

The Addiction Severity Index at 25: Origins, Contributions, and Transitions

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Abstract

The Addiction Severity Index (ASI) is a multi-dimensional interview used to measure the substance use, health and social problems of those with alcohol and other drug problems; both at admission to treatment and subsequently at follow-up contacts. This article first discusses the conceptual and practical importance of the ASI's multi-dimensional approach to measuring addiction severity as illustrated by two case presentations. The second section of the paper reviews how this measurement approach has led to some important findings regarding the prediction and measurement of addiction treatment effectiveness. The third section describes the historical and practical considerations that have changed the instrument over time, details the problems with the instrument, and describes our efforts to correct those problems with the ASI-6. Finally, we take the opportunity of this paper to present some recent ASI data collected from over 8,400 patients admitted to a nationally representative sample of U.S. addiction treatment programs.

150 words

Introduction

The Addiction Severity Index (ASI) was developed 25 years ago¹ by our team of investigators as a semi-structured clinical-research interview designed to measure patient status in seven functional domains: alcohol and drug use, medical and psychiatric health, employment/self support, family relations, and illegal activity. In each of these functional domains two time frames are sampled. Lifetime information is designed to help evaluate the duration and severity of each problem. Knowledge of the frequency and intensity of recent problems (past 30 days) in each of these domains is also used for these purposes; and for monitoring change in patient status through subsequent re-administrations.

The items in each of the seven areas have been tested for understanding, and test-retest reliability as well as concurrent, predictive and discriminate validity among adults of both genders and most large ethnic groups.²⁻⁴ The ASI has become very widely used mainly due to extensive psychometric testing, a comprehensive training manual (plus other instructional materials) and its availability in the public domain.⁵ It is a standard in virtually all clinical trials of addicted patients; it is part of the standard clinical assessment of alcohol and drug abusing patients in more than 20 states and 50 cities in this country as well as the Veterans Administration, the Indian Health Service and the federal prison system. The ASI has been translated into over 20 languages^{6,7} and one international version of the instrument⁸ is part of standard clinical practice and treatment evaluation studies throughout European countries.

After 25 years of working with the ASI our group was asked to review the history of the instrument, discuss what we feel are its main contributions to the addiction field and suggest directions for future research. To these ends we begin by discussing two case examples that illustrate the conceptual and practical issues that helped to shape the design and construction of

the ASI. We next review the history of the ASI, its uses and some of the findings that have resulted from treatment research with this instrument. In the next section we discuss some of the problems with the instrument and introduce our efforts to remediate some of them in the latest version of the instrument – the ASI-6. We end with some new normative data on the ASI from a sample of over 8,400 patients admitted to a representative sample of treatment programs in the United States.

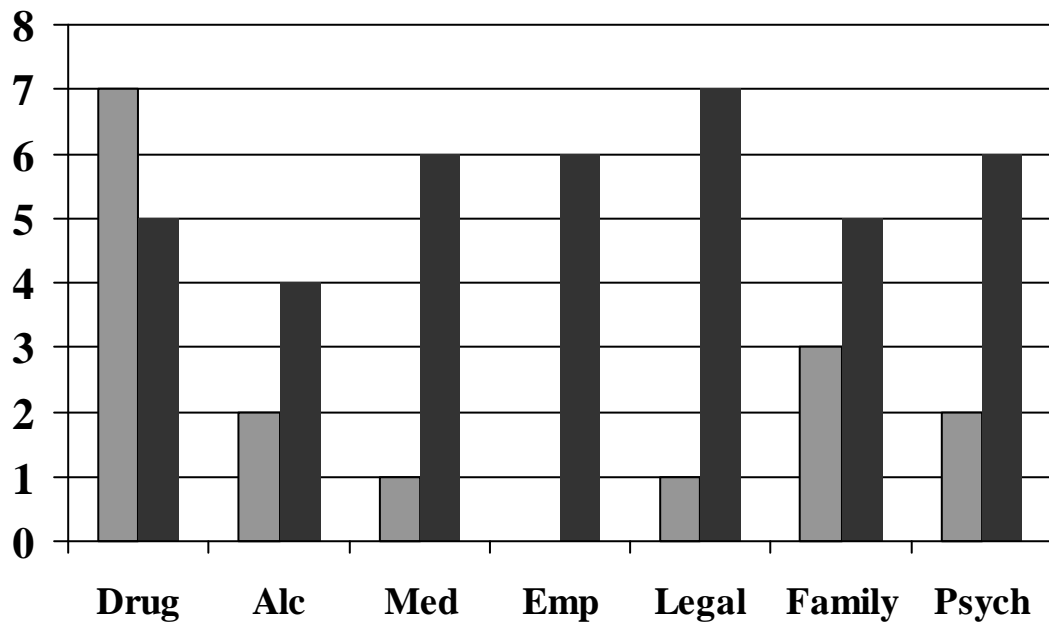
The multi-dimensional measurement approach in the ASI

