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Focused Review

Prevention of Opioid Abuse in Chronic Non-Cancer Pain: An Algorithmic, Evidence Based Approach

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Background: The use of opioids for chronic non-cancer pain has grown exponentially in the last 15 years. Associated with that, dramatic increases in abuse and overdose deaths from opioid use have been noted.

Objectives: Most opioid abuse stems from legitimate prescriptions, putting the onus on prescribers to use opioids responsibly for chronic pain. Very little evidence-based guidance exists for those who wish to prescribe opioids for legitimate chronic pain and at the same time prevent opioid abuse.

Methods: A review of literature was performed for articles focused on guidelines for opioid use when prescribed for chronic pain, opioid abuse, and overdose, strategies to detect and prevent abuse of opioids, urine drug screens (UDS) in chronic pain settings, prescription monitoring programs (PMP), and the relationship between opioid dosing and abuse.

Results: Based on the existing literature, an evidence-based algorithmic approach was developed to decrease opioid abuse in the chronic pain environment. The pillars of prevention are the screening of patients into high, medium, and low risk categories using screening tools; monitoring patients using UDS, PMP, and pill counts, and lastly, dose limitations.

Conclusion: This algorithmic approach may enable physicians to prescribe opioids for patients with chronic pain and also to reduce opioid abuse.

Key words: Opioids, chronic pain, abuse, prescription, overdose, deaths, overdose deaths, urine drug screens, prescription monitoring programs, opioid dose, screening, monitoring

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The use of opioids has gained universal acceptance in the treatment of acute pain and cancer pain. The use of opioids for chronic non-cancer pain, however, remains controversial. In the last 15 years, there has been a dramatic upsurge in the use of opioids for chronic pain, even though the evidence in support of this practice has not kept up with the increase in the number of prescriptions. Although the use of opioids for chronic non-cancer pain has resulted in an increase in the quality of life and decrease in pain for some, there has been an unacceptable increase in opioid abuse and opioid-related deaths. Most of the abuse and deaths are from legally prescribed opioids. This predicament calls for responsible prescribing by the physician community, and the need for serious and earnest effort to decrease abuse. Prescribers need do this, however, without compromising availability of opioids to those who benefit from them.

Scope of the Problem

The abuse of prescription opioids has escalated at such an alarming rate that many now consider it an epidemic. It has been reported that the United States consumes 83% of the global supply of oxycodone, and 99% of the hydrocodone supply, despite the fact its population is only 4.6% of the world's population (1-13). In 2010, enough opioids were sold to medicate every American adult with an equivalent dose of 5 mg of hydrocodone every 4 hours for one month (14). In 2008, 2.17 million Americans used pain relievers in an illicit manner; a number close to those using marijuana (2.20 million) and much higher than those using cocaine (722,000) (14). Since 2003, deaths in the United States from drug overdose for whites have exceeded age-adjusted deaths among African Americans. In 2007, the number of deaths involving prescription opioids was 9.3 times the number involving cocaine and 5.38 times the number involving heroin (1). These deaths were more than those from cocaine and heroin combined. It has been shown that from 1997 through 2007, there was a seven fold increase in the number of prescriptions for opioids. This paralleled closely with the increase in deaths due to opioid overdose (15). There were 14,800 opioid overdose deaths in 2008, as compared to less than 2,000, in 1997. In 2008, deaths attributable solely to prescription opioids constituted approximately 73% of all deaths associated with drug-related overdoses (2). This increase in unintentional drug overdose deaths has been directly credited to the increased use of prescription opioids (1,14,15). We must be cognizant that each death represents just the tip of the iceberg and that there is ample abuse lurking beneath it. For every unintentional overdose death related to an opioid analgesic, 9 patients are admitted for substance abuse treatment, 35 visit emergency departments, 161 report drug abuse or dependence, and as many as 461 patients report the nonmedical use of opioid analgesics (2). During the years 1999–2008, prescription opioid sales, emergency department admissions for substance abuse treatment related to prescription opioids, and mortality rates due to opioid overdose all increased at similar rates (14). Sales of prescription opioids in 2010 were 4 times those in 1999 (14). The Treatment Episode Data Set Report (16) found that substance abuse treatment admissions that reported any opioid abuse increased more than fourfold between 1998 and 2008, from 2.2 to 9.8%. A separate report indicated that the substance abuse treatment admission rate in 2009 was almost 6 times the rate in 1999 (14). The nonmedical use of opioids costs insurance companies up to $72.5 billion annually in health care costs (17). According to another report, total US societal costs of prescription opioid abuse were estimated at $55.7 billion in 2007. Workplace costs accounted for $25.6 billion (46%), health care costs accounted for $25 billion (45%), and criminal justice costs accounted for $5.1 billion (9%) (18).

