

# Narcotics in the Emergency Room: Helpful or Harmful for Headaches?

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# Disclosure

All planners, presenters, and reviewers of this session report no financial relationships relevant to this activity.

# Objectives

At the end of this presentation, attendees will be able to:

- Apply strategies to select effective, non-narcotic medications tailored to an emergency room (ER) migraine patient's needs.
- Employ validated headache questionnaires to identify undiagnosed migraine sufferers and assess their current treatment.
- Propose pharmacists' actions that can improve transitions of care between ER and outpatient settings.

# Pre-presentation Question

The American Headache Society endorses sumatriptan, metoclopramide, prochlorperazine and which other medication as “should offer” for acute migraine in the ER?

- a. Hydrocodone injection
- b. Morphine injection
- c. Oral zolmitriptan
- d. Droperidol injection
- e. None of the above

# Pre-presentation Question

Which validated questionnaire assesses a patient's current migraine medications' efficacy?

- a. ID Migraine
- b. Migraine ACT
- c. Headache Impact Test
- d. MIDAS
- e. None of the above

# To prevent headache recurrence after ER discharge, which is a “Should” offer?

- A. Dexamethasone
- B. Prednisone
- C. Ketorolac injection
- D. Intravenous fluids

**Virtually every human being on  
the planet will experience a  
headache during their lifetime**

# World Health Organization (WHO)

- #1 = dental caries = 2.4 billion people
- #2 = tension headache = 1.6 billion people
- #3 = migraine headache = 0.9 billion people



# Audience poll

**Diabetes = 9%**

**Epilepsy = 1%**

**Asthma = 8%**

**Migraine = 16%**

Headache 2013;53:427-436

[www.cdc.gov/diabetes/data/statistics/2014statisticsreport.html](http://www.cdc.gov/diabetes/data/statistics/2014statisticsreport.html)

[www.aesnet.org/for\\_patients/facts\\_figures](http://www.aesnet.org/for_patients/facts_figures)

[www.cdc.gov/nchs/products/databriefs/db94.htm](http://www.cdc.gov/nchs/products/databriefs/db94.htm)

# Migraine

- In the United States, approximately 30 million adults
  - 22 million women
  - 8 million men
- Costs
  - \$11 billion for society, primarily due to lost productivity

# Diagnosis

- International Headache Society (IHS) *Primary Headache* criteria
- Standardized research
- **Cumbersome in clinical practice**
  - Categories not mutually exclusive
  - Symptoms-based
  - only 50% of people reporting headaches fulfilling migraine criteria are diagnosed by a physician

# IHS Migraine Criteria

- A. At least five attacks fulfilling criteria B-D
- B. Headache attacks lasting 4-72 hours (untreated/unsuccessfully treated)
- C. At least two:
  - 1. unilateral location
  - 2. pulsating quality
  - 3. moderate or severe pain intensity
  - 4. aggravation by or causing avoidance of routine physical activity (e.g., walking)**
- D. At least one:
  - 1. nausea and/or vomiting
  - 2. photophobia and phonophobia
- E. Rule out organic illness

# Migraine = WHO's 7<sup>th</sup> Most Disabling Illness

## Examples of disabling illnesses

Dementia

Quadriplegia

Active psychosis

**Acute, severe migraine**

# Biomarker

- No biomarker exists for primary headaches
  - symptoms-based diagnosis
  - research ongoing, but useable test is years away
- **Until biomarker found, optimal diagnosis and treatment unlikely**

# Problematic in ER

- **Without biomarker, history is paramount**
- **History-taking barriers**
  - lack of patient/clinician familiarity
  - patient's pain hinders questioning
  - evaluate for substance abuse
  - noisy, sensory-overload environment
  - others

# Why do patients go to ER?

Patient reported reason	%
Access to healthcare	46%
Perceived emergent condition	33%
Preference (ER versus outpatient)	6%
Geographic/transportation	1%
Other	13%



# Headache in ER

- 3 to 5 million visits annually
  - **5<sup>th</sup> leading ER-visit reason**
  - 3<sup>rd</sup> leading reason for adult women
- 1.2 million migraine visits annually
  - 3300 per day
- 37,000 hospital admissions annually
  - 100 per day

# ER diagnosis

- 42% of patients are discharged with a migraine diagnosis
- 42% of patients are discharged as “NOS”
  - NOS = headache not otherwise specified
  - Some (likely the majority) of NOS patients are migraineurs

