Published in final edited form as:

J Subst Abuse Treat. 2007 October ; 33(3): 303–311. doi:10.1016/j.jsat.2006.12.011.

Addiction Severity Index in a chronic pain sample receiving opioid therapy

Kenneth Saffier, MD,

Assistant Clinical Professor, Department of Family and Community Medicine, University of California, Davis and Contra Costa Regional Medical Center, 2500 Alhambra Ave, Martinez, CA 94552 USA

Cynthia Colombo,

Research Specialist, Department of Family Medicine, University of Wisconsin, 777 S Mills St, Madison, WI 53715 USA

David Brown, PhD,

Special Advisor on Adolescent Health and Substance Abuse, British Columbia Provincial Health Services, 201-601 West Broadway, Vancouver, BC V5T 4C2 CANADA

Marlon P. Mundt, MS, and

Statistician, Department of Family Medicine, University of Wisconsin, 777 S Mills St, Madison, WI 53715 USA

Michael F. Fleming, MD, MPH

Professor, Department of Family Medicine, University of Wisconsin, 777 S Mills St, Madison, WI 53715 USA

Abstract

The treatment of chronic pain with opioids remains controversial. Physicians are concerned about addiction and drug diversion, and there is limited empirical information on using opioids with chronic pain patients. This report presents data collected on the Addiction Severity Index (ASI) in a sample of patients (n=908) receiving opioids from their primary care physicians. The ASI provides clinically important information about patients receiving opioid therapy. The ASI consists of seven subscales including medical, alcohol, drug, employment/support, legal, family/social, and psychiatric domains. Clinically relevant findings include a high ASI medical score (0.87), high psychiatric severity score (0.27), lifetime treatment of alcohol problems (reported by 22% of males), 5.6% prior delirium tremens, 10.1% prior treatment for drug problems, 12.1% prior drug overdose, 28% drunk driving citations; 40.3% of females had serious suicidal thoughts, and 23.8% suicide attempts. The ASI provides important information that can help primary care physicians manage chronic pain patients receiving opioid therapy.

Keywords

Addiction Severity Index; ASI; chronic opioid therapy; chronic pain; primary care; substance use disorders

Address correspondence to: Michael F. Fleming, MD, MPH, Professor, Department of Family Medicine, University of Wisconsin, 1100 Delaplaine Ct., Madison, WI 53715 USA, Phone: 608-263-9953, Fax: 608-263-5813, Email: E-mail: mfleming@fammed.wisc.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Introduction

Chronic pain is a frequent and challenging problem for primary care providers. In a World Health Organization (WHO) study of 25,916 primary care patients in 14 countries, 21.5% had experienced severe pain for most of six months in the preceding year (Gureje, Von Korff, Simon, & Gater, 1998). Several factors have prompted clinicians to prescribe opioid analgesics as one of several tools for pain management. These factors include patient experiences and studies that have illustrated 1) how pain is too often inadequately treated (Von Roenn, Cleeland, Gonin, Hatfield, & Pandya, 1993); SUPPORT Principal Investigators, 1995), 2) legislative actions to promote patients' right to adequate pain treatment (Gilson, Maurer, & Joranson, 2005), and 3) recent court cases holding physicians and health care organizations responsible for inadequately treated pain (Rich, 2001). With an increase in physicians prescribing opioids, there are concerns about the use of opioids leading to a rise in substance use disorders (SUDs) in this population. Estimates of the prevalence of substance use disorders in patients with chronic non-malignant or benign pain range from <1% (Porter, & Jick 1980) to 65% (Swanson, Maruta & Wolff, 1986). This great variance is due to different definitions and assessments of substance use disorders, selective populations studied, and research methodology.

Since the introduction of the ASI (McLellan, Luborsky, Woody, & O'Brien, 1980), it has been a useful tool for both substance abuse treatment programs and researchers to evaluate patients entering treatment and their outcomes (McLellan, Kushner, Metzger, Peters, Smith, Grissom, Pettinati, & Argeriou 1992). Studies have reported ASI scores in various populations of persons participating in alcohol and drug treatment programs (Leonhard, Mulvey, Gastfriend, & Schwartz, 2000; Rosen, Henson, Finney, & Moos, 2000), incarcerated individuals (McLellan, Kushner, Metzger, Peters, Smith, Grissom, Pettinati, & Argeriou, 1992), patients with substance use disorders seeking primary medical care, (Saitz, Horton, Larson, Winter, & Samet, 2005), homeless substance abusers, (Argeriou, McCarty, Mulvey, & Daley, 1994), as well as patients with trauma and post-traumatic stress disorder (Barber, Blaine, Butler, Gastfriend, Najavits, Reif, et. al, 1998), functionally disabled veterans with substance use disorders (Calsyn, Saxon, Bush, Howell, Baer, Sloan, Malte & Kivlahan, 2004), and chronic pain patients with substance use disorders (Currie, Hodgins, Crabtree, Jacobi, & Armstrong, 2003). Comparisons between a large random sample of a general medical and a substance abuse treatment sample from a large HMO population have been made as a means of obtaining normative ASI data (Weisner, McLellan, & Hunkeler, 2000).

In addition to assessing current and lifetime substance use problems and prior treatment, the ASI provides information on medical illnesses, legal events, employment status, family/social problems, and psychiatric treatment and severity. Much of this information is not collected as part of routine care in general clinical settings. In view of the complexity of managing patients with chronic pain disorders, the ASI can help physicians and other providers develop more comprehensive treatment plans.

