assessment** | **Orders: Urinary Drug Screens/Meds/Consults** | **Education & Agreements** | **Documentation**

Opioid Conversion Calculator [Back to Recommendations](#)

Please select the presently used opioid, the new opioid to switch to, enter the present dose and cross tolerance reduction percentage, then press calculate to obtain the equivalent dose for the new opioid.

Converting From: To:

Present Daily Dose (mg/day OR mcg/h Fentanyl only):

Reduction for incomplete cross tolerance (%):

Equivalent Daily Dose:

2.40 mg of Methadone
(for 30 mg of Hydrocodone at 20 % reduction)

WARNING: When switching to methadone, the VA guideline recommends a dose no greater than 5 mg q 8 hrs (15 mg/day), and suggest consulting a specialist. Disregard the calculated equivalent dose if this limit is exceeded.

ABERRANT BEHAVIOR GUIDE TOOL

ATHENA Opioid Therapy for Chronic Non-Cancer Pain

Feedback for researchers

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Summary Assessment **Orders: Urinary Drug Screens/Meds/Consults** Education & Agreements Documentation

Aberrant Behaviour Guide [Back to Recommendations](#)

Aberrant Behaviour Guide [Back to Summary](#)

Aggressive complaining about needing more of the drug

Recommended Action: Consider whether current dose is a reasonable opioid dose. Is this likely an effective dose?

[Back to Top](#)

Positive drug screen test for illicit substances

Recommended Action: Consider discontinuing therapy. Talk with patient.

[Back to Top](#)

Signs of Alcohol Abuse, especially binges

Recommended Action: Consider discontinuing therapy.

[Back to Top](#)

Positive drug screen test for marijuana

Recommended Action: Talk with patient. Re-test in 6-8 weeks. If positive de-escalate dose. Marijuana is an illegal substance within the Federal HealthCare system.

[Back to Top](#)

Negative drug screen for prescribed medication

Recommended Action: If Oxycodone or Fentanyl is the prescribed medication request a more sensitive test be conducted.

If Morphine or Codeine are the prescribed medication consider discontinuing therapy.

[Back to Top](#)

Openly acquiring similar drugs from other medical sources

Recommended Action: Discuss with patient. Stop prescribing opioids if patient is acquiring opioids from multiple sources. Review the Pain Management Agreement.

[Back to Top](#)

Unsanctioned dose escalation or other noncompliance with therapy on one or two occasions

Recommended Action: There are patients that escalate dose due to increased pain. Review patient's rationale. Dose

LEGAL REQUIREMENTS TO BE MET WHEN PRESCRIBING OPIOIDS

ATHENA Opioid Therapy for Chronic Non-Cancer Pain

Feedback for researchers

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Summary Assessment Orders: Urinary Drug Screens/Meds/Consults Education & Agreements Documentation

Documentation

[Back to Recommendations](#)

Legal Requirements

[Back to Summary](#)

Minimum Documentation to Record in Patient Record based on the VA CPG and the Medical Board of California

The physician should keep accurate and complete records including the medical history and physical examination, other evaluations and consultations, treatment plan objectives, informed consent, treatments, medications, rationale for changes in the treatment plan or medications, agreements with the patient, and periodic reviews of the treatment plan.

	Initial Pain Assessment Minimum Documentation	Pain Re-Assessment (at least annually) Minimum Documentation
Assessment	Document that you conducted a Physical Examination Document that you conducted a Pain Assessment	Document that you conducted a Pain Re-Assessment
Treatment	Document that you completed a Treatment Plan Document Consulting Referrals Document extra and special care you are providing for patients who are at risk for non-compliance, abuse, and addiction	Document that you completed a Treatment Plan Document Consulting Referrals Document extra and special care you are providing for patients who are at risk for non-compliance, abuse, and addiction
Education	Document that you and your patient discussed Informed Consent and that your patient signed the Pain Management Agreement .	Document that you and your patient re-discussed Informed Consent and that your patient signed the Pain Management Agreement if this was needed in therapy.

See more detail below.

