Original Article

The Addiction Behaviors Checklist: Validation of a New Clinician-Based Measure of Inappropriate Opioid Use in Chronic Pain

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Abstract

This study introduces the Addiction Behaviors Checklist (ABC), which is a brief (20-item) instrument designed to track behaviors characteristic of addiction related to prescription opioid medications in chronic pain populations. Items are focused on observable behaviors noted both during and between clinic visits. One hundred thirty-six consecutive veterans in a multidisciplinary Veterans Affairs Chronic Pain Clinic who were receiving long-term opioid medication treatment were included in this study. This study represents one of the first to follow a sample of chronic pain patients on opioid therapy over time, using a structured assessment tool to evaluate and track behaviors suggestive of addiction. Interrater reliability and concurrent validity data are presented, as well as a cut-off score for use in determining inappropriate medication use. The psychometric findings support the ABC as a viable assessment tool that can increase a provider’s confidence in determinations of appropriate vs. inappropriate opioid use. J Pain Symptom Manage 2006;32:342–351. © 2006 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

Key Words

Chronic noncancer pain, opioid medications, substance abuse, addiction, medication misuse

Introduction

Diagnosing addictive disease in patients with chronic nonmalignant pain has proven to be a clinical challenge.1–3 Standardized diagnostic criteria for opioid addiction4 in pain-free populations have proven to be less than valid or difficult to apply in the context of chronic pain and therapeutic opioid prescription.5–9 Acknowledging the difficulties inherent in identifying addictive disease in patients for
which opioids are therapeutically prescribed, a consensus statement was developed by the American Academy of Pain Medicine, the American Pain Society, and the American Society of Addiction Medicine in 2001 that provided initial definitions for addiction in chronic pain populations. Addiction is defined in this public policy statement as “a primary, chronic, neurobiological disease, with genetic, psychosocial, and environmental factors influencing its development and manifestations” and “characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.”

Thus, in the context of chronic pain treatment, addiction is determined by the presence of certain observable patient behaviors, the description of which are nearing clinical agreement. For example, “behaviors suggestive of addiction” identified in the above consensus statement include an inability to adhere to the prescription schedule, insistence on certain forms or routes of medication, and resistance to other nonopioid treatments. Portenoy and Payne listed 10 aberrant drug-related behaviors suggesting an addiction disorder: selling prescription drugs; forging prescriptions; stealing drugs; injecting oral formulations; obtaining drugs from nonmedical sources; concurrently abusing alcohol or other drugs; evidence of deterioration in function; and failing to comply with dosing regimen, losing medications, and/or seeking prescriptions from other medical sources on multiple occasions.

In their analysis, Chabal et al. focused on medication-related issues, including an overwhelming focus on opioid issues, using supplemental sources of opioids, and patterns of early refills, multiple telephone calls, unscheduled visits, and episodes of lost or stolen prescriptions, as behaviors indicative of problematic opioid use. These medication-related behaviors are consistent with those predicting future opioid medication misuse in the concept mapping analysis of Butler et al. Modeled after the consensus statement criteria noted above, Savage categorized many of the same behaviors as either due to the consequences, loss of control or compulsivity, and craving or preoccupation related to medication use, with an emphasis on behaviors that can be detected during the visit, such as sedated appearance, a preference for opioids with high reward value, and reported poor tolerance for nonopioid and nonpharmacological interventions. Adding patients’ perceptions of their medication use, Adams et al. found that patients who believe they need a higher dose of medication than that prescribed, report having difficulty getting the medication they need from the physician, and worry that they may be “too dependent” on the medication were those most likely to suffer addiction.

The development of valid instruments for tracking behaviors characteristic of addiction in the context of opioid medications prescribed for patients with chronic pain is an important step in improving clinical care. The Addiction Behaviors Checklist (ABC) was, therefore, developed in an effort to organize and provide an operational tool for use by clinicians to monitor ongoing and current behaviors characteristic of addiction in patients with chronic pain and treated with opioid analgesics on a continuing basis. The majority of tracked behaviors included in the ABC are consistent with those behaviors suggested within the consensus definition by the American Academy of Pain Medicine, the American Pain Society, and the American Society of Addiction Medicine.

The aims of this study were as follows: 1) introduce the item development and the specific items of the ABC, 2) examine interrater reliability, 3) examine indicators of validity for the sum score from the items as well as individual items, and 4) introduce results regarding the sensitivity and specificity for cut-off scores for the ABC. This study improves upon previous efforts in that ongoing, prospective data from both the ABC and other validity indicators are collected across multiple time points, enabling cross-validation of the ABC with other measures of problematic behaviors.

