Overview of Acute Pain

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Acute pain

- Acute pain is caused by injury, surgery, illness, trauma or painful medical procedures. It serves as a warning of disease or a threat to the body. It generally lasts for a short period of time, and usually disappears when the underlying cause has been treated or has healed.

Acute Pain

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Health Policy

Opioid Epidemic in the United States

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Over the past two decades, as the prevalence of chronic pain and health care costs have exploded, an opioid epidemic with adverse consequences has escalated. Efforts to increase opioid use and a campaign touting the alleged undertreatment of pain continue to be significant factors in the escalation. Many arguments in favor of opioids are based solely on traditions, expert opinion, practical experience and uncontrolled anecdotal observations. Over the past 20 years, the liberalization of laws governing the prescribing of opioids for the treatment of chronic non-cancer pain by the state medical boards has led to dramatic increases in opioid use. This has evolved into the present stage, with the introduction of new pain management standards by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) in 2000, an increased awareness of the right to pain relief, the support of various organizations supporting the use of opioids in large doses, and finally, aggressive marketing by the pharmaceutical industry. These positions are based on unsound science and blatant misinformation, and accompanied by the dangerous assumptions that opioids are highly effective and safe, and devoid of adverse events when prescribed by physicians.

Results of the 2010 National Survey on Drug Use and Health (NSDUH) showed that an estimated 22.6 million, or 8.9% of Americans, aged 12 or older, were current or past month illicit drug users, The survey showed that just behind the 7 million people who had used marijuana, 5.1 million had used pain relievers. It has also been shown that only one

CONCLUSION

What emerges from the available data utilized in this review is the conclusion that over the past 20 years there has been an escalation of the therapeutic use of opioids and other psychotherapeutics as well as their abuse and nonmedical use. As a consequence of the fact that hydrocodone has become the number one prescribed medication in America, it is not difficult to see the significant impact that this has had on the overall patterns of abuse and nonmedical use, particularly since the illicit use of prescribed psychotherapeutics (including opioids, which are currently at the top of that list) now overshadows the use of nonprescription illicit drugs.

Drug dealers are no longer the primary source of illicit drugs. Our greatest enemy is now inappropriate prescribing patterns, based on a lack of knowledge, perceived safety, and undertreatment of pain