Source of Opioids Used Illicitly

More than half of those who used opioids illicitly obtained them free of cost either from a relative or a friend; 14% bought the drugs from them and 5% stole the drugs from them. Only 18% got prescriptions from a physician. In other words, about 83% of those who used opioids in an illicit manner had access to them because of a legitimately written prescription. Moreover, 81% of those who obtained the opioids free of cost revealed that their sources had obtained these drugs through a single prescriber. Only 4% paid a drug dealer or a stranger for the medication. Only 5% obtained them by writing a fake prescription, stealing from a doctor's office/clinic/hospital/pharmacy or described their source as "some other way" (1). According to a report by the Centers for Disease Control and Prevention, 76% of nonmedical users report getting drugs that had been prescribed to someone else, while only 20% report that they acquired the drug from their own doctor (2). Furthermore, among persons who died of opioid overdoses, a significant proportion did not have a prescription in their records for the opioid that killed them. In West Virginia, Utah, and Ohio, 25%–66% of those who died of pharmaceutical overdoses used opioids originally prescribed to someone else (2). Hall et al (19) reported that 63% of overdose deaths were from pharmaceutical diversion and 21% were from doctor shopping, meaning that at least 84% of the deaths were from legally prescribed opioids. This data implies that not only is personal abuse a major concern, but that diversion of prescribed opioids deserves equal attention. Drug dealers are no longer the primary source of illicit drugs. It appears that the greatest enemy is now the diversion of drugs from family and friends -- drugs procured from one physician and not from doctor shopping (20).

How Did It Become An Epidemic?

In the late nineteenth- and early twentieth-century, opioids were used extensively in medicine, even for non-pain conditions such as respiratory problems, anxiety, gynecological conditions, bloating, and many

others. This led to the widespread abuse of opioids and resulted in a public health emergency. Congress in 1912 passed a law severely limiting the use of opioids. Following that, opioids were used very conservatively (21) and perhaps even too cautiously. This changed in the late 1990s with the introduction of long-acting opioid formulations (22). The pharmaceutical industry aggressively marketed long-acting opioids (20-24) for chronic pain relying on 2 erroneous facts:

- That medical management with opioids is the recommended solution for undertreated chronic pain
- That the use of long-acting formulations decreases incidences of prescription opioid abuse.

Aggressive marketing by pharmaceutical companies using "paid consultant" physicians (some of whom did not have formal chronic pain management training and some of whom were non physicians), along with the endorsements of major pain societies, resulted in a reconsideration of then current practices by the state medical boards. The principles of opioid management in acute pain and cancer pain were transferred to the chronic pain arena. This culminated in the embracing of this class of drugs by practicing physicians who wanted to provide relief to their chronic pain patients. According to one study, data from 1990 to 1996 (a phase before the aggressive push for use of opioids for chronic pain), show that during this time period, there was a 22% increase in the medical use of oxycodone and interestingly, a 29% decrease in oxycodone-related emergency department visits (25). The authors concluded that increased opioid use is not associated with deleterious health consequences. The article, in fact, was published in 2000 (during the onset of the epidemic), thus giving the false impression that increased opioid use was not associated with increased abuse. But when similar data were examined by the same group for 1997-2002, there was a 402% increase in the medical use of oxycodone and a 226% increase in fentanyl (26). It is to be noted that during this period, physicians had undergone a significant change in their outlook regarding pain management and were aggressively treating chronic non-cancer pain using opioids. Correspondingly, there was a 1000% and 381% increase in opioid-related emergency department visits; 1,000% for fentanyl and 381% for oxycodone. This group concluded that even though there was an increase in abuse, it did not interfere with legitimate practice (26)! As reported by the Milwaukee Journal Sentinel, this group received funding from the pharmaceutical industry. Approximately two-thirds of the panel responsible for writing guidelines for the use of opioids for chronic pain for the American Academy of Pain Medicine (AAPM) and American Pain Society (APS) had conflicts of interest with the opioid pharmaceutical industry (27-31). These guidelines, while addressing issues like dose escalations, high dose opioid therapy, breakthrough pain, and upward titration of opioids, do not address the issues of dramatic increases in overdoses, deaths, addiction, and costs associated with the increased use of opioids. The investigation announced by the Senate in reference to conflicts of interest in preparation of opioid guidelines and promotion of opioid usage, have resulted in abandonment of the American Pain Foundation on May 10, 2012, which was a pivotal organization in promoting opioid use (32).