**Methods**

**Participants**

This study included 136 chronic pain patients who were being prescribed long-term opioid medications to treat their chronic pain problem. Participants were veterans recruited from a chronic pain clinic at the Greater Los
Angeles Veterans Affairs (VA) Healthcare System.

This study was approved by the local institutional review board. Data were collected as part of a larger data collection effort following patients who were receiving long-term opioid medication treatment over the course of one year. Participants visited the chronic pain clinic on a monthly basis in order to refill their opioid prescriptions. During the course of these visits, participants received various assessments reviewing their levels of pain over the course of the month and other areas related to potentially problematic medication use. Participants were asked to give signed consent prior to enrollment into this research study.

Measures

Addiction Behaviors Checklist. The development of ABC items was based upon an extensive review of the relevant literature,3,7,8,10,16,17 with an overriding aim to keep the tool concise, easy to complete, and otherwise useful in a busy clinical setting. Integrating observable behaviors identified in and across the work of published experts on indicators of addiction in chronic pain patients resulted in the synthesis of items for the ABC (Appendix). The full set of 20 items initially selected was used in all the analyses presented in this paper. All behaviors tracked in the ABC reflect those suggested in the consensus document by the American Academy of Pain Medicine, the American Pain Society, and the American Society of Addiction Medicine.10

The tool was designed to be administered in an interview format and scored based upon the participant’s responses to questions, the interviewer’s observations of displayed behaviors during the session, and pertinent information gathered from medical chart review. Items were classified into two major categories: 1) addictive behaviors noted between visits (e.g., “patient running out of medications early,” “receiving narcotics from other providers”) and 2) addictive behaviors observed within the visit (e.g., “patient appearing sedated,” “patient expressing concern about future availability of narcotic”). In addition to these two major categories, another question was included that could be used if the patient’s family members were present in session (“significant others express concern over patient’s use of analgesics”). Family members were rarely present within the setting of the current data collection, therefore producing insignificant influence on study results. This item was retained in the instrument, however, because this information might be more available within other medical settings. A total of 20 items were included in the instrument, with dichotomous response scoring. Each affirmative response was counted as one point, and points were added to calculate the total score, consequently resulting in scores ranging from 0 to 20. While some of the items on the ABC are clearly based on patients’ reports and hence are subject to reporting bias, the primary emphasis of the scale and item scoring is on observable behaviors or objective information derived from the patient or other sources to indicate opioid misuse. Participants were assessed on a monthly basis using the ABC.

Prescription Drug Use Questionnaire. To evaluate construct validity for the ABC, the Prescription Drug Use Questionnaire (PDUQ)16 was administered to all subjects at the 4-month clinic visit. Unique in that scores have been cross-validated with clinical expert diagnosis of addiction, the PDUQ consists of 39 items evaluating five different domains of problematic opioid analgesic use in chronic pain patients, including the characteristics of the pain condition, opioid use patterns, social/family factors, familial/personal history of substance abuse/addiction, and psychiatric history. Initial analyses of PDUQ scores provide suggested cut-off values indicative of the diagnosis of substance abuse and substance dependence.16 Since it includes historical data, the PDUQ was developed primarily to assess addiction (or addiction risk) at a single time point and, therefore, is not a redundant measure with the ABC. However, both measures do overlap in their aim to measure the construct of current addiction behaviors and thus should show moderate positive correlations.

Global Clinical Judgment. A common criterion variable in studies of opioid misuse is an expert clinician’s global judgment.14,16 For the current study, subjects were rated at each visit by their treating pain clinician on a dichotomous global question (“Do you think patient
is using medications appropriately?”) assessing either appropriate or inappropriate opioid medication use over the past month. It should be noted that the rating clinicians were familiar with both the patients (for the most part patients were routinely seen by only one or two clinicians over the course of the study) and with current concepts of addiction, pseudoaddiction, physical dependence, and tolerance. Participants were assessed on a monthly basis using the global clinical judgment.