The primary goal of this report is to present ASI normative data on a sample of primary care chronic pain patients receiving daily opioid therapy for chronic pain. Secondary goals are to compare the seven ASI subscale scores between our pain sample and other ASI samples, to demonstrate the clinical utility of the ASI as a tool to help primary care patients take better care of their patients and to discuss methods on how the ASI could be administered to primary care patients. This is first report focused on the clinical utility of the ASI in a large diverse sample receiving opioids for the treatment of chronic pain.

Materials and Methods

An interview study was conducted with a sample of primary care patients being treated for chronic pain. The goal of the primary study was to determine the prevalence of substance use disorders and aberrant drug behaviors in a primary care chronic pain sample. Secondary variables of interest included chronic pain diagnoses, type and dose of opioid, opioid efficacy, opioid adverse effects, depression, anxiety, quality of life, sleep quality, use of complementary and alternative medical (CAM) therapy, costs, and current physician practice behavior. Chronic pain was defined as pain that has persisted every day for at least three months. All opioids were prescribed by the patient's primary care physician.

Subject recruitment

The sample used for this report on the ASI consisted of 908 patients with chronic pain who were receiving opioids for at least the past three months. The average duration of pain was 7.1 years. The mean duration of opioid use was 6.2 years. Subjects were recruited with the help of 235 primary care physicians practicing in eight counties located throughout the state of Wisconsin. These physicians were members of six health care systems including the University of Wisconsin Medical Foundation, Dean Health System, Group Health Cooperative, Medical College of Wisconsin, Aurora Health Care and Mercy Health Care.

Physicians used a number of strategies to identify patients being treated for chronic pain. These strategies included obtaining patient lists from billing records using ICD-9 codes for chronic pain diagnoses, pharmacy records, patient opioid logs maintained by individual physicians, and electronic medical record searches. The goal of the recruitment efforts was to enroll 100% of the chronic pain patients receiving opioid prescriptions in each of the 235 physician practices, so as to minimize selection bias. The second step was to mail potential subjects a letter of invitation from their primary care physicians. Patients who did not return an "opt-out" post card were contacted by a study researcher by telephone and invited to participate in a face-to-face interview. Interviews were conducted in primary care clinics and research offices in 2002, 2003 and 2004. Inclusion criteria included: a) age between 18 and 81; b) a diagnosis of chronic non-cancer pain (daily pain for at least 3 months); and c) current treatment with chronic opioid therapy by a primary care physician.

Patients who met the inclusion criteria were scheduled for a face-to-face interview. Written informed consent was obtained at the time of the interview. Response rates were high, with only 22% (n=238) of eligible subjects declining to participate in the study. The vast majority of the sample of chronic pain patients wanted to "tell their story" and share their experiences. The primary reasons given for non-participation were lack of time, day care issues and transportation barriers. The study provided taxi and bus vouchers as needed for interested subjects. We elected not to conduct interviews in patient homes. Research subjects were paid \$50 for their time commitment. Financial support for the study was obtained from a National Institute of Drug Abuse (NIDA) R01 grant. There were no pharmaceutical funds used in this study.

Research Instruments

Five instruments were administered by interview for the primary study. These instruments included the Addiction Severity Index (ASI) (McLellan, Kushner, Metzger, Peters, Smith, Grissom, Pettinati, & Argeriou 1992), the Substance Dependence Severity Scale (SDSS) (Miele, Carpenter, Cockerham, Dietz Trautman, Blaine, & Hasin, 2000), a 15-question chronic pain inventory, a prescription medication survey and the 15-question Revised Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979) Subjects also completed nine questionnaires, including the 44-question P3 scale, which assesses emotional function, (P3 NCS Assessments,

1995) the Treatment Outcomes in Pain Survey (TOPS) which is a modified version of the SF-36, (Pain Management Program and the Health Institute at New England Medical Center, version 2, 1993) the Medical Outcomes Study (MOS) Sleep Cognitive Scale; (Stewart, Ware, Sherbourne, & Wells, 1992) the Neighborhood Disorder Scale (Ross & Mirowsky, 1999); the 14-question Social Strain and Life Stress Scale (Williams, Yu, Jackson, & Anderson, 1997); Aberrant Behavior Items (Passik, Kirsh, Whitcomb, Dickerson, & Theobald, 2002), the SAFTEE (Jacobson, Goldstein, Dominguez, Steinbook, 1987), and a series of questions about utilization of complementary medicine. The findings from these instruments are reported in a series of papers in press or being considered for publication.

The primary instrument used for this paper was the Addiction Severity Index (ASI). The ASI is a semi-structured instrument used in a face-to-face interview conducted by a clinician or researcher. Each of the seven areas consists of a number of questions on events in the last 30 days and lifetime. The ASI focuses on treatment events and health care problems. Composite scores are calculated from events from the previous 30 days for each of the seven subscales and can then be compared for individual patients before, during and after treatment as well as among groups. The ASI also includes a severity rating determined for each area by the trained interviewer.

The medical area includes questions on number of hospitalizations, number of illness days, and treatment. The alcohol and drug sections ask about current and lifetime use, current problem severity and treatment importance, history of withdrawal, prior treatment, and overdoses. The legal area inquires about number of arrests and charges for 14 kinds of offenses, separate questions related to drunk driving charges, and previous incarcerations. The family/social section asks about family history of alcohol, drug use and psychiatric problems, current living arrangements, interpersonal violence, and significant relationship problems. The employment/support area focuses on employment pattern, current skills, possession of a valid driver license, income, and the number of people who depend on the subject for support. The psychiatric status portion asks about hospital admissions, outpatient treatment, psychiatric symptoms, suicide, and need for treatment.