# Costs

- Per ER visit = \$775
  - Cumulative = \$700 million
- Per inpatient hospitalization = \$7317
  - Cumulative = \$375 million
- **Exceeds \$1 billion annually**

# Patient example

- 43-year-old female, two-decade migraine history
- Presented to ER with debilitating headache, nausea, vomiting
- Persisted for over 24 hours despite self-administration of naproxen, oral/injectable sumatriptan, oral/rectal promethazine
- Twice in preceding year similarly presented to ER
- Afebrile, blood pressure 138/88,
- Neurological exam, CT, EKG, and serum labs “normal”
- **What would you prescribe?**

**HEALTH SYSTEM**

**STATEMENT OF ACCOUNT**

**ACCOUNT INFORMATION**

CARD NUMBER: [REDACTED] AMOUNT: [REDACTED]

SIGNATURE: [REDACTED] EXP. DATE: [REDACTED]

STATEMENT DATE: 12/07/07 DUE DATE: 12/17/07 CURRENT AMOUNT DUE: 0.00

ACCOUNT NUMBER: [REDACTED] \$ AMOUNT ENCLOSED: [REDACTED]

Please detach and return top portion with your payment.

**PATIENT INFORMATION**

Patient Name: [REDACTED] Account Number: [REDACTED] Service Date: 11/09/07 Amount Due: 4,451.00

**INSURANCE INFORMATION**

Primary Insurance: [REDACTED] Secondary Insurance: [REDACTED]

Group #: [REDACTED] Group #: [REDACTED]

Policy #: [REDACTED] Policy #: [REDACTED]

Effective: 05/01/2007 Effective: [REDACTED]

Description of Charge/Service	DESCRIPTION OF SERVICES	Charge(s)
LABORATORY		296.00
CT SCAN		
EMERGENCY ROOM		
EKG/ECG		

Current Account Balance: [REDACTED]

Total Amount Expected: [REDACTED]

Estimated Balance Due: [REDACTED]

**\$4451**

# ER narcotic use

- Authoritative sources recommend AGAINST narcotics as a treatment-of-choice for acute migraine within ER



## American Headache Society (AHS)

### Five Things Physicians and Patients Should Question

Released November 21, 2013

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#### **Don't prescribe opioid or butalbital-containing medications as first-line treatment for recurrent headache disorders.**

These medications impair alertness and may produce dependence or addiction syndromes, an undesirable risk for the young, otherwise healthy people most likely to have recurrent headaches. They increase the risk that episodic headache disorders such as migraine will become chronic, and may produce heightened sensitivity to pain. Use may be appropriate when other treatments fail or are contraindicated. Such patients should be monitored for the development of chronic headache.

# ER Prescribing

- Narcotics

2001 = 20%      2010 = 35%

- Hydromorphone was largest increase = 461%

2001 = 1%      2010 = 10%

- Codeine use declined and hydrocodone use remained stable



# ER Prescribing

- Triptans decreased  
2001 = 10%    2010 = 7%
- **Only medication group:**
  - 1. FDA-approved for acute migraine**
  - 2. Demonstrated to restore function**
- Intravenous fluid  
2001 = 20%    2010 = 34%

# ER narcotic use

- Injectable narcotics administered in 49% of headache visits
  - hydromorphone = 25%
  - meperidine = 7%
- Including oral combination products
  - **narcotics = 59%**
- In year 1998:
  - hydromorphone = less than 1%
  - meperidine = 37%

# Upon ER discharge

- **20% are pain-free**
  - **thus, 80% are NOT pain-free**
- 64% experienced headache recurrent within 24 hours
- Majority lacked outpatient medications
- Majority lacked follow-up recommendations

# Median time to discharge

Drug	Minutes
Any triptan	90
Ketorolac	142
Prochlorperazine	159
Hydromorphone	178
Metoclopramide	193

Length of stay (hours)

ER return within 7 days (%)

Narcotic	Non-narcotic
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5	3.9
7.6	3

# Possible explanations

- Effective analgesics with few contraindications
  - enough narcotic can diminish - at least momentarily - virtually any pain
- Easily reversed with readily available antagonists
- Physician knowledge/comfort:
  - narcotics
  - FDA-approved medications
  - guideline recommendations
- Concern with safety/adverse effects of non-narcotics
- Other

# ER doctors

- **ER doctors are physicians most likely to be a migraineurs' 1<sup>st</sup>-prescriber of narcotics**
- Narcotic administration associated with prior visit to the same ER within the previous 12 months