Effectiveness of Opioids in Chronic Pain

The long-term improvement of pain scores and functionality with the use of opioids for chronic pain has been scrutinized by many organizations. A recent review of the literature by Manchikanti et al (33) suggested that, based on the lack of literature supporting the use of opioids for chronic pain, opioids should be used with great restraint and caution. A review of the literature by Kuijpers et al (34) showed that there was poor evidence that opioids were better than a placebo in relieving pain and improving function. They also reported that there was poor evidence that opioids were not superior to nonsteroidal anti-inflammatory drugs (NSAIDS) in relieving pain and improving function. Guidelines by APS and AAPM (27) also suggest that the evidence of effectiveness of opioids for chronic pain is limited, and yet a consensus is provided for the use of opioids. Chou et al (35) also expressed concern that the review of the literature used to formulate the clinical practice guideline for APS and AAPM revealed a lack of effective studies on the long-term benefits and harm of opioids for chronic pain. A Cochrane review (36) of the long-term use of opioids for chronic non-cancer pain showed that there is weak evidence that those who use them long-term experience clinically significant pain relief, and that there was inconclusive evidence that the quality of life or functioning improves. Pinto et al (37) have evaluated the efficacy of opioids for patients with sciatica and concluded that the clinical trials were of low quality and the efficacy and tolerability of these drugs were unclear. An analysis of the literature regarding pharmacological management for low back pain by White et al (38) concluded that opioids have

similar efficacy as NSAIDS, but have more side effects. Franklin et al (39) followed injured workers for one year. They found that despite a 62% increase in opioid doses over a 12 month period (from 26 mg morphine equivalent dose [MED] in the first quarter to 42 mg in the fourth quarter), improvement in pain and function was seen only in 27% and 16% of the patients. In concurrence with Franklin et al (39), multiple other authors have illustrated deleterious consequences of early or continued opioid use for chronic pain, including adverse consequences of dependence, hyperalgesia, and an association between opioid prescribing and overall health status, with increased disability, medical costs, subsequent surgery, and continued or late opioid use (1,39-56).

Call For Responsible Prescribing

The annual US expenditures related to pain (including direct medical costs and lost wages) are higher than those for cancer, heart disease, and diabetes combined (20). The improvements in the emotional and economic impact of untreated chronic pain are often the criteria by which pain management physicians measure the success of a treatment modality. But the notion that aggressive use of opioids in trying to alleviate chronic non-cancer pain would result in improvement of function (let alone improvement in pain) has been proven erroneous. Despite a cavalier approach to the prescription of opioids in the last decade, numerous studies have shown a consistent lack of evidence that opioids decreased pain, improved function, or decreased health care costs (27,33-39). On the contrary, there is now an abundance of evidence that this aggressive approach has harmed individuals and society and has had a negative economic impact (1,14-18,23,57-87). Gomes et al's study (57) reports that the overall death rate for patients receiving opioids was 10 times higher than those not on opioids, suggesting possible harm. Eriksen et al (23) have shown that patients on opioids report higher pain scores, poor self-rated health, not being engaged in employment, higher use of the health care system, and a negative influence on quality of life. Although pharmacists, state medical boards, and other agencies and professionals play a role in curbing abuse, the primary onus is on the prescribing physician. Since the vast majority of opioid overdose deaths from opioids stem from legitimate prescriptions, calls for responsible prescribing by physicians have been made (88-94). Given that 3% of physicians accounted for 62% of the opioids prescribed in one study (61), the proliferation of high-volume prescribers can have a large impact on the use of opioids and overdose death rates (14).