To explore how our primary chronic pain sample compared to other populations for which ASI data is known, we selected studies of substance abuse treatment populations and normative data from a large random medically insured HMO sample. A large sample of subjects from inner city alcohol and substance abuse clinics (Leonhard, Mulvey, Gastfriend, & Schwartz, 2000), mostly male veterans with SUD's from a Veterans Affairs medical center (Rosen, Henson, Finney, & Moos, 2000), incarcerated males with SUDs (McLellan, Kushner, Metzger, Peters, Smith, Grissom, Pettinati, & Argeriou 1992), and over 9,300 members of a large Northern California HMO without SUDs were compared.

Research Procedures

Prior to initiation of the interview, each subject received from the interviewer a written and verbal explanation of the study protocol and its risks and potential benefits. The consent form outlined methods used to ensure patient confidentiality and included statements that patients could withdraw from the study at any time and names would be destroyed after the study was completed. The HIPAA authorization form explained which patient health information would be obtained during the study. Following resolution of any questions, subjects who understood the study were asked to sign a consent form. Each subject received a copy of the consent form to take home. The study was approved by the University of Wisconsin Health Sciences Human Subjects Committee.

The interview began with the Medication Checklist. Information was copied from each subject's medication bottles for more accurate recording of current medications. The subject

and interviewer went through all medications; recording dosages and the last time administered, and then completed the Pain Inventory. The chronic pain inventory consisted of 15 questions derived from other instruments and was administered by interview. There were 4 questions that asked about pain severity on a scale of 1–10, with 1 being no pain and 10 being the worst pain imaginable. Then 4 questions asked about average daily pain, worst pain, best pain and nighttime pain. The other questions focused on prior experiences with pain treatment, pain location, pain diagnosis, and pain duration. Subjects next completed nine questionnaires on their own with the interviewer accessible in case of questions or problems. When the subject had completed these forms the interviewer resumed the interview with the ASI, SDSS and the IES, and collected the urine sample. Subjects were written a check for \$50 and the process was concluded. The entire process usually took 2 hours.

The lead interviewer/trainer was certified by the developers of the ASI and provided training to the study researchers. Researcher training began with a 6-hour in-house session covering study protocols and details of each instrument and ending with role-plays of the interview. In the field, each interview trainee first observed several actual interviews conducted by the trainer and subsequently was observed by the trainer for his/her initial real life interviews.

Analysis

Data were entered by hand into an Access database. All data entry was carefully monitored for accuracy and reviewed by the data manager; SAS software was used to conduct the analysis. The ASI was scored using a weighted formula for each of the seven domains to calculate the composite scores. (McGahan, Griffith, Parente, & McLellan, 1986). Descriptive statistics were used to describe the characteristics of the sample and the frequency of various pain diagnoses.

Results

The results section presents a general description of the sample followed by tables for six of the seven subscales and a final table that compares our sample to four other studies. Selected questions from the employment subscale were included in the description of the chronic pain sample in Table 1.

Subject demographics are shown in Table 1. Subjects' mean age was 48.5 years and females comprised 68.6% of the sample. In our sample 75.5% were white, 23.1% black, 0.8% Native American and 0.7% Hispanic. Most had finished high school (84.5%), with 26% having completed some, but less than 4 years of college and nearly one-fifth having more than 16 years of education. Almost 40% were disabled, 11% were unemployed, with 30% working full time, and 12% part time. A greater percentage of males worked full time (36.8%) than females (26.9%), with more females working part time (14.3%) than males (7.0%). Tobacco products were smoked by 44.5% of subjects, with a greater percentage of males (55.3%) who were smokers than females (40.5%).

The following information is not included in a table and was added to give the readers a better picture of the sample. Physicians recorded a total of 45 different chronic pain syndromes in the medical record. The top five diagnoses were chronic low back pain (24.3%) arthritis (21.4%), migraine headache (8.1%), neuropathy (5.4%), and fibromyalgia (3.8%). Opioids prescribed included oxycodone (48.2%), hydrocodone (28.3%), and morphine sulfate (15.6%), with an average MS equivalent dose of 91 mg/24 hour period. The average duration of opioid use in our sample was 6.2 years. Urine toxicology tests were obtained at the end of the interview with 22% of the sample testing positive for marijuana or cocaine.

The medical composite scores of males, females, and the total sample were above 0.84 and similar across age groups (Table 2). Females and males had approximately the same composite

scores. Subjects over 45 years old had a greater mean number of hospitalizations (12.0) than those 18 to 44 years old (9.3). Sixteen percent of older subjects were hospitalized 2 or fewer times compared to 37% of younger patients. The mean days of medical problems for the prior 30 days were over 28 for all subgroups.

Alcohol composite scores (Table 3) were 0.02 for all patients, with males scoring higher than females (0.03 vs. 0.01). A greater percentage of males than females used alcohol on 10 or more days per month (9.8% vs. 4%). The percentage of males who reported a lifetime history of DT's (5.6%) was more than twice that of females (2.6%). Over one-fifth of males (22.1%) had a history of treatment for alcohol problems, a rate nearly three times that of females (7.4%). In the past 30 days, about 3% of subjects were treated for alcohol problems. A greater percentage of older subjects abstained from alcohol in the past 30 days (69%) than younger (54%), with a greater percentage of younger subjects reporting intoxication (18.6%) as compared to those older than 45 (6.4%). A greater percentage of males (4.2%) than females (1.6%) reported being intoxicated 6 or more times in the preceding 30 days. Of all subjects, 88% reported no episodes of drinking to intoxication, while 2.4% reported 6 or more episodes.