**Opioid Medication Discontinuation for Noncompliance.** An additional outcome measure was the occurrence of major medication contract violations leading to opioid discontinuation over the course of the one-year study. Discontinuation decisions were made as a group by the multidisciplinary pain clinic treatment team based on results of urine toxicology screens, medication contract violations, and other factors, such as alcohol intoxication or inappropriate behaviors in clinic. The primary reasons for discontinuing opioid medications were as follows: 1) alcohol or illicit substance abuse, 2) noncompliance with prescribed medications (e.g., repeatedly running out of medications early, seeking opioid medications from other sources), and 3) noncompliance with clinic procedures (e.g., refusing to submit urine toxicology screens, repeatedly missing appointments, and expecting medication refills via phone request). Opioid medication discontinuation decisions were not based specifically on scores of the ABC, PDUQ, or Global Clinical Judgment evaluations.

**Visual Analog Scales (Pain Scores).** At each monthly visit, patients received an assessment of both their usual level of pain and their worst level of pain since the last visit. This was measured using a 10 cm visual analog scale, ranging from 0 (no pain) to 10 (highest level of pain imaginable).

**Interrater Reliability Procedures**

Interrater reliability estimates for the ABC were determined for two separate samples of patients during the study (Sample 1, n = 23; Sample 2, n = 19). For each sample, the same pair of raters completed the ABC for the same individuals during their visit, but each rater was blind to the other’s scoring. Visits to be rated were based on consecutive clinic appointments without preselection of patients to be rated and regardless of position within the subject’s study year.

**Results**

**Patient Demographics**

Mean age was 53 years (range 25–65 years). The study sample included 8 female and 128 male participants. The high male to female ratio of study participants is typical of VA populations. Based on initial general categorization, 105 participants had a primary musculoskeletal pain problem, 26 participants had a primary neuropathic pain problem, and the remaining 5 participants had multicategory pain problems or it was unclear what category the primary pain problems fit into. Regarding marital status, 53 participants (39%) were married or living with their partner, 19 participants (14%) were never married, 55 participants (41%) were divorced or separated, and 8 participants (6%) were widowed. Concerning employment, 17 participants (13%) were working full time, 8 (6%) were working part time, and the remainder (107 participants, approximately 81%) were not working. Of the 107 participants who were not working, approximately 46% (48 participants) indicated that they were unemployed or unable to work due to pain.

**Validity**

**Interrater Reliability.** ABC scores for Sample 1 (Raters 1 and 2) ranged from 0 to 10 (mean = 2.74, SD = 2.55), and for Sample 2 (Raters 2 and 3) ranged from 0 to 9 (mean = 1.93, SD = 2.13). The Pearson correlation coefficient between Raters 1 and 2 was 0.94 (n = 23, P < 0.01), and between Raters 2 and 3 was 0.95 (n = 19, P < 0.01). These results show strong intrarater reliability for the ABC.
of patients’ opioid use patterns. As noted, Items 2–6 and 11–19 displayed significant correlations with the interviewer’s global clinical judgment. It should be briefly noted that Table 1 does not include information on Variable 8, “patient bought meds on the street,” as this item was not endorsed across all subjects during this initial period of follow-up visits. Over the year follow-up in general, this item shows highly infrequent endorsement (see Discussion).

**Concurrent Validity—Global Clinical Judgment.**

Using the provider’s global clinical judgment as a criterion variable to operationalize appropriate medication use, initial t-test results indicated that the mean ABC scores can significantly distinguish between patients who display appropriate use of opioid medications and patients who display inappropriate use of opioid medications. Mean ABC scores were higher for inappropriate users (mean = 5.31, SD = 2.96) than appropriate users (mean = 1.00, SD = 1.27, t(16) = −5.75, P < 0.001).

**Concurrent Validity—PDUQ.**

Correlations were determined between mean ABC scores and PDUQ total scores. Mean ABC scores are the average ABC score across the initial 4–5 months. The Pearson correlation coefficient between mean ABC scores and the PDUQ total score at this time point was 0.40 (P < 0.01).

**Sensitivity, Specificity, and Determination of Cut-Off Score**

Using the global clinical judgment as the criterion measure for inappropriate opioid use, measurements of sensitivity and specificity were determined comparing the cross-tabulation measurements of ABC total score vs. global judgment rating. Fig. 1 shows a graphical representation of sensitivity [true positives/(true positives + false negatives)] and specificity [true negatives/(true negatives + false positives)] measurements for different ABC total scores using global clinical judgment as the criterion measurement of inappropriate opioid use. Because of a relatively small number of endorsed opioid misuse behaviors at any specific visit, ABC monthly data were combined across all visits (n = 998) in order to maximize calculation of sensitivity and specificity. These results indicate that a cut-off score of 3 or greater on the ABC shows optimal sensitivity and specificity in determining whether a patient is displaying inappropriate opioid use. To evaluate the impact of combining data, calculations of sensitivity and specificity at the initial visit time point were also performed and reproduced the same findings of optimal sensitivity/specificity at a cut-off score of 3 or greater (e.g., using ABC data from initial visit only, sensitivity = 87.50% and specificity = 86.14%).