1. Document that you conducted a Physical Examination

A medical history and physical examination must be accomplished. This includes an assessment of the pain, physical and psychological function; a substance abuse history; history of prior pain treatment; an assessment of underlying or

BEHAVIORAL THERAPY REFERRALS WITHIN AND OUTSIDE VA

The screenshot shows a web application window titled "ATHENA Opioid Therapy for Chronic Non-Cancer Pain". The interface includes a header with a patient information field, a feedback button, and a navigation menu with tabs for Summary, Assessment, Orders: Urinary Drug Screens/Meds/Consults, Education & Agreements, and Documentation. The main content area is titled "Behavioral Therapy" and contains several sections of text providing resources for patients with chronic pain.

ATHENA Opioid Therapy for Chronic Non-Cancer Pain

Feedback for researchers

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Summary Assessment **Orders: Urinary Drug Screens/Meds/Consults** Education & Agreements Documentation

Behavioral Therapy Back to Recommendations

Behavioral Therapy

There are many internal and external resources for the patient experiencing chronic pain. The sources below include low/no cost exercise classes, support groups, and VA resources for referrals.

VA PAIN CLINIC

Judith B. Chapman, Ph.D
(650) 493-5000 x64130
Judith.Chapman@med.va.gov

Affiliated with the VA Pain clinic – does all behavior therapy for pain clinic

PRIMARY CARE BEHAVIORAL MEDICINE TEAM

Contact Info
Robert Hall, Ph.D. ext: 64132
Evelyn Shinoda, RD ext: 65618 or 63096

ADDICTION TREATMENT SERVICES

Menlo Park VA
Provides addiction treatment services and consultation regarding concerns about misuse of alcohol, illicit drugs or prescription medications. Special groups are offered for patients on potentially addictive medications (e.g. opioids, anxiolytics). The addiction consult team is also happy to provide assistance with planning opioid therapy for patients with histories of substance use disorder or concerns about addiction. Refer by electronic consult in CPRS to Addiction Treatment Services (ATS) or contact the clerk at x22734 or Pat Dilkian (nurse) at x27384. Patients may self refer by calling the clerk.

AA groups are held at VAPA – 12pm on Tuesdays and Fridays in the Chaplin's office.

CONSULTATION TEAM

MENTAL HEALTH CLINIC AT MENLO PARK

SYSTEM RATED HIGHLY USABLE

Table 1: System Usability Scale:

	Round 1		Round 2	
	mean	sd	Mean	sd
1. I think that I would like to use this system frequently	2.75	0.50	3.25	0.96
2. I found the system unnecessarily complex	2.50	1.11	3.00	0.00
3. I thought the system was easy to use	3.00	0.76	3.25	0.50
4. I think that I would need the support of a technical person to be able to use this system	3.50	1.51	4.00	0.00
5. I found the various functions in this system were well integrated	2.50	0.82	3.00	0.82
6. I thought there was too much inconsistency in this system	3.25	0.98	3.75	0.50
7. I would imagine that most people would learn to use this system very quickly	3.25	0.69	3.00	0.00
8. I found the system very cumbersome to use	2.75	1.11	3.75	0.50
9. I felt very confident using the system.	3.00	0.53	3.25	0.50
10. I needed to learn a lot of things before I could get going with this system	3.25	1.27	3.75	0.50
Overall Score:	74.38		84	p=0.0167

But mostly used by clinicians who were already relatively attentive to following good opioid prescribing practices!



NEED TO GET USE OF GOOD OPIOID PRESCRIBING PRACTICES PRIORITIZED

- Decision support and process redesign can streamline and facilitate good practice, but only among those willing to attend to pain and opioid management.
- Need supervisory or administrative assistance and pressure to motivate clinicians to take the time and effort to use good prescribing practices.



HOW MIGHT WE IMPROVE OPIOID THERAPY GUIDELINE ADHERENCE?

- A performance measurement system can help bring attention to current practice problems and help clinicians and administrators tell when practice is improving.
 - Identify variation in clinical practice and targets for quality improvement
 - Monitor impact of quality improvement efforts over time
- Can help link consequences of prescribing shortcuts to the immediate prescribing practice.



DEVELOPED A SUITE OF ADMINISTRATIVE DATA BASED METRICS TO ASSESS ADHERENCE TO CLINICAL GUIDELINE RECOMMENDED PRACTICE

- Identified practices in key domains that could be identified in “billing” data
- Developed measures of practice or outcome in these domains
- Creating a data report to allow facilities to track their performance on these measures with quarterly updates. Allow comparison to national performance and performance at other facilities.
- Identify model programs.
- Target and evaluation quality improvement efforts.