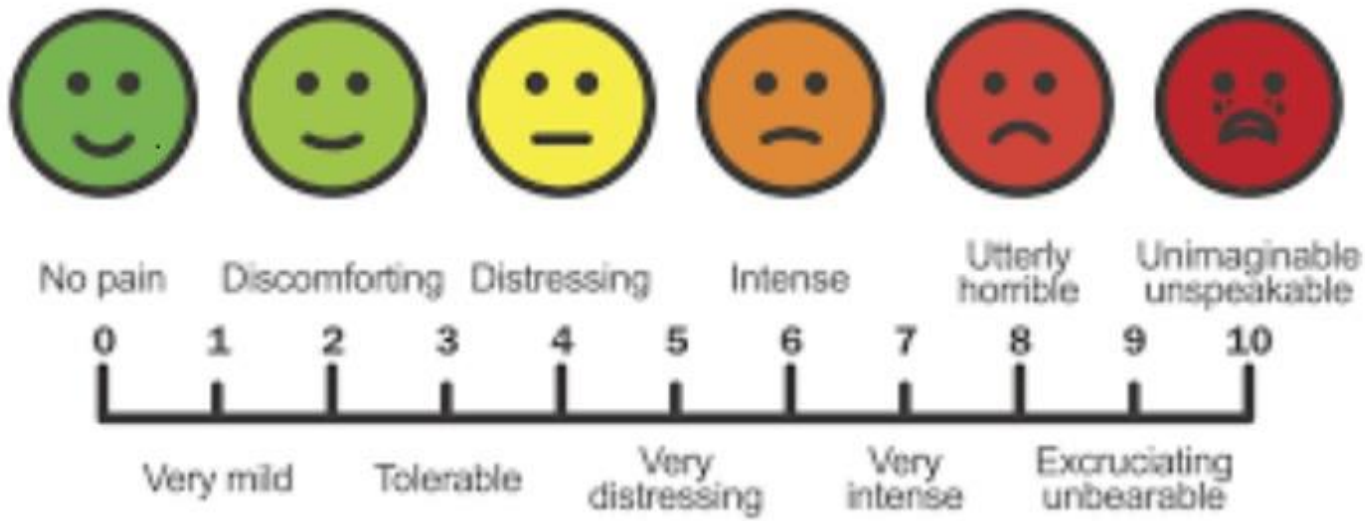
Acute pain service manages

PCA

epidural

other specialize continuous regional analgesia

- APS Staffing
- Pain score
- Pupil size
- FAC
- Neuropathic pain scale


No pain
Discomforting
Distressing
Intense
Utterly horrible
Unimaginable unspeakable
0
1
2
3
4
5
6
7
8
9
10
Very mild
Tolerable
Very distressing
Very intense
Excruciating unbearable

Functional Activity Capacity (FAC)

روشی ساده سریع و کارآمد برای تخمین میزان موفقیت کنترل درد حاد به شمار می آید که به شرح ذیل بررسی میشود

A: محدودیت حرکتی به واسطه درد نداشته باشد.

B: اندکی محدودیت حرکتی به واسطه درد وجود داشته باشد.

C: عدم توانائی حرکت به واسطه درد وجود داشته باشد.

منظور از Function عملکردی است که مرتبط با علت بستری بیمار باشد مانند عدم توانائی یا توانائی تنفس / سرفه در جراحیهای شکمی ، عدم توانائی یا توانائی انجام فیزیوتراپی مفاصل هیپ پس از جراحی مفصل.

- NASAIDs
- Coxib
- Paracetamol
- Ketamin
- Nitrous oxide
- TCAs
- Gabapentinoids
- Lignocain
- Calcitonin

کتامین

- این دارو به صورت انفوزیون IV (یا Subcu) یا زیر زبانی قابل تجویز می‌باشد
- ترجیحاً از یک راه تجویز شود.
- تجویز زیر زبانی کتامین Bioavailiability حدود ۵۰٪ دارد فلذا 200^{mg} زیر زبانی معادل 100^{mg} داخل وریدی می‌باشد

- اندیکاسیونهای تجویز کتامین

۱. بیماران در معرض ریسک دردهای نوروپاتیک (انفوزیون ۵-۳ روز)

۲. بیمارانی که علی رغم خواب آلودگی حاصل از مخدرها هنوز درد دارند

۳. Opioid-Tolerant (انفوزیون ۵-۳ روز)

- انفوزیون کتامین در تمام بخش‌های بیمارستان قابل انجام است

- جهت جلوگیری از سوء استفاده‌های احتمالی انفوزیون کتامین بهتر است با پمپهای PCA انجام شود.

- روز پیشنهادی $mg/_h$ ۸-۶ در افراد جوان و $mg/_h$ ۴-۲ در افراد پیر است در صورت نیاز به دوزهای بولوس اختلاف دو دوز متوالی از ۵-۴ میلیگرم بیشتر نباشد.

OPIOID RISK TOOL		
Mark each box that applies	**Female (score)**	**Male (score)**
1. Family history of substance abuse		
• alcohol	☐ 1	☐ 3
• illegal drugs	☐ 2	☐ 3
• prescription drugs	☐ 4	☐ 4
2. Personal history of substance abuse		
• alcohol	☐ 3	☐ 3
• illegal drugs	☐ 4	☐ 4
• prescription drugs	☐ 5	☐ 5
3. Age (mark box if between 16-45 years)	☐ 1	☐ 1
4. History of preadolescent sexual abuse	☐ 3	☐ 0
5. Psychological disease		
• attention deficit disorder, obsessive compulsive disorder, bipolar, schizophrenia	☐ 2	☐ 2
• depression	☐ 1	☐ 1
Scoring totals		

0-3: low risk; **4-7:** moderate risk; **>8 :** high risk (estimated 91% risk of aberrant behaviour)

Reference: Webster LR, Webster RM. Predicting aberrant behaviours in opioid-treated patients: preliminary validation of the Opioid Risk Tool. *Pain Medicine* 2005; 6: 432-442.