ASI drug composite scores were 0.13 for males, females and the total sample (Table 4). A greater percentage of males in the past 30 days (17%) used marijuana than females (10%) and 7.4% used it 6 or more days as compared to 4.6% of females. Although only 3% of males and females reported cocaine use in the last 30 days, younger subjects reported more frequent cocaine use in the past 30 days (5.4%) and lifetime use (18.6%) than older subjects (2% and 11.6%, respectively). About equal percentages of males and females used prescribed amphetamines, with a total of 9.5% reporting lifetime use and 1.5% reporting use in the last 30 days. The number of all subjects who reported lifetime heroin use was 21 (2.3%) and only 3 (0.3%) reported use in the past 30 days.

Our total sample had a legal composite score of 0.01 with males (0.02) and younger subjects (0.02) having higher scores (Table 5). As mentioned above, these relatively low composite scores are derived from legal events or concerns from the preceding 30 days, and not lifetime events which are reported here. Males had twice the lifetime involvement than women with legal issues. This is reflected in most of the individual charges (except forgery) for which they were about equal and shoplifting/vandalism where a slightly greater percentage of males were charged. Twenty-eight percent of males were charged with driving while intoxicated, compared to 5% of females. When viewing individual charges by age groups, younger subjects had more parole/probation violations, forgery, disorderly conduct, and major driving violations. About an equal percentage of younger and older subjects had drug charges and driving while intoxicated. In the two age groups, 1–2 charges were more common in younger subjects than older (23.1% vs. 15%). About twice the percentage of males (12%) than females (6.3%) had 3 or more charges with there being essentially no difference between younger and older subjects.

Family/social composite scores were 0.27 for all subjects, with 0.23, and 0.28 for males and females, respectively (Table 6). A third of younger subjects reported family problems in the past 30 days as compared to about one-fifth of older subjects. Family and social problems in the last 30 days were more frequent among women (27% and 10.8%) as compared to men (17.5% and 8.4%). Current alcohol and drug problems were reported as more common in females' families (6.9% and 5.1%) than in males' families (2.1% and 2.8%).

Table 7 shows the mean psychiatric composite score for all subjects was 0.27 and was slightly higher for younger subjects (0.29) and females (0.29) than for those older (0.26) and males (0.22). About one-quarter were hospitalized at least once in their lifetime, with younger subjects (29.5%) and females (27.3%) having been hospitalized more than older (23.3%) and male

subjects (19.9%). Outpatient treatment similarly followed this pattern, with a greater percentage of females and younger subjects having had out-patient treatment compared to males and older subjects. Consistent with more hospitalizations and outpatient treatment, symptoms of serious depression, anxiety, suicidal thoughts and lifetime suicide attempts were more frequent in females and younger subjects than in males and older subjects. Of note, 40.3% of females had serious suicidal thoughts and 23.8% had suicide attempts in their lifetimes compared to 31.9% and 13.3% for males. A greater percentage of males had trouble controlling violent behavior in their lifetime (22.8%) compared to females (16.7%). A greater percentage of younger subjects (23.7%) had trouble controlling violent behavior than older subjects (16.2%).

ASI composite scores were compared with results from several previous studies (Table 8). Our chronic pain sample had a substantially higher medical composite (0.87) than the other four samples, as would be expected for subjects with a chronic illness. The alcohol (0.02), drug (0.13), and legal (0.01) composite scores were substantially lower than the treatment (Leonhard, Mulvey, Gastfriend, & Schwartz, 2000; Rosen, Henson, Finney, & Moos, 2000) and incarcerated samples (McLellan, Kushner, Metzger, Peters, Smith, Grissom, Pettinati, & Argeriou, 1992) and similar to the HMO group (Weisner, McLellan, & Hunkeler, 2000). Family/social (0.27) and psychiatric composite scores were similar to the treatment and incarcerated samples, but higher than the HMO sample which was only 0.03. A most interesting finding in this table is the observation that despite the high lifetime prevalence of alcohol related problems in our subjects, the alcohol composite scores are lower than a general medical population from which subjects with alcohol use disorders had been excluded. The educational level of our sample was higher than reported for other substance abuse samples included in table 8 and reflects the sociodemographic differences between the samples.

Discussion

This study presents normative data for the ASI in patients receiving opioid therapy from their primary care physicians. It is reassuring to note the alcohol severity subscale score is less than in the other four samples, including the general medical sample. The higher drug subscale score is of some concern however and suggests higher rates of drug problems in the pain sample compared to the Kaiser sample. Another scale of interest is the psychiatric severity composite of 0.27. As noted in table 8, this composite score is higher than the general population, incarcerated and the same or higher than addiction treatment samples. This finding suggests chronic pain patients have high rates of psychiatric co-morbidity.

In addition to the subscale scores, there are a number of findings of interest to physicians and psychologists who provide treatment for patients affected by chronic pain. First, a lifetime history of alcohol and drug use and problems in this population are common. One in five males has had prior treatment for alcohol problems; over one in four had been arrested for drunk driving. Current and problematic use was less common with 5.8% of the sample reporting drinking 10 or more days per month, 2.4% reported frequent intoxication and 2.9% receiving alcohol treatment in the past 30 days. In view of the sedation and respiratory effects of opioids and alcohol, it is prudent for clinicians to carefully assess current and lifetime alcohol use and risks prior to prescribing opioids.

Second, lifetime drug abuse was common in the sample with 17% (n=47) of males and 10% (n=63) of females having reported drug abuse treatment at least once in their lifetime. Other areas of concern include concurrent use of marijuana, cocaine and amphetamines. A history of drug overdose is another issue when prescribing opioids, with 10% (n=91) reporting overdose at least once and 2.1% (19) three or more times. A careful drug history with appropriate surveillance and follow-up may decrease the misuse of opioids in patients at risk

for abuse, diversion and drug overdose. Prescription opioids diverted to minors are a source of fatal accidental overdoses in young people.