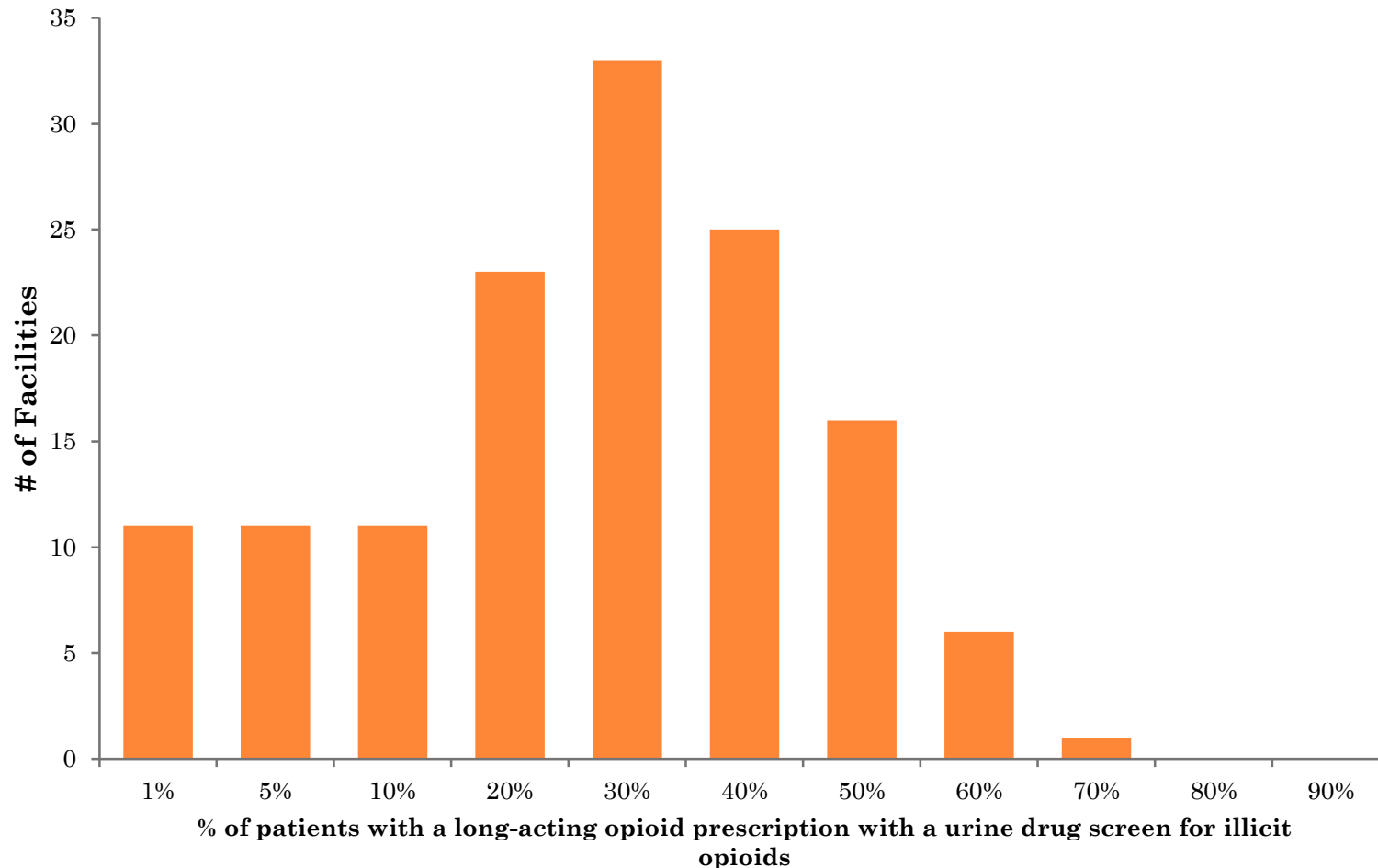


MEASURE DOMAINS

- Side Effects Management
- Serious adverse effects
- Dangerous Drug Interactions
- Minimizing Misuse Risk
- Appropriate Follow-Up
- Avoidance of Sole Reliance on Opioids
 - Psychosocial treatments
 - Other pharmacotherapies
 - Rehabilitation medicine
 - Complementary and alternative medicine treatments
- Absolutely Contra-Indicated Opioid Prescriptions
- Medication Management/Pharmacy Reconciliation
- Ordering of Appropriate Lab Tests