# Think!!!

## And Then Teach!!

- Narcotics unlikely to restore function
  - Particularly when used on an intermittent basis
- Indeed, narcotics decidedly **decrease** function due to CNS effects
  - Thwarts patient's ability to engage in life's activities



# Risks

- Over time, persistent narcotic consumption among headache sufferers can yield:
  - Tolerance
  - Paradoxical hyperanalgesia
  - Refractory headache

Headache 2007;47:1125-1133  
Neurohospitalist 2016;6:141-146  
Curr Pain Headache Rep 2016;20:50

# U.S Headache Consortium's guidelines

## Acute migraine treatment goals include:

- Treat attacks rapidly and consistently, without recurrence
- **Restore patient's ability to function**
- Optimize self-care and reduce subsequent use of resources

# Patients' Medication Wants

<b>Complete pain relief</b>	<b>87%</b>
No recurrence	86%
Rapid onset	83%
No side effects	79%
Relieve associate symptoms	76%
Route of administration	56%

# AHS

## Ideal parenteral medication [for ER] would

1. offer rapid and sustained headache freedom,
2. without short or long-term sequelae,
3. and allow patients to **return rapidly to work or usual daily activities** *[emphasis added]*

# Challenges Assessing ER Literature

- More than 20 medications studied
- Numerous efficacy measures
- Varying diagnostic, inclusion, & exclusion criteria
- Too few patients for robust statistical analysis
- Tolerability infrequently assessed
- Few studies assess patients' willingness re-take medication
- Comparative studies often lack equivalent doses
- Post-discharge assessment uncommon

# Prime Target for Quality Improvement

## Goals:

1. increase FDA-approved/evidence-endorsed drugs
2. decrease narcotic use
3. Optimize patient-education and transitions of care

# Target Patients

- Ten percent of ER headache patients are “repeaters”
- Account for **fifty percent** of headache-related ER visits
- In comparison to non-repeaters, repeaters are more:
  - **Triptan-naïve**

# Tools you can use to.....

- better identify migraine (and other primary headaches)
- better assess severity,
- better assess at-home drug therapy
- guide improved medication selection



1. Has a headache limited your activities for a day or more in the last 3 months?
2. Are you nauseated or sick to your stomach when you have a headache?
3. Does light bother you when you have a headache?

# ID Migraine

- *Nine of 10 people answering “Yes” to at least 2 questions will fulfill IHS migraine criteria*
- Positive predictive value = 0.93
  - Sensitivity = 0.81
  - Specificity = 0.75
- Regardless of gender, age, presence of other comorbid headaches, or previous diagnostic status.

# ID Migraine

- If patient answers “yes” to at least two questions
  - Suspect migraine
  - Assess current therapy
  - Provide outpatient medication & non-medication options
  - Consider outpatient referral

# Migraine Disability Assessment Survey (MIDAS)

- Five questions
- Assessing headache-related debilitation
- Over last three months
- In work, school, & social domains
- Grade I = 0 to 5 days = little disability
- Grade II = 6 to 10 days = mild disability
- Grade III = 11 to 20 days = moderate disability
- Grade IV = 20+ days = severe disability

# MIDAS

1. On how many days in the last 3 months did you miss work or school because of your headaches?
2. How many days in the last 3 months was your productivity at work or school reduced by half or more because of your headaches? (Do not include question 1 days)
3. On how many days in the last 3 months did you not do household work (such as housework, home repairs and maintenance, shopping, caring for children and relatives) because of your headaches?
4. How many days in the last 3 months was your productivity in household work reduced by half or more because of your headaches? (Do not include question 3 days)
5. On how many days in the last 3 months did you miss family, social or leisure activities because of your headaches?

# MIDAS in the ER

- Diminishes avoidable delays
- Fosters stratified care
  - i.e. base treatment according to disease severity
- Promotes referral for outpatient

# Migraine ACT

**Assesses medications' effectiveness**

**“When you take your treatment.....**

1. Does your migraine medication work consistently, in the majority of attacks?
2. Does the headache pain disappear within 2 hours?
3. Are you able to function normally within 2 hours?
4. Are you comfortable enough with your medication to be able to plan your daily activities?”

# Migraine ACT

- Score changes correlated with, and had a linear relationship with:
  - Short form (SF)-36
  - MIDAS
- **Migraine-ACT score greater than/equal to 2?**
  - **consider medication changes**
- 40% of studied patients scored greater than/equal to 2
  - signifies significant unmet treatment needs.