To further evaluate the utility of this cut-off score, t-tests were performed comparing

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**Table 1**

<table>
<thead>
<tr>
<th>ABC Item</th>
<th>Pearson Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.18</td>
</tr>
<tr>
<td>2</td>
<td>0.30*</td>
</tr>
<tr>
<td>3</td>
<td>0.54*</td>
</tr>
<tr>
<td>4</td>
<td>0.44*</td>
</tr>
<tr>
<td>5</td>
<td>0.64*</td>
</tr>
<tr>
<td>6</td>
<td>0.31*</td>
</tr>
<tr>
<td>7</td>
<td>0.06</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0.02</td>
</tr>
<tr>
<td>10</td>
<td>0.07</td>
</tr>
<tr>
<td>11</td>
<td>0.52*</td>
</tr>
<tr>
<td>12</td>
<td>0.25*</td>
</tr>
<tr>
<td>13</td>
<td>0.35*</td>
</tr>
<tr>
<td>14</td>
<td>0.25*</td>
</tr>
<tr>
<td>15</td>
<td>0.54*</td>
</tr>
<tr>
<td>16</td>
<td>0.21*</td>
</tr>
<tr>
<td>17</td>
<td>0.25*</td>
</tr>
<tr>
<td>18</td>
<td>0.51*</td>
</tr>
<tr>
<td>19</td>
<td>0.58*</td>
</tr>
<tr>
<td>20</td>
<td>−0.04</td>
</tr>
</tbody>
</table>

*P < 0.01.  
*P < 0.05.
differences in PDUQ scores between participants who received mean scores of 3 or greater on the ABC across the first 4–5 months and those with mean scores below 3. Mean PDUQ scores were higher for those participants with a mean ABC score greater than or equal to 3 (mean = 11.77, SD = 3.99) than those with mean ABC scores less than 3 (mean = 8.52, SD = 4.05, t(86) = −2.97, P = 0.004). A similar t-test was performed comparing participants who received any ABC score greater than or equal to 3 over the first 4–5 months with those who consistently had scores less than 3 during this period. Mean PDUQ scores were again higher for those participants who had at least one ABC score greater than or equal to 3 (mean = 10.17, SD = 4.35) than those who consistently had scores less than 3 (mean = 8.02, SD = 3.80, t(86) = −2.46, P = 0.016).

Trends Over Final Four Visits of Study

Over the course of the one-year data collection follow-up period, 38 participants had their opioid medication prescriptions discontinued due to objective misuse criteria established within the clinic setting. These objective criteria included receiving a “bad” urine toxicology screen (e.g., positive urine findings of drugs of abuse, numerous occurrences of absence of prescribed medications within urine toxicology screens) or refusing to comply with the medication contract used within the clinic (e.g., failing to submit to random pill counts, repeatedly deviating from prescribed opioid medication schedule). It should be noted that the clinic used a sophisticated urine screening methodology, including high-performance liquid chromatography of all samples, which was both sensitive and specific for individual opioid compounds. Given the initial development of the ABC, participants did not have their opioid medications discontinued due to elevated scores on the ABC, but were only discontinued from their medications due to the previously mentioned objective measures of opioid misuse. Of these 38 participants, 11 participants had their opioid medications discontinued due to alcohol or illicit substance abuse, 21 due to noncompliance with prescribed medications, and 6 due to noncompliance with clinic procedures.