Opioid	Preparation	Comments
Morphine	For PCA: ▪ 1 mg/mL solution is available in pre-filled syringes. ▪ If require a higher concentration, write detailed dilution instructions on the *PCA Standard Orders* form. Morphine tartrate is available in ampoules of 120 mg and 4 mg/mL and is a useful concentration. It should be ordered as '*Draw up 2 x 120 mg ampoules morphine tartrate and make up to 60 mL with saline = 4 mg/mL*'.	▪ First choice in most patients ordered PCA or intermittent subcut opioids except in those patients with renal impairment and if very high doses are expected. ▪ Has renally cleared active metabolites. ▪ Note that M6G levels may take up to 24 hours to peak in the CNS. **Note:** RAH guidelines are available for age-based intermittent subcut morphine – see summary on APS dose card.
Fentanyl	For PCA: ▪ 20 microgram/mL solution is available in pre-filled syringes. ▪ If require a higher concentration, write detailed dilution instructions on the *PCA Standard Orders* form. It should be ordered as '*Draw up 50 mL of undiluted fentanyl = 50 microgram/mL.*'	▪ Alternative first-line choice with PCA. ▪ First choice with PCA in patients: - with renal impairment - aged over 70 years ▪ No active metabolites.
Oxycodone	For PCA: ▪ The ward staff must prepare the syringes. Instructions for dilution are on the pre-printed label. For oral analgesia: ▪ Is available as a syrup if needed.	▪ Third-line choice with PCA and second choice for intermittent subcut opioid injections where it is equipotent with parenteral morphine. ▪ Can be given to patients with renal impairment. **Note:** RAH guidelines are available for age-based intermittent subcut and oral oxycodone – see summary on APS dose card.
Tramadol	For PCA: ▪ The ward staff must prepare the syringes. Instructions for dilution are on the pre-printed label. For intermittent injection: ▪ Use subcut rather than IV on general wards as usually not given slowly enough if IV, increasing the risk of nausea and vomiting. ▪ Suggest order 4 hourly and not 6 hourly in most patients. For oral analgesia: ▪ Suggest order 4 hourly and not 6 hourly in most patients. ▪ Is available in liquid form. Tapentadol (Palexia®) is a second-generation version of this drug that has been approved for use in Australia but is not yet on the PBS. It has no active metabolites.	▪ Has an active metabolite (M1, which has most of the opioid agonist effect of tramadol) and therefore often not appropriate in patients with renal impairment. ▪ May be useful in patients where it is important to avoid sedation (e.g. patients with sleep apnoea) or to minimise opioid-related adverse effects on bowel function. ▪ Ondansetron may reduce the analgesic efficacy of tramadol although evidence remains limited ▪ Usefulness is restricted by limits placed on the maximum dose that can be given. The *Product Information* sheet suggests a maximum of 600 mg daily IV/IM and 400 mg a day by mouth; in fit young patients with no contraindications or precautions, the APS has used up to 1000 mg in 24 hours; in patients over 75 yrs a maximum of 400 mg in 24 hours is recommended. ▪ There are a number of contraindications or precautions listed for tramadol, including other drugs that affect reuptake of serotonin (e.g. SSRIs, MAOIs) and drugs or diseases that may lower the patient's seizure threshold (e.g. antidepressant and major antipsychotic drugs and epilepsy). Concurrent use with low doses (≤ 50 mg) of nortriptyline is probably reasonable. ▪ Will not prevent opioid withdrawal. ▪ Consideration should be given to stopping tramadol if signs suggestive of ***serotonin syndrome*** are noted. These include [a] *altered mental status* (e.g. agitation, anxiety, restlessness, confusion), [b] *autonomic stimulation* (e.g.↑ hr, ↑ bp, fever, sweating, dilated pupils) and [c] *neuromuscular excitation* (e.g. tremor, clonus