A third finding of clinical interest is the high rate of lifetime suicidal thoughts and suicide attempts especially in women (40.3% and 23.8%). This is substantially higher than what was reported in the National Comorbidity Survey (Kessler, Borges, & Walters, 1999) in which estimated lifetime prevalence of suicidal ideation and attempts were 13.5%, and 4.6%. These findings clearly emphasize the importance for physicians to identify and assess chronic pain patients' psychiatric history and ongoing needs.

As far as how the ASI scores on our sample compare with other ASI samples, there was one area (medical) where the composite scores were substantially higher, three scales that were lower (alcohol, drug and legal) and two that were similar to treatment populations (family and psychiatric). Our sample had the highest ASI medical composite scores that we have seen reported in the medical literature with a composite mean of 0.87. Subjects reported they were severely affected by medical problems an average of 28.7 days per month. One other study of chronic pain patients reported a medical composite of 0.8 (Currie, 2003). By contrast, ASI medical composite scores in a large general HMO population without substance use disorders, the medical composite score was 0.24 (mean days per month 3.1 sd 6.9) (Weisner, 2000).

The strengths of this report include a large sample size (n=908), diverse population (25% underrepresented minorities), primary care based sample, a number of chronic pain syndromes, high response rate, and state of the art measures. The primary weaknesses are the cross sectional nature of the data, absence of the ASI on the sample prior to the onset of their chronic pain syndrome, and lack of data prior to the initiation of the opioid therapy. Another potential weakness is under reporting of alcohol and drugs due to fear of being taken off their pain medications. We used state of the art research procedures to minimize under reporting including a detailed informed consent procedure guaranteeing anonymity, researcher training in empathy and reassurance, and multiple assessment measures. The data we reported is the best we could obtain using current methodology. However, in a clinical setting, without these conditions of confidentiality some patients with chronic pain who are receiving opioids may respond to questions about drug and alcohol use differently than when these questions are asked in a confidential, research setting. Some patients may understate or deny their use of non-medically prescribed drugs or alcohol for fear that it might jeopardize their future prescriptions for opioids.

The administration of the ASI in general clinical settings can provide primary care physicians and other health care professionals with important clinical data in patients suffering from chronic pain. The ASI provides information about lifetime and current alcohol and drug treatment and problems, legal and employment problems, family stress, and psychiatric treatment and problems. The ASI focuses on problems and previous treatment that can help physicians develop a more comprehensive pain treatment plan. Based on the medical record reviews we conducted as part of this study, this information is not routinely collected by primary care physicians in chronic pain patients. In view of our observations that the 908 patients in our sample reported an average pain score of 4.2, and were currently receiving an average dose of 91 mg of morphine, these patients need additional help to try to reduce their pain levels.

The ASI could provide valuable information to improve the care of these patients. Pain is a multi factorial disease that is exacerbated by alcohol and drug use, stress, chronic depression and a variety of co-morbid medical, family and social issues. All too often physicians and patients would rather utilize pain medication than deal with the underlying disorders.

How can primary care providers administer the ASI to their patients? The ASI could be administered by one of the clinic nurses or a behavioral health counselor to all patients being considered for chronic opioid therapy. This is not a large number of patients. The average number of chronic pain patients on opioids, in each physicians practice in our study, was less than 5. In a typical group practice of 5–6 physicians this would be less than 30 patients. This would not be a big burden on a primary care practice considering the information obtained and the potential benefit to the practice. While some training is required on the administration of the ASI, it is not difficult.

As demonstrated in our study, the ASI can be administered in 20–30 minutes with 60 minutes being the outside range for patients with more complicated substance use histories. There is also a brief form of the ASI if time and cost is a major concern. Alternatively, there is a computer-based, multi-media version that can be self-administered and computer scored that might be more appropriate for some practices (Butler, needs additional authors 2001).

Chronic pain is not a benign condition. As presented in this paper, primary care chronic pain patients on opioid therapy have high rates of disability, a one in five lifetime history of suicide attempts, legal problems, family problems and psychiatric disorders. From a physician's perspective they are also one of the most difficult types of patients encountered and often take up an enormous amount time. Identification and treatment of co-morbid conditions identified by the ASI could potentially make an enormous difference in the care of these patients.

Acknowledgments

This study was supported by NIH grant number R01DA013686F from the National Institute of Drug Abuse.

References

- Argeriou M, McCarty D, Mulvey K, Daley M. Use of the Addiction Severity Index with homeless substance abusers. *Journal of Substance Abuse Treatment* 1994;11:359–65. [PubMed: 7966506]
- Barber JP, Blaine J, Butler SF, Gastfriend DR, Najavits LM, Reif S, et al. The Addiction Severity Index as a screen for trauma and posttraumatic stress disorder. *Journal of Studies on Alcohol* 1998;59:56–62. [PubMed: 9498316]
- Butler SF, Budman SH, Goldman RJ, Newman FL, Beckley KE, Trottier D, Cacciola JS. Initial validation of a computer-administered addiction severity index: the ASI-MV. *Psychology of Addictive Behaviors* 2001;15:4–12. [PubMed: 11255937]
- Calsyn DA, Saxon AJ, Bush KR, Howell DN, Baer JS, Sloan KL, Malte CA, Kivlahan DR. The Addiction Severity Index medical and psychiatric composite scores measure similar domains as the SF-36 in substance-dependent veterans: concurrent and discriminant validity. *Drug and Alcohol Dependence* 2004;76:165–171. [PubMed: 15488340]
- Currie SR, Hodgins DC, Crabtree A, Jacobi J, Armstrong S. Outcome from integrated pain management treatment for recovering substance abusers. *The Journal of Pain* 2003;4:91–100. [PubMed: 14622720]
- Gilson AM, Maurer MA, Joranson DE. State policy affecting pain management: recent improvements and the positive impact of regulatory health policies. *Health Policy* 2005;74:192–204. [PubMed: 16153479]
- Gureje O, Von Korff M, Simon G, Gater R. Persistent pain and well-being. A World Health Organization study in primary care. *Journal of the American Medical Association* 1998;280:147–151. [PubMed: 9669787]
- Horowitz M, Wilner N, Alvarez W. The Impact of Events Scale: a measure of subjective stress. *Psychosomatic Medicine* 1979;41:209–218. [PubMed: 472086]
- Jacobson AF, Goldstein BJ, Dominguez RA, Steinbook RM. Inter rater agreement and reliability measures of SAFTEE: general inquiry vs. systematic inquiry. *Psychopharmacology Bulletin* 1987;23:97–101. [PubMed: 3299447]