EXAMINE CURRENT PRACTICE AND IDENTIFY AREAS AND SITES FOR QUALITY IMPROVEMENT



EXAMPLE 2: METHADONE MAINTENANCE TREATMENT

- Clinic-level surveys of methadone maintenance clinics indicated wide variation in both mean and individual doses provided to clients.
- Some suggested that this was evidence of poor practice as randomized controlled trials indicated that higher doses (e.g. 60-100mg/day) produced better patient outcomes than lower doses (e.g. under 60mg/day).
- But clinicians reported that many patients do well on low doses.



Need for improvement?

- VHA was interested in conducting quality improvement in hopes of improving substance use outcomes for opioid dependent patients. Did dosing practices require improving? Or did patient needs vary by site?



NEUROSCIENCE ON EFFECTS OF METHADONE MAINTENANCE

- Substantial tolerance to opioids develops rapidly through a variety of mechanisms, depending partially on the pattern of drug exposure and withdrawal experienced over time
- At relatively low dose, methadone will prevent or minimize withdrawal symptoms in opioid dependent subjects.
- At higher doses, methadone will act as a competitive antagonist at mu opioid receptors – blocking the acute effects of fast-acting opioid drugs, like heroin.



DOES METHADONE DOSE MATTER FOR PATIENT OUTCOME?

- Conducted an 8 site prospective observational study of new patient outcomes in the first year of treatment at VA methadone maintenance clinics.
- Clinics were selected such that half had relatively low mean methadone doses, and half had relatively high mean methadone doses
- Found no association between patient-level methadone dose and substance use outcomes.
- But patients at the 4 clinics with relatively low mean methadone dose had poorer substance use outcomes than those at the 4 clinics with relatively high mean methadone dose.



DID DOSE MATTER OR NOT?

- Examined methadone dosing in patients who achieved abstinence versus overall clinic dosing at low and high dosing clinics.
- Examined factors associated with higher methadone dosing among patients who achieved abstinence.



