A Review of Tapering Strategies to Improve Appropriate Use of Opioids in Patients Undergoing Pain Management Therapy

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PRIUM

BACKGROUND

- In recent years opioid use in the United States has increased.
- Furthermore, there has been increased aggressiveness in pharmaceutical companies' marketing of opioids, greater physician and organization advocacy, and an enhanced patient awareness on the right to pain relief.
- One of the most common problems clinicians face with opioid therapy is the development of withdrawal symptoms in patients upon discontinuation.

OBJECTIVES

1. Provide a comprehensive overview of the published peer-reviewed literature related to opioid tapering strategies in pain management
2. Develop an algorithm and taper examples to guide clinicians in the appropriate tapering of opioid therapy

METHODS

- PubMed, Ovid, Google Scholar and Cochrane Library, were searched for articles from January 2000 to January 2013.
- The key search terms were "opioid," "opioids," "taper," "tapering," "detoxification," "detox," "dependence," "withdrawal," and "weaning."
- Articles were selected based upon relevance and quality and included narrative and systematic reviews, prospective and retrospective studies, and clinical guidelines from US government agencies and experts.
- Articles which focused on methadone and buprenorphine as detoxification and maintenance treatments in addicted patients were excluded.
  - —This exclusion was due to the complexity of weaning addicted patients off opioid therapy and significantly different addiction therapy as handled by specialists.
- The selected articles were summarized in a table and further divided into subgroups: temporal parameters, complex patients with or without behavioral problems, and pharmacologic adjuvants.

RESULTS

YEAR	AUTHOR/TITLE	STUDY DESIGN	INTERVENTION	FINDINGS
2006	Kral, L et al. Pain treatment topics: opioid tapering.	Review.	None.	No single strategy can be universally applied. Each situation is unique. The most important factor is to consider how acutely the taper or conversion is needed.
2007	Finch, James W et al. Two-year experience with Buprenorphine-naloxone (Suboxone) for Maintenance Treatment of Opioid Dependence Within a Private Practice Setting.	Retrospective chart review. N=71 opioid-dependent patients. 72% of patients were younger than 40 years old, median and mean age were 32, 93% were white, 70% were employed.	Induction with Suboxone during first three days of treatment. Suboxone was given ranging from 2–4 mg in divided doses. At day three daily dose needs were established and patients were given three–seven day Suboxone prescriptions, followed by scripts for increasing length.	Positive treatment outcome (patient engaged in ongoing substance abuse treatment with significant reductions in opioid abuse). 43% of patients continued ongoing medication-assisted therapy, and 21% tapered successfully with Suboxone.
2000	Pederson, C, Parran, L. Opioid Tapering in Hematopoietic Progenitor Cell Transplant Recipients.	Descriptive, exploratory, prospective, quantitative, and qualitative. N= 45 (patients between ages 7– 64) Daily.	Interviews, patient reported pain levels and withdrawal symptoms during opioids tapers. Demographic, medication, and nurse documentation data were obtained from patient hospital records.	Length of taper ranged from 1–17 days. There was no difference by disease or transplant type in length of taper cumulative opioids give pre-taper or during taper, or number of self-reports of withdrawal symptoms. Daily changes in nurse-administered opioid dosage during tapers ranged from a decrease of 67% to an increase in 14%.
2002	Parran, L, Pederson, C. Effects of an Opioid Taper Algorithm in Hematopoietic Progenitor Cell Transplant Recipients.	Quasi-experimental. An intervention was used, but there was no random assignment of study participants to groups. N= 106, Phase one = 45, Phase two=61.	An opioid taper algorithm, developed by the experimenters was used in phase two, while patients in phase one (really just a separate group of patients) received no intervention (i.e., therapy was not directed by the algorithm).	Use of the algorithm decreased taper time by an average of 0.4 days compared to the non-algorithm group. There was also a significant decrease in withdrawal symptoms, and no significant differences in patient self-reports of worst pain or satisfaction with pain management.
2013	Roux, P et al. Buprenorphine/naloxone as a promising therapeutic option for opioid abusing patients with chronic pain: reduction of pain, opioid withdrawal symptoms, and abuse liability of oral oxycodone.	Seven-week inpatient study (n=25).	Subjects were transitioned from preadmission prescribed opioid to Buprenorphine/Naloxone (Bup/Nx). Subjects were tested under Bup/Nx maintenance doses. Patients could self-administer oxycodone orally or receive money during laboratory sessions. Drug choice data was gathered, as well as subjective ratings of clinical pain and withdrawal symptoms.	Pain was significantly reduced while participants were maintained on Bup/Nx compared to preadmission ratings. No differences in percentage drug choice were observed between the active oxycodone doses and placebo under each Bup/Nx maintenance dose.
2011	Jalili, M et al. Sublingual Buprenorphine in acute pain management: a double-blind randomized clinical trial.	Prospective double-dummy, double-blind, placebo-controlled, randomized clinical trial. N=44 (only patients with bone fractures were included).	Subjects were randomly assigned to receive either 0.4 mg sublingual buprenorphine tablets plus 5ml of sterile water (as placebo), or 5 mg of intravenous morphine sulfate plus one sublingual placebo.	Mean pain scores were similar at 30 minutes and at 60 minutes). Adverse effects observed within 30 minutes were nausea, dizziness, and hypotension.
2012	Dembe, A et al. Opioid Use and Dosing in the Workers' Compensation (WC) Setting. A Comparative Review and New Data from Ohio.	This was a retrospective, descriptive study, comparing Ohio WC data to national WC data.	Systematic literature reviews of and non-WC opioid use and dosage were conducted nationally. These were compared to two years of Ohio WC data (2008-2009), which were analyzed to determine average daily morphine equivalent dose (MED), opioid costs, pharmacies used per claimant, and extent of long-duration cases.	19.2% of Ohio WC claims involved opioid use, compared to 31.8% in other WC systems, and 17.9% in non-WC settings. The mean daily morphine equivalent dose was 57.5 mg in Ohio, compared to 47.8 mg in other WC systems, and 41.8 mg in non-WC populations. Approximately 10% of Ohio WC claims had MEDs exceeding 120 mg/day.
2008	Franklin, GM et al. Early Opioid Prescription and Subsequent Disability Among Workers With Back Injuries.	Prospective, population-based cohort study with the purpose to examine whether prescription of opioids within six weeks of low back injury is associated with work disability at one year.	Data was analyzed reflecting paid bills for opioids prescribed within six weeks of the first medical visit for a back injury among 1843 workers with lost work-time claims. Additional baseline measures included an injury severity rating from medical records, and demographic, psychosocial, pain, function, smoking, and alcohol measures from a worker survey conducted 18 days (median) after receipt of the back injury claim. Computerized database records of work disability one year after claim submission were obtained for the primary outcome (receipt of wage replacement benefits for temporary total disability one year (365 days) after claim receipt).	Nearly 14% of the sample were receiving work disability compensation at one year. More than one-third of the workers (630 of 1843) received an opioid prescription within six weeks, and 50.7% of these were received at the first medical visit. After adjustment for pain, function, injury severity, and other baseline covariates, receipt of opioids for more than seven days and receipt of more than one opioid prescription were associated significantly with work disability at one year.
2004	McNicholas, L et al. Clinical Guidelines for the Use of Buprenorphine in the Treatment of Opioid Addiction.	Clinical guidelines.	None.	Protocols are presented for the tapering of patients who are on opioid therapy and for conversion from opioids to a type of buprenorphine therapy for maintenance or detoxification treatment.