- Kessler RC, Borges G, Walters EE. Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Archives of General Psychiatry* 1999;56:617–626. [PubMed: 10401507]
- Leonhard C, Mulvey K, Gastfriend DR, Schwartz M. The Addiction Severity Index: a field study of internal consistency and validity. *Journal of Substance Abuse Treatment* 2000;18:129–35. [PubMed: 10716096]
- Mäkelä K. Studies of the reliability and validity of the addiction severity index. *Addiction* 2004;99:411–418.
- McGahan, PL.; Griffith, JA.; Parente, R.; McLellan, AT. Addiction severity index composite scores manual. 1986. <http://www.tresearch.org/resources/compscores/CompositeManual.pdf>
- McLellan AT, Cacciola JS, Alterman AI. The ASI as a still developing instrument: response to Mäkelä. *Addiction* 2004;99:411–418.
- McLellan AT, Kushner H, Metzger D, Peters R, Smith I, Grissom G, et al. The fifth edition of the Addiction Severity Index. *Journal of Substance Abuse Treatment* 1992;9:199–213. [PubMed: 1334156]
- McLellan AT, Luborsky L, Woody GE, O'Brien CP. An improved diagnostic evaluation instrument for substance abuse patients. The Addiction Severity Index. *Journal of Nervous and Mental Disease* 1980;168:26–33. [PubMed: 7351540]
- Miele GM, Carpenter KM, Cockerham M, Dietz Trautman K, Blaine J, Hasin DS. Concurrent and predictive validity of the Substance Dependence Severity Scale (SDSS). *Drug and Alcohol Dependence* 2000;59:7–88.
- P3 NCS Assessments (1995). PO Box 1416, Minneapolis Minnesota 55440
- Pain Management Program and the Health Institute at New England Medical Center, version 2 (1993). Rand-36. The Rand Corporation.
- Passik S, Kirsh K, Whitcomb L, Dickerson P, Theobald L. Pain Clinicians' rankings of aberrant drug taking behaviors. *J Pain Palliat Care Pharmacotherapy* 2002;16:39.
- Porter J, Jick H. Addiction rare in patients treated with narcotics (letter). *New England Journal of Medicine* 1980;302:123. [PubMed: 7350425]
- Rich BA. Physicians' legal duty to relieve suffering. *Western Journal of Medicine* 2001;175:151–152. [PubMed: 11527832]
- Rosen CS, Henson BR, Finney JW, Moos RH. Consistency of self-administered and interview-based Addiction Severity Index composite scores. *Addictio* 2000;95:419–25.
- Ross CE, Mirowsky J. Disorder and decay: The concept and measurement of perceived neighborhood disorder. *Urban Affairs Review* 1999;34:412–432.
- Saitz R, Horton NJ, Larson MJ, Winter M, Samet JH. Primary medical care and reductions in addiction severity: a prospective cohort study. *Addiction* 2005;100(1):70–78. [PubMed: 15598194]
- Stewart, A.; Ware, J.; Sherbourne, C.; Wells, K. Psychological distress/well-being and cognitive functioning measures. In: Stewart, A.; Ware, J., editors. *Measuring Functioning and Well-Being: The Medical Outcomes Study Approach*. Duke University Free Press; 1992. p. 102-142.
- Swanson DW, Maruta T, Wolff VA. Ancient pain. *Pai* 1986;25:383–387.
- The SUPPORT [Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatment] Principal Investigators. A controlled trial to improve care for seriously ill hospitalized patients. *Journal of the American Medical Association* 1995;274:1591–1598. [PubMed: 7474243]
- Von Roenn JH, Cleeland CS, Gonin R, Hatfield AK, Pandya KJ. Physicians attitudes and practice in cancer pain management: A survey from Eastern Cooperative Oncology Group. *Annals of Internal Medicine* 1993;119:121–126. [PubMed: 8099769]
- Weisner C, McLellan AT, Hunkeler EM. Addiction Severity Index data from general membership and treatment samples of HMO members, one case of norming the ASI. *Journal Substance Abuse Treatment* 2000;19:103–109.
- Williams D, Yu Y, Jackson J, Anderson N. Racial differences in physical and mental health: Socioeconomic status, stress and discrimination. *Journal of Health Psychology* 1997;2:335–351.