**Patient  
presents with  
headache**



**Diagnose**

**ID Migraine  
IHS**



**Assessments**

**MIDAS**

**Migraine ACT**



**Low Need**

**Diagnose, treat, educate**

**Moderate Need**

**Diagnose, treat,  
educate, discharge  
meds**

**High Need**

**Diagnose, treat, educate,  
discharge meds, follow-up  
care/referral**

# Intravenous fluids

- Sparse evidence
- Administered to 47% of patients
- No correlation of use and pain severity
- ER visit duration is greatest for patients receiving fluids compared to those who do not

# Review Article

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## **Management of Adults With Acute Migraine in the Emergency Department: The American Headache Society Evidence Assessment of Parenteral Pharmacotherapies**

# Answered two questions

1. Which injectable medications should be considered 1<sup>st</sup>-line treatment for adults who present to an ER with acute migraine?
2. Do parenteral corticosteroids prevent recurrence of migraine in adults discharged from an ER?

Recommendation	A	B	C	U
Wording	Must	May	Should	None
Value of benefit relative to risk	Large	Moderate	Small	Too close to call
Confidence in evidence	High	Moderate	Low	Very Low
Strength of principle-based inferences	Compelling	Convincing	Plausible	Not plausible

# Must offer

- **Not a single drug!**
- Reflects an unfortunate state of reality
- Also reflects the opportunity for research

# Should offer

- Sumatriptan subcutaneous injection
- 6mg, may repeat in 2 hours
- FDA-approved for acute migraine
- Only guideline drug **demonstrated to restore function [emphasis added]**

# Should offer

- Metoclopramide intravenously
- 10 to 20 milligrams per dose
- Although uncommon, warn about akathisia and drowsiness
- Effective for nausea/vomiting



# Nausea & Vomiting ER Impact

	With N/V	Without N/V
<b>ER costs</b>	\$1,499	\$1,187
<b>Lost work productivity costs</b>	\$10,344	\$9,218

# Should offer

- Prochlorperazine intravenously
- 10 milligrams per dose
- Effective for N/V
- Warn about akathisia and drowsiness
- *My comment – return to function unlikely*

# May Offer

(my vignettes)

- Droperidol injection
  - (Drowsiness, may improve N/V)
- Valproate injection
  - (well tolerated, infuse over 5 minutes)
- Acetaminophen intravenous
  - (well tolerated, costly)
- Chlorpromazine injection
  - (drowsiness, may give via infusion)
- Haloperidol injection
  - (drowsiness, consider giving benztropine for EPS)
- Ketorolac injection
  - (No drowsiness, well tolerated)
- Acetylsalicylic acid intravenous
- Dexketoprofen injection
- Diclofenac injection

# May Avoid

- **Hydromorphone intravenous**
- **Morphine intravenous**
- Octreotide intravenous
- Diphenhydramine injection

# No recommendation

- Meperidine intravenous

# Prevent Migraine Recurrence

- Must offer
  - No drug
- Should offer
  - Parenteral dexamethasone
  - Ideal dose not known
    - studied doses include 10mg, 20mg, and 24mg

# Non-pharmacologic options

- Cognitive Behavioral
  - endorsed by guidelines, e.g. biofeedback
- Also consider
  - Room with minimal sensory stimulation (i.e. low light & noise)
  - Cool cloth/ice to forehead

# Pharmacists' opportunities

- Treatment largely based on physicians' discretion
  - Substantial practice variations
  - **Target efforts at physicians' knowledge, whether individual or group**
- Advocate for:
  - preferential use of endorsed medications
  - narcotic avoidance unless patient-specific factors necessitate use
  - Incorporating evidence summaries into the electronic/paper drug-ordering processes
  - transitions of care coordination