It might be expected that objective signs of opioid misuse and opioid prescription discontinuation would be preceded by an increasing trend in misuse behaviors. To examine this, the ABC scores were analyzed for the final three to four visits for each patient. Comparisons were made between those participants who were dropped from the study for one of the above-mentioned offenses vs. those participants who either completed the study or had to drop out of the study for nonproblematic reasons (i.e., need for surgery, moved out of town). It should be noted that the last visit in this data set could either be the participant’s completion of the one-year follow-up visits or the point at which the patient was dropped from the study, due to either problems in opioid use or other reasons. Fig. 2 displays a graphical representation of the trends seen between the mean ABC scores for these two groups in the last four visits of the study. As can be seen in Fig. 2, the ABC mean score gradually increased, approaching a total mean score of 3, as the participants neared the final visit in which they were dropped due to problematic opioid medication use. ABC mean scores for participants who either completed the study or were dropped due to nonproblematic reasons tended to remain fairly stable around a mean score of about 1.2–1.3. Based on t-test analysis, equal

![Graph of Mean ABC Scores](image-url)

Fig. 2. Comparison of mean ABC scores over the final four visits in the study (n = 136). Participants who were discontinued due to opioid misuse problem (e.g., problem displayed in urine toxicology, noncompliance with clinic procedures) displayed an elevated ABC score (P < 0.05) at final visit as compared to participants who completed or discontinued the study due to nonproblematic reasons (i.e., need for surgery).
variances not assumed, there was a significant
difference between these two groups at the
final visit ($t(47) = -2.40$, $P = 0.021$).

Correlations Between ABC Scores
and Pain Scores
In the presence of pseudoaddiction, one
might expect that ABC scores would tend to
covary with pain scores (i.e., as patient receives
adequate pain relief and pain scores decrease,
pseudoaddictive behaviors would decrease as
well). Table 2 displays correlation coefficients
between mean ABC scores and both usual and
worst pain scores at the quarterly visit.
This analysis found no significant correlations
between ABC scores and pain scores. This find-
ing lends support to the concept that increases
in ABC scores would be indicative of inappro-
priate behaviors suggestive of addiction rather
than a pseudoaddiction process.

Discussion
The goal of this study was to test the psycho-
metric properties of the ABC, a new instru-
ment for tracking behaviors suggestive of
addiction related to opioid medications in
chronic pain populations. The ABC shows
strong interrater correlations across three sep-
arate interviewers, supporting the reliability
and objective nature of the individual items
and total score. The ABC total score also
showed good concurrent validity in terms of
its relationship with global clinical judgments
of appropriate opioid use, as well as validity
with an opioid misuse risk assessment instru-
ment, the PDUQ, which itself has shown very
good preliminary external validity. The sensi-
tivity and specificity analysis indicates that
a cut-off score of 3 or more on the ABC pro-
vides a good general estimate of appropriate
vs. inappropriate opioid use. This cut-off score
showed initially positive results in differentiat-
ing opioid abuse as assessed by the PDUQ.

Comparison with Other Measures
The ABC can be distinguished from other
recently developed instruments in this area
in that it is specifically focused on longitudinal
assessment and tracking of problematic behav-
iors and not determination of risk. There are
now several published measures for use with
chronic pain patients to assess risk of opioid
misuse or addiction. These measures in-
clude historical information (e.g., history of
substance abuse), current nonopioid abuse be-
haviors (e.g., nicotine craving), and opioid
medication-related behaviors. The focus on
historical information is critical for assessment
of risk since previous substance abuse can be
predictive of future opioid abuse. The na-
ture of these scales, however, makes them less
likely to change over time and they are not
designed to track signs of misuse or flag
behaviors that signal increasing medication
problems. Additionally, even though certain
predictors have suggested an increased risk
for future opioid abuse, the data indicate
that the prediction models are not highly ro-
 bust and presence of these predictors does
not provide certainty that chronic pain pa-
tients would misuse their opioid medications
in the future. For example, Compton et al. found
that in a sample of 52 chronic pain pa-
tients evaluated for opioid addiction, 27%
and 50% of those who did not meet addiction
criteria still had a positive personal history and
family history of addictive disease, respectively.
This suggests that history variables, while cau-
tionary, may not be clear enough indicators
to withhold or modify opioid treatment deci-
sions. On the other hand, the ABC represents
the first measure specifically designed and val-
iddated for longitudinal assessment of behaviors
suggestive of addiction. Because addictive
disease is essentially a disease of behavior, we

Table 2
Pearson Correlation Coefficients
Between Mean ABC Scores and Usual Pain Score
at Quarterly Visit Points