Table 1
 Characteristics of the Primary Care Chronic Pain Sample

	Women	Men	Total
	n=623	n=285	n=908
Age-mean	48.4	48.6	48.5
Range	18–81	20–73	18–81
Race-white or Caucasian	75.6%	74.3%	75.5%
Black or African American	23.8%	22.6%	23.1%
Native American	1.1%	0.0%	0.8%
Hispanic	0.5%	1.1%	0.7%
Education, Less than high school	15.1%	16.5%	15.5%
High school	37.2%	44.2%	39.4%
Some college	28.1%	21.4%	26%
College degree	19.6%	17.9%	19.1%
Employment-Fulltime	26.9%	36.8%	30%
Part time	14.3%	7.0%	12%
Retired	4.2%	7.2%	6.4%
Disability	39.9%	39.2%	39.7%
Unemployed, looking for work	10.9%	11.2%	11.1%
Marital Status-Married	36.7%	53.5%	42.1%
Widowed	7.0%	1.9%	5.4%
Separated or divorced	36.3%	25.0%	32.6%
Never married	20.0%	19.6	19.9%
Smoking status (yes in past 30 days)	42.9%	53.9%	46.4%

Table 2

ASI – Medical composite scores and selected items

Variables	Male (n=285)	Female (n=623)	18-44 (n=295)	45+ (n=613)	Total (n=908)
Composite score Mean (sd)	0.84 (.17)	0.88 (.17)	0.87 (.15)	0.87 (.14)	0.87 (.14)
# of hospitalizations (Lifetime) Mean (sd)	10.1 (19.2)	11.6 (29.3)	9.3 (21.8)	12.0 (28.6)	11.1 (26.6)
# times hospitalized (Lifetime)	% (n)	% (n)	% (n)	% (n)	% (n)
0 times	6.7 (19)	6 (37)	12.2 (36)	3.3 (20)	6.2 (56)
1-2 times	16.1 (46)	16.9 (105)	24.8 (73)	12.7 (78)	16.6 (151)
3 or more times	77.2 (220)	77.2 (480)	63 (186)	84 (514)	77.2 (700)
Days of medical problems (Past 30 days) Mean (sd)	28.4 (5.5)	28.8 (4.5)	28.5 (5.0)	28.8 (4.8)	28.7 (4.9)

Table 3

ASI – Alcohol composite scores and selected items

Variables	Male (n=285)	Female (n=623)	18-44 (n=295)	45+ (n=613)	Total (n=908)
Alcohol composite score Mean (sd)	.03 (.07)	.01 (.05)	.02 (.06)	.02 (.06)	.02 (.06)
Days of alcohol use (past 30 days) Mean (sd)	3.2 (6.8)	1.7 (4.3)	2.4 (5.1)	2.0 (5.3)	2.1 (5.3)
Days of use (past 30 days)	% (n)	% (n)	% (n)	% (n)	% (n)
0 days	58.6 (167)	66.4 (413)	53.9 (159)	68.8 (421)	64 (580)
1-5 days	26.3 (75)	25.6 (159)	33.6 (99)	22.1 (135)	25.8 (234)
6-10 days	5.3 (15)	4 (25)	6.8 (20)	3.3 (20)	4.4 (40)
10 or more days	9.8 (28)	4 (25)	5.8 (17)	5.9 (36)	5.8 (53)
# days intoxicated (past 30 days)	% (n)	% (n)	% (n)	% (n)	% (n)
0 days	85.3 (243)	89.9 (559)	81.4 (240)	91.8 (562)	88.4 (802)
1-5 days	10.5 (30)	8.5 (53)	15.2 (45)	6.2 (38)	9.1 (83)
6 or more times	4.2 (12)	1.6 (10)	3.4 (10)	2 (12)	2.4 (22)
	% (n)	% (n)	% (n)	% (n)	% (n)
Lifetime history of alcohol DT's	5.6 (16)	2.6 (16)	2.7 (8)	3.9 (24)	3.5 (32)
Lifetime history of alcohol treatment	22.1 (63)	7.4 (46)	10.2 (30)	12.9 (79)	12 (109)
Number of subjects treated for alcohol problems (past 30 days)	3.4 (13)	2.1 (13)	2.3 (7)	3.3(19)	2.9 (26)

Table 4

ASI – Drug composite scores and selected items

Variables	Male (n=285)	Female (n=623)	18–44 (n=295)	45+ (n=613)	Total (n=908)
Drug composite score mean (sd)	0.13(.09)	0.13(.09)	0.13 (.09)	0.13 (.08)	0.13 (.09)
Days of marijuana use (past 30 days)	% (n)	% (n)	% (n)	% (n)	% (n)
0 days	82.8 (236)	89.7 (559)	80.3 (237)	91 (558)	87.6 (795)
1–5 days	9.8 (28)	5.5 (34)	8.5 (25)	6 (37)	6.8 (62)
6 or more days	7.4 (21)	4.6 (29)	11.1 (33)	2.8 (17)	5.6 (50)
30-day history cocaine use	3.2 (9)	3 (19)	5.4 (16)	2 (12)	3.1 (28)
Lifetime cocaine use	20 (57)	11.1 (69)	18.6 (55)	11.6 (71)	13.9 (126)
30 day heroin use	1.1 (3)	0 (0)	0.3 (1)	0.3 (2)	0.3 (3)
Lifetime heroin use	3.5 (10)	1.8 (11)	0 (0)	0 (0)	2.3 (21)
30-day amphetamine use	1.1 (3)	1.8 (11)	1.7 (5)	1.5 (9)	1.5 (14)
Lifetime amphetamine use	10.2 (29)	9.1 (57)	8.1 (24)	10.1 (62)	9.5 (86)
# times treated for drug abuse (lifetime)	% (n)	% (n)	% (n)	% (n)	% (n)
0 times	83.5 (238)	89.7 (559)	83.1 (245)	90 (552)	89.7 (814)
1–2 times	12.3 (5)	9 (56)	13.9 (41)	8.2 (50)	8.0 (73)
3 or more times	4.3 (12)	1.1 (7)	3 (9)	1.7 (10)	2.1 (19)
# times overdosed on drugs (lifetime)	% (n)	% (n)	% (n)	% (n)	% (n)
0 times	91.6 (261)	88.8 (553)	87.8 (259)	90.5 (555)	87.8(797)
1–2 times	6 (17)	9 (56)	10.8 (32)	6.7 (41)	10 (91)
3 or more times	2.2 (6)	2.1 (13)	1.4 (4)	2.4 (15)	2.1 (19)