PRESCRIBING NOTES:

- *When ordering drugs and their route of administration, please note that national prescribing guidelines require 'subcut' and 'subling' to be written rather than 'SC' and 'SL'*
- *When ordering oral opioids (immediate- and slow-release) write the generic name and trade name. E.g. OxyContin (SR oxycodone) or oxycodone (Endone).*

Variable	Value	Comments
Loading dose	0 mg (i.e zero)	این دوز به مقداری از مخدر انتخابی اشاره دارد که پیش از فعال کردن پمپ ضد درد باید به بیمار تجویز شود. به Opioid titrationدر ذیل این جدول دقت شد
Concentration	Morphine 1 mg/mL Fentanyl 20 microgram/mL	غلظتی از دارو که در سرنگ های از پیش آماده شده داخل پمپ قرار میگیرد را شامل میشود
Dose duration	این زمان حدود ۳۰ ثانیه میباشد این زمان حدود ۳۰ ثانیه میباشد	به مدت زمانی که پمپ حجم دوز بولوس را تزریق میکند اطلاق میشود که بنا به شرایط خاص(الگوریتم شماره یک)قابل تغییر است دربیمارانی که از روش PCA زیر جلدی استفاده میشود به ۵ دقیقه افزایش می یابد
Lockout	5 - 10 mins	به مدت زمانی که پمپ دارویی را تزریق نمی کند اطلاق میشود. ثبت تلاش های بیمار جهت دریافت داروی بیشتر در این فاصله زمانی مقیاس مناسبی جهت بررسی کفایت بی دردی وابستگی اضطراب و ... در بیماران تحت درمان میباشد
Background Infusion	0 mg/hr (i.e zero)	ترجیحا در بیمارانی که سابقه مصرف مخدر را ندارند توصیه نمیشود در صورت تجویز این روش مقدار مخدر دریافتی باید از مقدار Bolus کمتر باشد

- **Morphine titration**

- در صورت استفاده از مورفین با توجه به دوز ۰,۰۳ –۰,۰۵ میلی گرم بر هر کیلو گرم وزن بیمار برای یک فرد ۷۰ کیلویی حدود ۲ میلی گرم تزریق وریدی مورفین هر ۵ دقیقه تا دستیابی به بی دردی توصیه میشود

- Subcutaneous PCA

- در صورتی که استفاده همزمان از lv line مشترک بین مورفین و داروی دیگر به صلاح نباشد و دستیابی وریدی مجدد مقدور نباشد، از این روش بصورت موقت یا دائم می توان استفاده کرد.جهت Setup PCA پارامتر های زیر توصیه می شود.

۱. دوبرابر کردن Bolus Dose
۲. دوبرابر کردن Lock Out Time
۳. مدت Dose Duration از سی ثانیه به ۵ دقیقه افزایش یابد

-

سوپ تزریقی

Back flow

anti syphon valve

Specific Groups

Burns patients

Patient with spinal cord injury

Patient after bone marrow transplant

Patient with sickle cell disease

Patient with chronic pain

Renal transplant patients

Pregnant or breastfeeding patients

Suggested initial doses only for opioid-naive inpatients with moderate to severe acute pain

NOTE: Slow-release (SR) opioids and fentanyl or buprenorphine patches **not** suitable or safe for management of acute pain