<table>
<thead>
<tr>
<th></th>
<th>ABC Mean Score</th>
<th>Initial</th>
<th>4-Month</th>
<th>8-Month</th>
<th>12-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usual pain, initial visit</td>
<td>0.12</td>
<td>0.05</td>
<td>0.01</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Usual pain, 4-month visit</td>
<td>0.12</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td>Usual pain, 8-month visit</td>
<td>0.1</td>
<td>0.08</td>
<td>0.01</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Usual pain, 12-month visit</td>
<td>0.12</td>
<td>0.09</td>
<td>0.00</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>Worst pain, initial visit</td>
<td>0.12</td>
<td>0.10</td>
<td>0.09</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Worst pain, 4-month visit</td>
<td>0.16</td>
<td>0.06</td>
<td>0.04</td>
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<td></td>
</tr>
<tr>
<td>Worst pain, 8-month visit</td>
<td>0.13</td>
<td>0.04</td>
<td>0.05</td>
<td>0.05</td>
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</tr>
<tr>
<td>Worst pain, 12-month visit</td>
<td>0.23</td>
<td>0.06</td>
<td>0.10</td>
<td>0.13</td>
<td></td>
</tr>
</tbody>
</table>
assembled an assessment tool relying on behavioral observations that are both logically consistent with accepted definitions of opioid addiction and relatively objective (the behavior is either present or not present).

**Importance of Specific Behaviors in Addiction**

Although there is general consensus regarding the primary behaviors that make up addiction in chronic pain patients using opioids, there is as yet no diagnostic algorithm for compiling these behaviors. In this context it is interesting to examine how individual ABC items relate to expert global clinical judgments in order to provide initial direction for the weighting of certain behaviors in the process of identifying addiction. The items that were most frequently endorsed and most associated with the global clinical judgment included “difficulty with using medication agreement,” “increased use of narcotics (since last visit),” “used more narcotics than prescribed,” and “patient indicated that s/he ‘needs’ or ‘must have’ analgesic meds.” These same behaviors have been variously emphasized in the frameworks of Savage, Chabal et al., and Portenoy and Payne, and were likely to also be endorsed on the PDUQ. Further, each of these behaviors is consistent with consensus criteria for addiction in pain patients. These indicators of loss of control over opioid use and craving for opioids in chronic pain patients appear to warrant increased and/or emphasized concern in addiction assessment. Although the above-mentioned items could be considered for heavier weighting when assessing for behaviors characteristic of addiction, a weighting system was not incorporated into the current analysis. A future direction for the ABC would be to explore possible weighting systems or further-developed scoring paradigms that might give added emphasis to more serious opioid misuse behaviors predictive of addiction.

Since the ABC is a checklist, it may also be important to include low-frequency items even though they did not display a significant bivariate relationship with the global clinical judgment in the current sample. An extreme example of this is the item assessing if the patient bought medications on the street. This information is very difficult to gather from observable behavior or the medical record and is usually only available from a patient report or trusted collateral report. Though this item showed extremely low endorsement, we would argue that it should be left in the checklist since a positive endorsement would be a clear warning sign to providers regarding continued prescription of opioid medications. Other items might have low endorsement rates that are population specific. For example, the items regarding significant others’ concern about use of analgesics and receiving medications from more than one provider also showed a low correlation with the global clinical judgment in this study. Both of these items had low endorsement rates, but this is hypothesized to be sample dependent. In the VA population, families are not as frequently involved as in other settings, and the HMO nature of care and the computerized patient record effectively limit a patient’s ability to receive opioid medications from multiple providers. These items may well be more frequent and useful in other contexts.

Another issue in the interpretation of an instrument designed to track behaviors indicative of potential addiction is the concept of pseudoaddiction. Pseudoaddiction includes behaviors that are similar to addiction but that are due to the undertreatment of pain. Therefore, it is important to consider if the behaviors tracked with the ABC are indeed representative of behaviors suggestive of addiction or due to the undertreatment of pain. Though it is an important theoretical consideration, the actual extent of pseudoaddiction has not been empirically validated. Within the chronic pain clinic at the Greater Los Angeles Veterans Affairs Healthcare System, physicians and providers are cognizant of the iatrogenic issues involved in pseudoaddiction and are careful to not make decisions regarding opioid medication discontinuation or addiction based solely on patients’ requests or behaviors that are due to an increased medication need due to poorly controlled pain.