Table 5

ASI - Legal composite scores and selected lifetime items

Variables	Male (n=285) % (n)	Female (n=623) % (n)	18-44 (n=295) % (n)	45+ (n=613) % (n)	Total (n=908) % (n)
Legal composite score Mean (s.d)	0.02 (.08)	0.01 (.06)	0.02 (.08)	0.01 (.05)	0.01 (.06)
Shoplifting/Vandalism	10.2 (29)	8.2 (51)	8.5 (25)	9 (55)	8.8 (80)
Parole/Probation violations	8.8 (25)	4.5 (28)	7.8 (23)	4.9 (30)	5.8 (53)
Drug Charges	11.2 (32)	6.4 (40)	7.8 (23)	8 (49)	7.9 (72)
Forgery	3.5 (10)	3.7 (23)	5.1 (15)	2.9 (18)	3.6 (33)
Disorderly conduct	26.7 (76)	10.8 (67)	19.3 (57)	14 (86)	15.7 (143)
Driving while intoxicated	28.4 (81)	5 (31)	11.2 (33)	12.9 (79)	12.3 (112)
Major Driving violation	24.2 (69)	12.4 (77)	23 (60)	14 (86)	16.1 (146)
Number of charges					
0 charges	61.4 (175)	78.5 (489)	67.8 (200)	75.7 (464)	73.1 (664)
1-2 charges	25.3 (72)	14.1 (88)	23.1 (68)	15 (92)	17.6 (160)
3 or more charges	12 (34)	6.3 (41)	8.2 (24)	8.3 (51)	8.3 (75)

Table 6

ASI - Family/Social composite scores and selected items

Variables	Male (n=285) % (n)	Female (n=623) % (n)	18-44 (n=295) % (n)	45+ (n=613) % (n)	Total (n=908) % (n)
Family/social composite Mean (sd)	0.23 (.16)	0.28 (.21)	0.30 (.22)	0.25 (.18)	0.27 (.20)
Current family problems	17.5 (50)	27 (167)	33.9 (100)	19.2 (117)	23.9 (217)
Current social problems	8.4 (24)	10.8 (66)	12.9 (40)	8.2 (50)	9.9 (90)
Current alcohol problem in another family member	2.1 (6)	6.9 (43)	6.8 (20)	5.1 (31)	5.4 (49)
Current drug problem in another family member	2.8 (8)	5.1 (32)	6.8 (20)	3.3 (20)	4.4 (40)
Family needs help – interviewer assessment	21.4 (57)	31.2(186)	39.3 (113)	22.7 (130)	27.1 (243)

Table 7

ASI Psychiatric composite scores and selected Items

Variables	Male (n=285)	Female (n=623)	18-44 (n=295)	45+ (n=613)	Total (n=908)
Psych composite score Mean (s.d)	0.22 (.22) % (n)	0.29 (.24) % (n)	0.29 (.25) % (n)	0.26 (.23) % (n)	0.27 (.24) % (n)
Treated in a hospital for a psychological or emotional problem at least one time in lifetime	19.9 (54)	27.3 (168)	29.5(87)	23.3 (135)	24.7 (222)
Treated in an outpatient clinic for a psychological problem in lifetime					
0 times	52.3 (149)	35.6 (222)	37.5 (96)	44.9 (275)	40.9 (371)
1-5 times	43.2 (123)	57 (355)	59.3 (175)	49.4(303)	52.6 (478)
6 or more times	4.2 (12)	6.7 (42)	7.8 (23)	5.1 (31)	6.0 (54)
Experienced serious depression in past 30 days	27.4 (78)	37.4 (233)	41 (121)	31 (190)	34.3 (311)
Experienced serious anxiety or tension in past 30 days	29.8 (76)	39.6 (247)	39.3 (176)	35.2 (216)	36.6 (322)
Experience trouble controlling violent behavior in lifetime	22..8 (65)	16.7 (104)	23.7 (70)	16.2 (94)	18.6 (169)
Experienced serious thoughts of suicide in lifetime	31.9 (91)	40.3 (251)	48.5 (143)	32.5 (199)	37.7 (342)
Attempted suicide in lifetime	13.3 (38)	23.8 (148)	27.5 (81)	17.1 (105)	20.5 (186)

Table 8

ASI composite scores - comparison data from 5 studies

Variables	Chronic pain sample n=908 2006		General medical sample Weisner 2000 n=9,398		Treatment sample Leonhard, 2000 N=8984		VA AODA treatment Rosen 2000 n=316		Incarcerated male abusers McLellan 1992 N=260	
	Mean (sd)		Mean (sd)		Mean **		Mean **		Mean (sd)	
Medical composite score	0.87 (.14)		0.24 (.17)		0.19		0.36		0.23 (.32)	
Alcohol composite score	0.02 (.06)		0.11 (.07)		0.36		0.47		0.24 (.25)	
Drug composite score	0.13 (.09)		0.01 (.03)		0.33		0.20		0.25 (.12)	
Employment composite	0.48 (.31)		NA		0.78		0.71		0.67 (.27)	
Legal composite score	0.01 (.06)		NA		0.15		0.13		NA *	
Family/social composite score	0.27 (.20)		NA		0.24		0.25		0.33 (.24)	
Psychiatric status composite score	0.27 (.24)		0.03 (.10)		0.22		0.27		0.18 (.20)	

* Subject responses about recent illegal activity were considered unreliable.

** SD not available.