Age (yrs)	Subcut morphine or oxycodone (mg)*	Subcut fentanyl (microg)*	Oral oxycod (mg)*
15 – 39	7.5 – 12.5	100 – 200	10 – 25
40 – 59	5 – 10	75 – 150	10 – 20
60 – 69	2.5 – 7.5	40 – 100	5 – 15
70 – 85	2.5 – 5	40 – 75	5 – 10
> 85	2 – 3	30 – 50	2.5 – 5
Recommended dose interval: 1 hourly prn			** ↓ dose if pain not se*

ACUTE PAIN SERVICE

(PCA)

نام	نام خانوادگی	نام پدر	پزشک معالج
شماره پرونده-	تاریخ بستری	تاریخ پذیرش	پزشک مشاور

PAC PROGRAM ORDERS		دستورات پایه
DRUG	نام دارو	1) در طول مدت اجرای این دستورات ملاحظات مربوط به دستورالعمل بررسی مقدارPAIN و SEDATION در فرم شماره 2 منظور شود
CONCENTRATION	غلظت	2) افزودن مخدر به دوز تجویز شده منوط به هماهنگی با APS میباشد
BOLUS DOSE	دوز بولوس	3)تجویز اکسیژن در تمام بیماران تحت درمان با PCA الزامیست
BACKGROUND INFUSION	دوز مستمر	4)سیستم PCAباید مجهز به دو استاندارد زیر باشد One way anti reflux valve in IV line Anti siphon valve between patient and PCA
LOADING DOSE	دوز اولیه	5) در صورتیکه دو نوبت متوالی NRS 8< یا FAC=C ثبت شد با APS تماس گرفته شود
LOCKOUT TIME	زمان توقف	6) امپول نالوکسان باید در بخش موجود باشد 7) جهت کنترل تهوع Amp. Ondansetron 4mg تزریق شود در صورت عدم کنترل پس از 15 دقیقه به APS اطلاع داده شود
MONITORING	مراقبتهای لازم	8)جهت کنترل خارش به APS اطلاع داده شود 9)نوع مونیتورینگ توسط پزشک مشاور ثبت شود

Adjuvant	1)داروهای کاهش 2) ملاحظات	متخصص بیهوشی
	Sedation score>2 Respiratory rate<7 fAC=C فورا با APSتماس گرفته شود	متخصص بیهوشی (لغو دستورات)

ACUTE PAIN SERVICE

(PCA)

مانیتورینگ پایه شامل

1)NAS در حالت استراحت و حرکت

2) FAC

3) Sedation Score

4) RR,PR,BP,SPO2

5) مجموع دوز دریافت شده

نام و نام خانوادگی	تاریخ پذیرش	تاریخ ویزیت

جهت مونیتورینگ، اطلاعات فوق برای 8 ساعت اول هر ساعت یکبار و پس از آن هر 2 ساعت یکبار باید ثبت شود

BP ↕																							
BP ↔																							
RR																							
SPO2																							
FiO2																							
NRS																							
SEDATION																							
FAC																							

TOTAL DOSES

PAIN SCORE 0 No Pain 10 Worst possible Pain Fanctional Activity Score A : no limitation B :mild limitation C :severe limitation	Sedation Score 0 Awake/ Alert 1 Easy to rouse 2 Easy to rouse/ difficulty staying awake 3 Difficult to rouse	Anesthesiologist Nurse

Refrences

1)Issue: Volume 95(5), November 2002, pp 1361-1372 Copyright: (C) 2002 International Anesthesia Research Society

2) Issue: Volume 111(4), October 2010, p 1042-1050 Copyright: (C) 2010 International Anesthesia Research Society

3) Issue: Volume 111(4), October 2010, p 841-844 Copyright: (C) 2010 International Anesthesia Research Society

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10) Australian and New Zealand College of Anaesthetists (ANZCA) 2013

11)National guideline clearinghouse practice guidelines for acute pain mamagement

12)10 years of acute pain services – achievements and challenges