For controlling acute pain and cancer pain, opioids have been shown to be quite effective. Most of the evidence for prescribing opioids comes from studies of their use in these settings. In such scenarios, other medications, namely NSAIDs, muscle relaxants, antidepressants, and anticonvulsants are not as effective and are used, if at all, in a supplementary role. However, extrapolating these results from acute pain studies to guide managing chronic non-cancer pain may not be a wise step. Opioids have a very important role in chronic pain management and their value should not be underestimated. Unlike other analgesics, opioids do not result in organ toxicity, nor is there any ceiling dose associated with their use. Opioids have, thus, become the mainstay and play a vital role but they are not a panacea for chronic pain. In order to maximize their efficacy, opioids should be used with great restraint and caution and in carefully selected patients as recommended by American Society of Interventional Pain Physicians guidelines (62). According to one study, there is evidence that opioids are being used with the wrong patients (63). We concur with Manchikanti et al (20) that the most underappreciated issue in modern medicine is the adverse consequences of appropriately prescribed opioids, with all the blame diverted to abuses and overuses.

There are 3 types of patients that we should be cautious about: the first is the abuser; the second is the one who is involved in diversion; and, the third is the patient who is a combination of the two. The cornerstones for responsible opioid use for balancing pain relief along with curbing abuse and diversion are:

- Careful patient screening to stratify patients into different risk groups for opioid abuse/diversion
- Monitoring patients to ensure compliance for the responsible use of opioids
- Establishing and adhering to dose limitations.

Screening Patients

The need for effective screening tools was expressed as early as 2001 (64,65). A decade later we are still looking for a tool that is universally acceptable. Guidelines from AAPM and APS (27) state that risk stratification is an undeveloped skill for many physicians prescribing opioids and that these physicians should be more knowledgeable in this area. There are many screening tools that currently exist which are specifically designed for prescription opioid abuse. Solanki et al (66) reviewed all the available screening tools and con-

cluded that there was no single screening tool that can be applied universally. Chou et al (35) analyzed tools that were specific for prescription opioids and based on their criteria found that most of the studies evaluating the screening tools had methodological flaws. However, screening tools may play an important role in curbing abuse. The failure to utilize existing tools so as to find the perfect tool seems counterproductive in this environment. The question remains: Which is the best existing tool? The tools we find useful are the Screener and Opioid Assessment for Patients with Pain (SOAPP) (67), Pain Medication Questionnaire (PMQ) (68,69), Prescription Drug Use Questionnaire patient version (PDUQP) (70), Addiction Behaviors Checklist (ABC) (71), Diagnosis, Intractability, Risk, Efficacy (DIRE) score (72) and the one by Atluri and Sudarshan (73). The screening tool Current Opioid Misuse Measure (COMM) (74) and Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP-R) (75) were not considered because many of the questions were not related to abuse/diversion and fell under the category of psychological queries. The Pain Assessment and Documentation Tool (PADT) (76) is not a screening tool as it addresses the level of analgesia, adverse events, and activities of daily living along with aberrant drug-related behavior. The section of abuse is a small component of the whole tool. The screening tool by Michna et al (77) addressed only 3 items, and is not comprehensive enough to identify abuse. The Opioid Risk Tool (ORT) (78) is a 5-item tool which is also not comprehensive. The items in this tool are not predictors of abuse. PDUQ and PDUQP tools were developed by the same group. PDUQP (70) is a modified, improved version of PDUQ (69) as all the questions are related to abuse, and questions related to psychopathology were eliminated. Among the tools selected, the first 3 tools are subjective (SOAPP, PMQ and PDUQP) and the last 3 are objective tools (DIRE score, ABC checklist and the tool by Atluri and Sudarshan). Although there has been a call for the use of these subjective tools (79-82), abusers tend not be truthful in subjective questionnaires (83-87). The screening tool developed by Wu et al (71), the DIRE Score (72), and the screening tool created by Atluri and Sudarshan (73) may have more value since they incorporate objective measures. These tools can be used singularly or in combination. Generic screening tools for drug and alcohol abuse are not as useful as those specifically designed for prescription opioid abuse. Guidelines developed for opioid use for chronic pain (27,87,88) include recommendations for using screening tools, but with the reservation that risk stratification is currently underutilized (89,90). Classifying patients into high and low risk groups helps tremendously with opioid management and might possibly be one of the cornerstones in abuse prevention. As described below, screening patients into different risk categories determines the frequency of monitoring, aggressiveness of dosage, and frequency of follow-up visits.