**Use of the ABC**

Although further validation and refinement is important, the current data suggest several areas of utility for the ABC. It can be used clinically, as it was in this study, to track abuse behaviors at clinic visits. Scores of 3 or above should flag for more careful monitoring of patients, including more frequent urine screens.
or increased medical chart review. Fig. 2, for example, shows some evidence for increasing abuse behaviors in visits preceding a major problem that led to removal of opioids. The ABC may be especially important in training clinics to cue clinicians to the range of possible problem behaviors and the need to examine specific signs of misuse. The ABC may also be a good longitudinal outcome measure for research studies on effectiveness and risks of opioid medications for chronic pain. A significant difficulty with the existing literature is the lack of standardized measures of behaviors suggestive of addiction, making comparisons across populations, medications, and settings very difficult. An advantage of the ABC in this regard is that, in addition to reporting the total score, the pattern of behaviors suggestive of addiction can be easily reported in tabular form.

Study Limitations

The present findings are based on data collected in a single tertiary pain center in a large urban VA Medical Center. While the sample does present with common pain problems seen in most pain clinics, the results need replication and extension in other contexts (primary care settings, other pain clinics outside of the VA). One limitation of the study design was that not all patients who entered the pain clinic could be included in the research study. A small group of patients at the initial clinic assessment were found to already show significant problems with opioid use. These patients were not recommended to continue chronic opioid treatment and were usually weaned off opioid medications or voluntarily sought care elsewhere. The use of a sample of patients deemed appropriate for continued opioid use may have resulted in fewer problems than the use of other less restricted samples. Another limitation concerns the use of a global clinical judgment as a major outcome criterion. While this measure has high interrater reliability and care was taken to make sure that raters were very familiar with the patient’s past and present behaviors, it includes individual clinician judgments and, therefore, may be prone to bias and both positive and negative influence. In addition, any bias may be common to both the global judgment and the ABC score leading to an inflated validity estimate. The fact that the ABC was significantly related to not only the global clinical judgment but also the discharge criterion and PDUQ moderates this limitation.

Summary

In summary, the ABC shows initial promise as an assessment instrument to quantify opioid medication misuse in patients with chronic pain. It can be rated reliably across clinicians using information typically available during a clinic visit. The total score is significantly related to other misuse criteria including a global clinical judgment and validated risk interview (PDUQ). The ABC can serve as a tool for providers to alert themselves when further intervention is needed, such as collecting random urine toxicology screens or pill counts. It allows for more objective tracking of opioid medication use behaviors and changes in these behaviors for both clinical and research purposes.

Acknowledgments

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References


**Appendix**

**Addiction Behaviors Checklist**

*Instructions:* Code only for patients prescribed opioid or sedative analgesics on behaviors exhibited “since last visit” and “within the current visit” (NA = not assessed)

**Addiction behaviors—since last visit**

1. Patient used illicit drugs or evidences problem drinking*  
   Y N NA
2. Patient has hoarded meds  
   Y N NA
3. Patient used more narcotic than prescribed  
   Y N NA
4. Patient ran out of meds early  
   Y N NA
5. Patient has increased use of narcotics  
   Y N NA
6. Patient used analgesics PRN when prescription is for time contingent use  
   Y N NA
7. Patient received narcotics from more than one provider  
   Y N NA
8. Patient bought meds on the streets  
   Y N NA

**Addiction behaviors—within current visit**

1. Patient appears sedated or confused (e.g., slurred speech, unresponsive)  
   Y N NA
2. Patient expresses worries about addiction  
   Y N NA
3. Patient expressed a strong preference for a specific type of analgesic or a specific route of administration  
   Y N NA
4. Patient expresses concern about future availability of narcotic  
   Y N NA
5. Patient reports worsened relationships with family  
   Y N NA
6. Patient misrepresented analgesic prescription or use  
   Y N NA
7. Patient indicated she or he “needs” or “must have” analgesic meds  
   Y N NA
8. Discussion of analgesic meds was the predominant issue of visit  
   Y N NA
9. Patient exhibited lack of interest in rehab or self-management  
   Y N NA
10. Patient reports minimal/inadequate relief from narcotic analgesic  
    Y N NA
11. Patient indicated difficulty with using medication agreement  
    Y N NA

**Other**

1. Significant others express concern over patient’s use of analgesics  
   Y N NA

*Item 1 original phrasing: (“Patient used ETOH or illicit drugs”), had a low correlation with global clinical judgment. This is possibly associated with difficulty in content interpretation, in that if a patient endorsed highly infrequent alcohol use, he or she would receive a positive rating on this item, but not be considered as using the prescription opioid medications inappropriately. Therefore, we include in this version of the ABC a suggested wording change for this item that specifies problem drinking as the criterion for alcohol use.