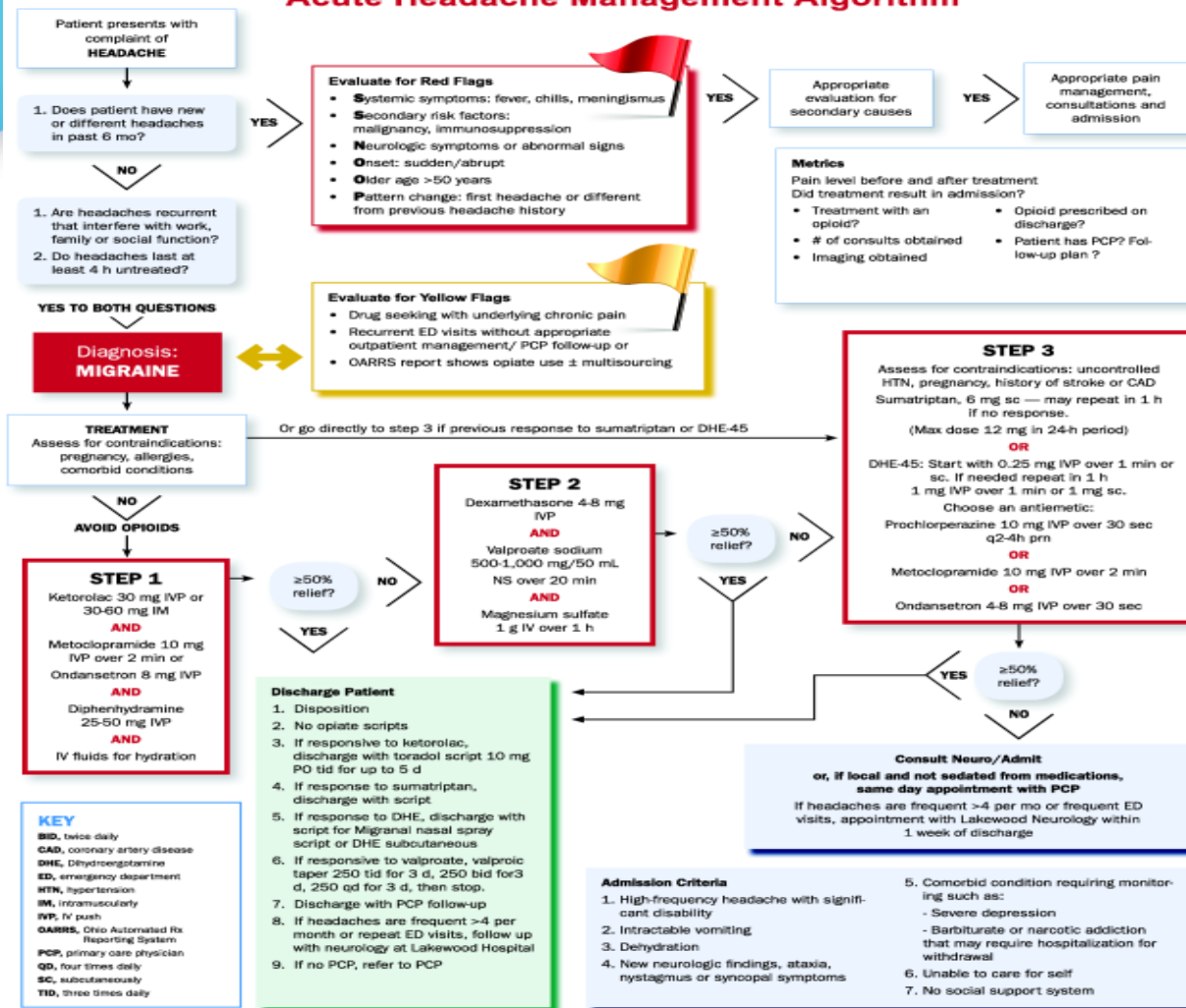
# ***An Algorithm for Opioid and Barbiturate (BCP) Reduction in the Acute Management of Headache in the Emergency Department***

Next slide

# Results, Pre- and Post- Algorithm Implementation

N = 50	Pre (%)	4 months (%)	1 year (%)
Treated with narcotic or BCP	66	7	28 P<0.001
Discharged with narcotic or BCP	37	12	6 P = 0.02
Follow-up appointment	54	97	73

# Cleveland Clinic Emergency Department Acute Headache Management Algorithm



# Should narcotics *EVER* be administered?

- Yes
- *“Never say never”*

**Per AHS, use Narcotics for Acute Migraine if:**

A headache has lasted longer than 4 hours,

**AND**

A patient cannot tolerate triptans,

**AND**

The risk of abuse has abuse has been addressed and sedation will not put the patient at risk,

**AND**

The patient has previously responded to an opioid

# Case example

- 34 year old female, no physician diagnosis
- “Worst headache ever”
- OTC products previously effective
  - Consumption is escalating
  - Took 8 Excedrin tablets prior to ER
- ID Migraine, “yes” to all questions
- MIDAS = Grade III
- What do you do?

# Key Takeaways

- #1. Headache is exceedingly common in ERs....as is INEFFECTIVE narcotic usage
- #2. Pharmacists are well-positioned to promote improved screening, assessment, and drug selection for migraine sufferers
- #3. Authoritative recommendations endorse non-narcotic approaches

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