Urine Drug Screens

Currently, urine drug screens (UDS) remain one of the most important tools for detecting inappropriate use of opioids. Although Starrels et al (91) concluded in their review that the evidence in support of the effectiveness of UDS for reducing opioid misuse in chronic pain is relatively weak, they have also noted that based on cross-sectional studies and case series, UDS is a valuable tool for detecting the use of unprescribed drugs and for confirming adherence to prescribed medications with a higher degree of accuracy than when identified by patient self-report or the impression of the treating physician. Starrels et al (91) also suggested that UDS might improve the provider-patient relationship and clinic morale. After a review of the literature regarding the role of UDS and opioids, Christo et al (92) concluded that, "UDS is one of the major tools of adherence monitoring in the assessment of the patient's predisposition to, and patterns of, drug misuse/abuse – a vital first step towards establishing and maintaining the safe and effective use of opioid analgesics in the treatment of chronic pain." Katz et al (93) have shown that using UDS along with monitoring aberrant behaviors enhances abuse detection. In Manchikanti et al's study (94), random UDS reduced illicit drug use in the chronic pain population. In a separate study, Manchikanti et al (95) have shown that by using UDS they could identify a combined use of illicit drugs and the misuse of prescription drugs in 24% of patients on hydrocodone and in 33% of patients receiving methadone (96). The Federation of State Medical Boards has formally included UDS in current guidelines for using opioids in the management of chronic noncancer pain (97). Since there is evidence that UDS have not been universally adopted by physicians treating chronic pain (98,99), the use of UDS must be encouraged. Random UDS may have more value in detecting abuse as patients may change their behavior when expected to be tested (27).

Prescription Monitoring Programs

Prescription monitoring programs (PMPs) serve as a means of data collection for opioid prescriptions, providing physicians with information about who wrote the prescriptions and the pharmacies that dispensed them. Physicians have access to this data to check if patients are getting opioid prescriptions from more than one physician at the same time. This information becomes extremely useful especially if the patient signs an opioid contract agreeing to obtain the prescription from only one physician and to fill it in only one pharmacy. Currently, there are 38 states with this program (66). A national program would be invaluable in curbing abuse and doctor shopping (100). The National All Schedule Prescription Electronic Reporting Act (NASPER) was enacted by Congress in 2005 but has not yet been fully implemented (101). Calls for immediate funding and rapid implementation of NASPER have been made. This law requires states to collect prescription information for Schedule II, III, and IV medications. It also requires states to have the capability to share this information with one another. This would potentially decrease cross-border opioid trafficking and would be invaluable in curbing abuse and doctor shopping (15,102,103). Paulozzi et al's study (104) recommends using PMP to curb overuse, noting that the rate of overdose deaths is higher in those who use multiple pharmacies and doctors. This assertion is also expressed by White et al (105). In one study, 21% of overdose deaths resulted from doctor shopping (106). In response to the epidemic of prescription drug abuse, the White House Office of National Drug Control Policy issued a document in which it recommended enhanced use of prescription drug monitoring programs (106). The National Alliance for Model State Drug Laws indicates that these databases foster the legitimate medical use of controlled substances while limiting drug abuse and diversion (102). Access to PMP can help clinicians curb diversion and abuse and to decrease the number of unnecessary prescriptions while still providing analgesia to those who need it (102). Manchikanti et al (107) have recently shown that the Kentucky's PMP, KASPER (Kentucky All Schedule Prescription Electronic Reporting Program) has led to a decrease in doctor shopping from 18% in 2001 to 2.1% in 2011. Baehren et al (108) showed that in an emergency department setting, the use of PMP positively influenced the opioid prescribing pattern. Based on the PMP results, 61% of their study patients were prescribed less opioid medication than originally planned, whereas 39% received more opioid medication than previously planned. Paulozzi et al (109) reported that PMPs were not significantly associated with lower rates of drug overdose or opioid overdose mortality or lower rates of consumption of opioid drugs. An accompanying editorial (110) clarified that the lack of impact of PMPs is due to their underutilization.

