



# Cross Validation of a Screener to Predict Opioid Misuse Among Chronic Pain Patients (SOAPP-R)

Stephen F. Butler<sup>1</sup>, PhD, Nathaniel Katz<sup>1,2</sup>, MD, MS, Simon H. Budman<sup>1,3</sup>, PhD, Kathrine C. Fernandez<sup>1</sup>, MPH,

Christine Benoit<sup>1</sup>, BA, Robert N. Jamison<sup>3,4</sup>, PhD

<sup>1</sup>Inflexxion, Inc., Newton, MA 02464, USA, <sup>2</sup>Tufts University School of Medicine, Boston, MA 02111, USA, <sup>3</sup>Harvard Medical School, Boston, MA 02115, USA, <sup>4</sup>Pain Management Center, Department of Anesthesia and Psychiatry, Brigham & Women's Hospital, Boston, MA 02115, USA.

## Specific Aims

- > To cross validate the Revised Screener and Opioid Assessment for Patients with Pain (SOAPP-R), a self-administered opioid risk-management tool for clinicians
- > To address some of the limitations of the original SOAPP V.1 by containing more subtle and socially acceptable items that were conceptually and empirically examined

## Methods

### Validation of the SOAPP-R

- A 94-item beta version of the SOAPP-R and comparison measures were administered to chronic pain patients from pain centers in Boston, MA, Toledo, OH, Indianapolis, IN, and Allentown, PA, who were followed for five months.
- A subset of subjects were randomly selected to retake the SOAPP-R one week later.
- All patients were asked to provide a urine sample at follow-up. Chart reviews were conducted to confirm prescriptions.
- The SOAPP-R was evaluated with a reassessment after five months using the Aberrant Drug Behavior Index (ADBI), derived from positive scores on the self-reported Prescription Drug Use Questionnaire (PDUQ) interview, the physician-completed Prescription Opioid Therapy Questionnaire (POTQ), and positive urine toxicology screens.

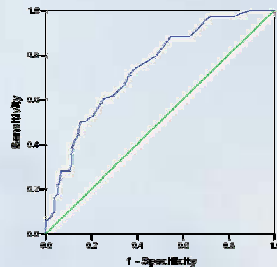
### Cross Validation of the SOAPP-R

- The final, 24-item version of the SOAPP-R and comparison measures were administered to a new group of chronic pain patients from pain centers in Boston, MA, Toledo, OH, Allentown, PA, Indianapolis, IN, and Lebanon, NH.
- All procedures for the cross validation study were identical to those used in the validation study

Figure 1. List of SOAPP-R questions

1. How often do you have mood swings?
2. How often have you felt a need for higher doses of medication to treat your pain?
3. How often have you felt impatient with your doctors?
4. How often have you felt that things are just too overwhelming that you can't handle them?
5. How often is there tension in the home?
6. How often have you counted pain pills to see how many are remaining?
7. How often have you been concerned that people will judge you for taking pain medication?
8. How often do you feel bored?
9. How often have you taken more pain medication than you were supposed to?
10. How often have you worried about being left alone?
11. How often have you felt a craving for medication?
12. How often have others expressed concern over your use of medication?
13. How often have any of your close friends had a problem with alcohol or drugs?
14. How often have others told you that you have a bad temper?
15. How often have you felt consumed by the need to get pain medication?
16. How often have you run out of pain medication early?
17. How often have others kept you from getting what you deserve?
18. How often, in your lifetime, have you had legal problems or been arrested?
19. How often have you attended an AA or NA meeting?
20. How often have you been in an argument that was so out of control that someone got hurt?
21. How often have you been sexually abused?
22. How often have others suggested that you have a drug or alcohol problem?
23. How often have you had to borrow pain medications from your family or friends?
24. How often have you been treated for an alcohol or drug problem?

ROC Curve



Diagonal orange line represents chance prediction.