EFFECTIVE METHADONE DOSE VARIES SUBSTANTIALLY AT THE INDIVIDUAL LEVEL

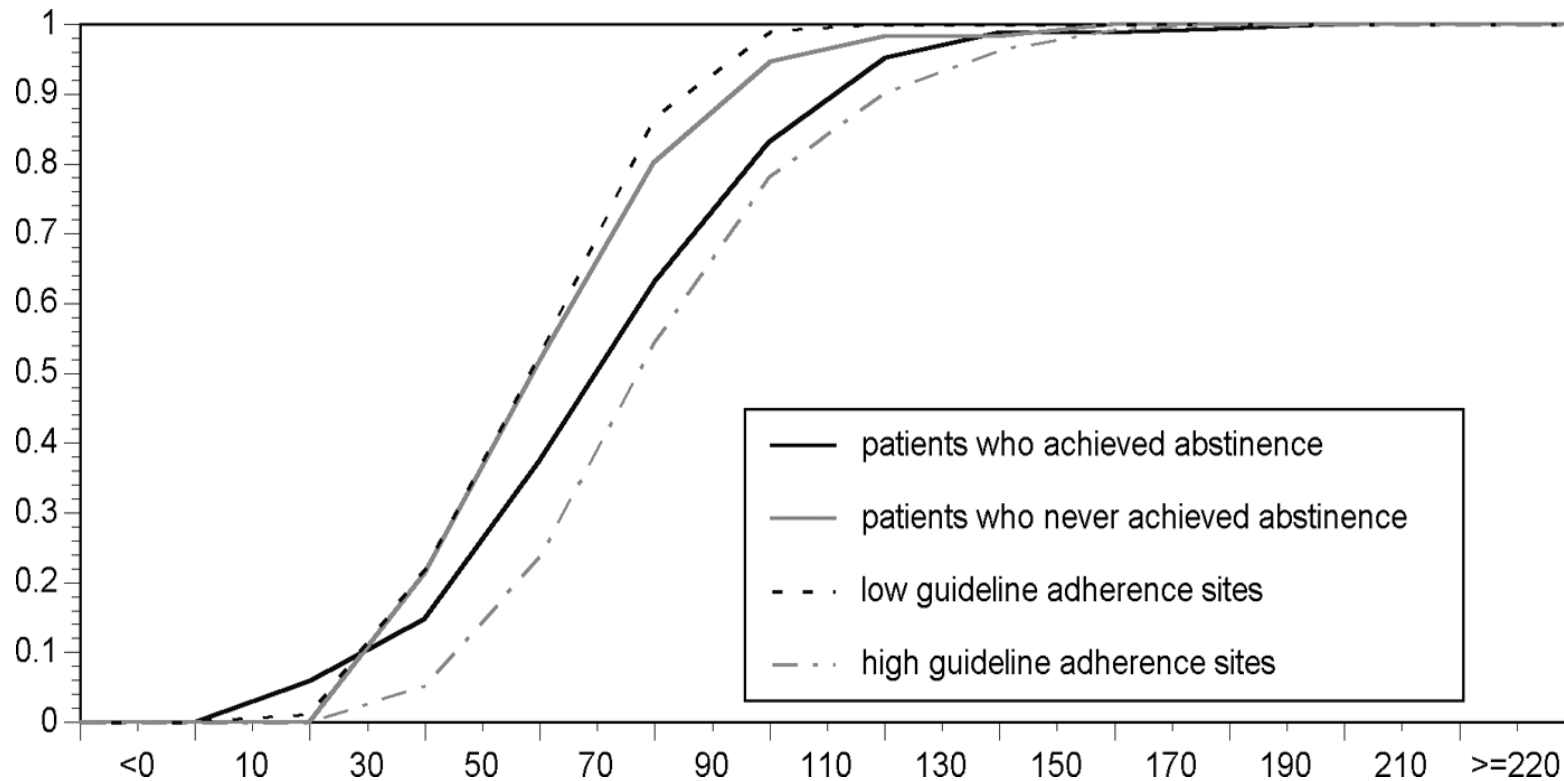


Figure 1. Cumulative Dose Histogram Depicting the Proportion of Patients at or below a Given Methadone Dose (in mg)



PREDICTORS OF METHADONE TOLERANCE.

- Created a model looking at associations between effective individual methadone dose and treatment clinic practices and patient factors.
- The model predicted 42.3% of the variance in the methadone dosage at which a patient maintained abstinence.
 - A PTSD dx increased dosage by 12.1 mg (95%CI: 3.4–20.8 mg).
 - A depression dx increased dosage by 14.1 mg (95%CI: 5.6–22.6 mg).
 - Each previous drug detoxification episode increased dosage which by 0.9 mg (95%CI: 0.1–1.7 mg).
 - For every 10% increase in local heroin purity, the dosage decreased by 4.0 mg (95% confidence interval: –6.8 to –1.2 mg).
 - Abstinent patients received 0.1 mg more (95% confidence interval: 0.06–0.14 mg) for each day they remained in treatment.
 - For each point increase on a counselor's tendency to encourage dosage reduction scale, dosage was 7.4 mg (95%CI: –10.5 to –4.2 mg) lower.



CONCLUSIONS

- Disorders linked to disruptions in endogenous opioid systems increase methadone dose needs.
- Exposure to drug withdrawal (e.g. by planned detoxification or use of less pure heroin) increases methadone dose needs.
- Tolerance builds with on-going methadone exposure.
- Doses can be minimized through counselor efforts, but this may limit patient recovery to those that are less tolerant.
- Factors identified as important for opioid tolerance in basic science studies appear clinically important in terms of patient methadone dose needs.



CONCLUSION

- Focusing on dosing process and use of an appropriate clinical endpoint rather than dose should optimize methadone maintenance treatment.
- Opioid dosing must be individualized based on comorbidities, and history of opioid exposure and withdrawal.



SUMMARY

- Non-clinician perspective can sometimes provide insight into clinical process and interventions to improve care.
- Multi-disciplinary research teams may be useful for addressing intractable or controversial clinical problems.



Acknowledgements

- Funded by a series of grants from:
- VA Health Services Research and Development and VA Substance Use Disorder Quality Enhancement Research Initiative