A Case for Dose Limitation

The evidence in favor of long-term opioid use for chronic pain is at best problematic. Considering the irrefutable evidence showing widespread abuse and diversion, the rationale for high dose opioids should be reexamined. Patients who do not respond to a low/medium dose of opioids generally would not find their pain alleviated by larger doses. In 2007, the state of Washington issued guidelines that in general, the daily dose should not exceed 120 mg of MED (87). The guidelines by APS and AAPM in 2009 defined high dose as 200 mg MED (27). The Canadian guidelines in 2010 identified 200 mg MED as a watchful dose (88). Until recently, however, there was only limited data verifying the safety of these recommended doses, especially in high risk patients. Five recent studies showed that the rate of overdose was directly proportional to the prescribed opioid dose (57,104,111-113). Bohnert et al's study (111) in a national sample of Veterans Health Administration patients revealed that there was a dose-response relationship between the maximum daily prescribed dose of opioid and the risk of opioid overdose death. The overdose death rate for patients receiving a dose of less than 20 mg MED was 0.11 per 1,000 compared to those getting more than 100 mg MED, for whom the death rate was 1.24/1,000. This difference was even higher in those with a history of substance abuse (0.54 versus 2.97). Since the death rates were higher in patients receiving doses of 50 mg MED versus those getting less than 50 mg MED, the authors concluded that that the risk of opioid overdose increased when the opioid dose was equivalent to 50 mg MED.

Dunn et al (112) reported that in a population from a health maintenance organization in Washington State , there was a 9-fold increase in opioid overdose in patients receiving high dose opioids (more than 100 mg MED) to those getting low dose (less than 20 mg). There was a 3.7-fold increase in overdose events in patients receiving doses between 50-99 mg MED versus those getting less than 20 mg MED. Paulozzi et al (104) found that compared to patients receiving lower opioid doses or no opioid prescriptions, the risk of overdose was greatest at daily opioid doses above 40 mg

MED. Braden et al (113) found that patients (Arkansas Medicaid and HealthCore commercially insured enrollees) receiving MEDs of more than 120 mg/d are more likely to have drug-related encounters than those getting lower doses. There were no differences between these 2 groups regarding emergency department visits. Gomes et al (57) found that patients from Ontario's public drug plan receiving "very high" doses (> 400 mg MED) and "high" doses (200-400 mg MED) had a much higher overdose death than those getting "moderate" doses (< 200 mg MED). In "very high" and "high" dose patients the opioid-related mortality rates were 9.94/1,000 for "very high" and 7.92/1,000 for "high." Comparatively, the opioid-related mortality rate was 1.63/1,000 in those with "moderate" doses. Also, the overall death rate (from any cause) was much higher in patients receiving opioids (20.05/1,000) when compared to those who were not getting any opioids (4.00/1,000).

In the above 5 studies, the doses which are related to an emergency department admission for overdoses or death are 40 mg MED (104), 50 mg MED (111,112), 120 mg MED (113), and 200 mg MED (57). We did not find any study in which a higher dose did not correlate with increased mortality and only one study where there was no correlation between higher opioid dose and emergency department visits. Moreover, Paulozzi et al (15) reported that in 80% of all patients receiving opioids, the dose was less than 100 mg MED and was obtained from one physician. This patient pool constituted 20% of the overall overdose deaths. Even though only 10% of all patients were receiving a dose of greater than 100 mg MED from a single prescriber, the overdose death rate in this population was as high as 40%. Patients receiving more than 100 mg MED from multiple physicians constituted the rest of the 10%. The percentage of overdose deaths was 40% in this segment. In other words, patients receiving more than 100 mg MED (from single or multiple prescribers), contributed to 80% of all the overdose deaths, whereas patients on doses of less than 100 mg MED contributed to only 20% of the overall overdose deaths, implying that 100 mg MED is a dangerous dose. There has been a call for establishing a maximum daily dose in order to guide physicians treating patients with chronic pain (114). Based on the current available evidence presented above, defining 50 mg MED/d as a high dose does not seem unreasonable. The dose limits recommended earlier by Washington State (120 mg MED) (109) and the Canadian guideline (200 mg MED) (110) seem excessive. Defining 200 mg MED by APS and AAPM as a high dose also appears to be harmful. We agree with Katz (114) that having dose limits will provide a guide for practicing physicians, reduce harm by eliminating high doses, assist in the negotiation process between physicians and patients pressing for higher doses and finally, impel high dose prescribers to exercise more caution. We concur with Manchikanti et al (20) that commencing long-acting opioid therapy is often the starting point for high dose opioid therapy, a practice that growing evidence suggests is harmful to patients and increases the black market availability of opioids through diversion. Many argue that chronic pain is undertreated and opioids must be used more liberally. We agree that chronic pain is undertreated, but we completely disagree, based on evidence, that aggressive opioid use is the answer to alleviating undertreated chronic pain. Given our awareness of the inadequacy and adverse effects of using opioids for the treatment of chronic pain, the failure to set dose limits is irresponsible and hazardous both to the individual and to society.