## Results

### Concurrent Validity and Reliability Assessment

- 283 subjects were recruited and completed the 94-item beta SOAPP-R:
  - 60.8% women
  - 14.9% minority
  - Mean age = 49.8 (SD = 12.8)
- Of the 94 items, 24 items appeared to measure aberrant behavior
  - Area under the ROC curve = .81,  $p < .001$
  - Coefficient  $\alpha$  for the 24 items = .88.
- Test-retest reliability ICC = .92 (95% CI = .77 to .92).
- SOAPP-R score Mean = 18.8 (SD = 11.1), range = 0 to 69.

### Cross Validation Assessment

- 284 subjects were recruited and completed the 24-item SOAPP-R:
  - 48.6% women
  - 15.6% minority
  - Mean age = 51.2 (SD = 13.4)
- The SOAPP-R demonstrated a continued ability to measure aberrant behavior.
  - Area under the ROC curve = .74,  $p < .001$
  - Coefficient  $\alpha$  for the 24 items = .86.
  - Test-retest reliability ICC = .94 (95% CI = .90 to .97).
  - SOAPP-R score Mean = 20.5 (SD = 10.7), range = 1 to 62.
  - ADBI scores: 23.9% positive and 47.5% negative

## Limitations

- Study was conducted in four, anesthesia-based pain centers and included a volunteer sample of patients
- Not all of the patients gave a urine sample for a toxicology screening, so there is risk of some selection bias.
- Continued efforts are needed to validate the SOAPP-R in other settings with all patients, including minorities, prescribed opioids for pain.
- Usefulness of the present measure in a primary care clinic with patients with shorter duration of pain particularly needs to be determined.

## Conclusions

- The SOAPP-R is the only known screener of its kind that has been cross validated.
- Shrinkage in the psychometric values is expected on cross validation. However, the predictive validity as measured by the AUC (Area Under the Curve) remained highly significant.
- The SOAPP-R provides clinicians with the ability to be more aware of patients who may have greater difficulty modulating their own medical use of opioids and who may require extra monitoring and management.
- The SOAPP-R is best used to identify which patients are at low risk for addiction or misuse and may require fewer resources to monitor.

## References

- Joransson DE, Ryan KM, Gilson AM, Dahl JL: Trends in medical use and abuse of opioid analgesics. JAMA 263:1710-1714, 2000
- Office of Applied Studies: Overview of findings from the 2002 National Survey on Drug Use and Health. DHHS publication No. SMA 03-3774, NHSDA Series H-21, Substance Abuse and Mental Health Services Administration, Rockville, MD, 2003 (<http://www.oas.samhsa.gov>)
- Wasan AD, Wootton J, Jamison RN: Dealing with difficult patients in your pain practice. Reg Anesth Pain Med 30:184-192, 2005
- Potter M, Schafer S, Gonzalez-Mendoza E, Gjettema K, Lopez A, Wu J, Pedrin R, Cozen M, Wilson R, Thom D, Croughan-Minihane M: Opioids for chronic nonmalignant pain. Attitudes and practices of primary care physicians in the UCSF/Stanford Collaborative Research Network. University of California, San Francisco. J Fam Pract. 50(2):145-51, 2001
- Morley-Forster PK, Clark AJ, Speechley M, Moulin DEL: Attitudes toward opioid use for chronic pain: a Canadian physician survey. Pain Res Manag 8(4):189-94, 2003

Table 1. Sensitivity and Specificity for the SOAPP-R

Validation Sample		
Cutoff Score	Sensitivity	Specificity
18	.81	.68
Cross Validation Sample		
Cutoff Score	Sensitivity	Specificity
18	.79	.52

Figure 2. Receiver operating characteristic curve SOAPP-R prediction score sensitivity and specificity estimates gauged against the ADBI.

(Note: Diagonal line represents chance prediction)

The SOAPP-R will be available on [www.painEDU.org](http://www.painEDU.org) as of June/July 2007.