RESULTS

- There were 24 articles included in this review.
- Out of the 24 articles, 12 were clinical guidelines.
- Of the remaining 12 studies, eight involved pediatric patients in the inpatient setting, and four involved populations that included adults in the inpatient setting.

TAPER EXAMPLES

Hydrocodone/APAP 10mg/325mg, 12 tabs per day

Hydrocodone/APAP tabs comes as:

2.5mg/500mg,
5mg/300mg or 325mg
7.5mg/300mg or 325mg
10mg / 300mg or 325mg
7.5mg/325mg/15mL
Oral Solution: 10mg/300mg/15mL, 10mg/325mg/15mL

Formulation	Q6H: 6am	Q6H: 2pm	Q6H: 6pm	Q6H: 10pm	Daily dose hydrocodon / APAP

OxyContin 30 mg + 40mg t.i.d.
ER tablets come in 10mg, 15mg, 20mg, 30mg, 40mg, 60mg, 80mg

Oxycodone formulation	6am	2pm	6pm	10pm	Daily dose

CONCLUSIONS

- Review of the literature suggested four major themes:
  a) individualize taper parameters to ensure patient compliance
  b) presentation of withdrawal symptoms
  c) slow the rate of the taper at one-third or 20% of the original dose for patients anxious about tapering or prefer to go slower, psychologically dependent, co-morbid cardio- respiratory conditions
  d) switch patients from short-acting to long-acting medications.
- There was no consistent rate of tapering found in the literature.
- Taper rate ranged from an initial 20-50% daily reduction in opioid dose to a 5% reduction in dose every one to four weeks.
- The most common titration rate was a 10% reduction in the daily dose.
- Duration in the reduction of doses ranged from two weeks to four months.
- Additionally, several studies noted the importance of referral of addicted and complex patients to appropriate specialists for treatment.

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