Algorithmic Approach to Prevent Opioid Abuse

Opioids play an important but limited role in treating chronic pain. The challenge for the physician is to make opioids available for those who are truly in need, and to withhold them from those who are either abusing or diverting. Although difficult, this can be achieved in most cases. If all nonopioid measures fail in alleviating pain, and if opioids are being used, the following steps would be very helpful. The 3 cornerstones for responsible prescribing are stratifying patients by using screening tools into high, medium and low risk groups; monitoring patients by using UDS, PMPs and pill counts; and lastly, establishing dose limits (Fig. 1).

Stratification of patients into different risk categories is the first step. This requires the use of existing screening tools designed specifically to screen for opioid misuse (subjective tools like SOAPP (67), PMQ (68), PUDQP (70) or objective tools like ABC checklist (71), DIRE Score (72) and the tool by Atluri and Sudarshan (73) to classify patients as high risk, medium risk and low risk. As mentioned earlier, objective tools may be better than subjective tools. Those who are categorized as "high risk" should be monitored closely by performing UDS every 3 to 6 months and PMP every 2-4 months. Opioids should be either avoided or prescribed in low doses. Doses of more than 50 mg MED should be very rarely used and only under specialized settings in conjunction, when available, with addiction specialists. Pa-

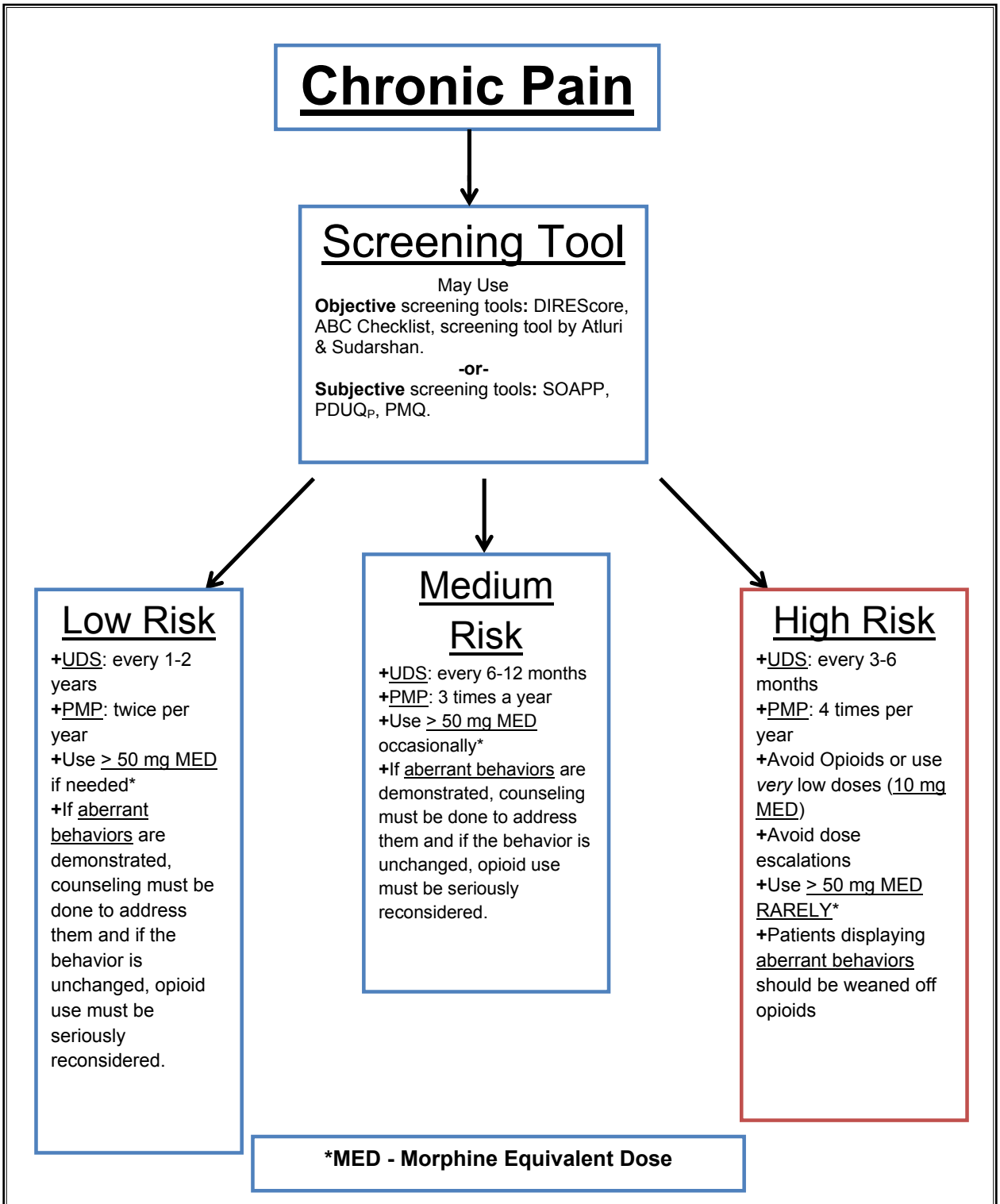

Fig. 1. *Illustration of the 3 cornerstones for responsible prescribing are stratifying patients by using screening tools into high, medium and low risk groups; monitoring patients by using UDS, PMPs and pill counts; and lastly, establishing dose limits*

tients displaying aberrant behaviors (asking for early refills, frequent visits to an emergency department for opioids, doctor shopping, taking opioids from others, etc.) should be weaned off opioids. Patients falling into the "low risk" category should be subjected to UDS every 1-2 years and PMP every 6 months to 1 year. Dose escalations can be done more liberally if required, keeping in mind that doses more than 50 mg MED/d should be an exception rather than the rule. If aberrant behaviors are present, counseling must commence. If counseling does not alter the behavior, opioid use must be seriously reconsidered. Those who are deemed as "medium risk" should be monitored with UDS every 6-12 months and PMP every 3-6 months. Opioid doses and their escalations should be guarded. Doses more than 50 mg MED/d can be used occasionally in carefully selected patients. If aberrant behaviors are present, counseling must commence, with a reconsideration of opioid use if the behavior does not change. These measures, along with an opioid agreement requiring patients to use a single prescriber and a single pharmacy, discouraging self dose escalations, giving limited refills, establishing regular office follow-ups, explaining the risks and benefits of opioids along with insisting on compliance with the opioid agreement should be useful in curbing inappropriate use of opioids.

Conclusion

To tackle the epidemic of prescription opioid abuse, the following is suggested by Paulozzi et al (15).

1. Improving legislation and enforcement of existing laws regarding doctor shopping, diversion, and unscrupulous physicians.
2. Improving medical practice in prescribing opioids through proper education. In our opinion, and in order to encourage proper prescribing, this education should be based on evidence and not influenced by pharmaceutical companies. Currently, most of the education in this field is sponsored by pharmaceutical companies. Not surprisingly, there has been an escalation of abuse despite "voluntary" education (14). There is some evidence that the risk reduction strategies are not employed by primary care physicians, even in high risk patients (115). Mandatory education for those prescribing opioids for chronic pain may be helpful.
3. Pain organizations and societies should establish guidelines based on sound science without conflict of interest. Opioid management should be based on evidence and not on consensus of experts, no matter how learned they may be (116).

Opioids have an important but limited role in chronic pain. Their use should not be curtailed. The aim of this article is to encourage opioid use for patients who need it and at the same time deny it to those who abuse it. Unless the medical community takes an active role in curbing abuse, opioid use will be subject to excessive regulation by the government, making it difficult for us to prescribe. Responsible opioid prescribing, entails employing screening tools, monitoring patients, and establishing dose limits, and is required to prevent harm and preserve access to those who need it. Lest, we should forget, "first do no harm."

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