From the beginning of our work in this field we felt that “addiction could not be understood; and addicted patients could not be adequately characterized simply by measuring the nature, amount and duration of their substance use.”¹ Like everyone else who has come into contact with addicted individuals, we too were struck with the number and severity of additional problems. Like many others in the field at that time, we assumed that the “addiction related” health and social problems that were so obvious were the direct result of the addiction process; and that they would resolve with the reduction of substance use. That these assumptions were wrong – or at least incomplete – is just the first of many surprises we encountered as we developed the instrument and the research that followed it.

Perhaps the best way to illustrate and illuminate this discussion is through case presentations of two actual patients treated in our center – an anesthesiologist addicted to prescription opioids; and a pregnant young woman, addicted to cocaine. The problem profiles for these two individuals, are illustrated using ASI interviewer severity ratings in **Figure 1**.

Figure 1

**Interviewer Severity Ratings of Two Patients Admitted to Drug Abuse Treatment:
An Opiate-Dependent Physician (light bars) and A Cocaine-Abusing, Pregnant Woman**



The lighter bars in **Figure 1** describe the severity of problems presented by a physician at the time of admission to treatment. Prior to admission he had been injecting pharmaceutical opioids multiple times per day for the past seven years and throughout the 30 days prior to admission. While the opioid use was a very serious problem, he also had many assets in other functional domains, including a successful career and a supportive family, no significant medical problems and no history of criminal behavior (beyond the drug use). He did report some psychiatric symptoms (depression and anxiety) which he related to his growing guilt about his drug use.

Based on this profile, this physician was detoxified and prescribed naltrexone for the recommended duration of one year while continuing active participation in family therapy. At one year follow-up he had complied with the recommendation to change occupation to an administrative position and he had been continuously abstinent. Despite a serious and chronic problem, the patient had personal and social resources that provided motivation and support for treatment adherence and for the lifestyle change that was required to maintain the symptom remission initiated by the naltrexone.

The darker bars in **Figure 1** illustrate the admission problems of a young woman whose addiction to crack cocaine became obvious during an emergency room visit during month four of her pregnancy. This young woman had been smoking crack cocaine about 10 days per month for the past two years; and in two-day binges during the month prior to admission. In addition, she had been drinking heavily during and following the cocaine binges. Beyond the medical complications associated with her pregnancy, she had a sexually transmitted disease (syphilis). She had not completed high school and had almost no employable skills. She was under state probation resulting from two arrests for drug possession and shoplifting. She had no stable

residence. Throughout the prior year this young woman had been experiencing severe symptoms of depression, anxiety and confusion.

She was referred to inpatient hospital care due to the medical complications of the pregnancy and because of the symptoms of depression. Following stabilization (5 days), she was transferred to outpatient addiction treatment and prenatal medical care. She delivered a healthy baby girl who she placed into adoption. Concurrent with this and for three months following the delivery she engaged in the recommended group oriented treatment, eliminating all cocaine use and reducing alcohol use substantially. However, she continued drug sales and was arrested a third time which produced a profound depression and a suicide attempt via alcohol and cocaine overdose. She dropped out of the treatment program but ultimately returned in a succession of emergency room visits and brief detoxifications.

These cases illustrate three issues confronting any effort to define, measure and treat addiction. First, if addiction were defined only by the type, intensity and severity of substance use - it is clear that the addicted physician had the most severe problem due to the intravenous route of administration, of high potency opioids at greater frequency, intensity and duration. However, the young woman was much more difficult and complicated to treat – but not because of the severity of her drug use.

The second measurement issue illustrated by these two cases is the difficulty of determining whether the health and social problems seen in these two patients caused the substance dependence; whether the substance use caused the observed health and social problems; whether the entire constellation of substance use, health and social problems were all caused by some broader acquired or inherited personality or temperament; or whether all the problems are due to coincidental economic, social, environmental and genetic factors.⁹ This is

not simply an interesting philosophical issue. Much of society assumes that the criminal behaviors among drug abusing arrestees; the lack of employment among welfare recipients and homeless clients; or the poor work performance of substance abusing employees – are all due directly to the effects of substance use. These types of assumptions have been the basis for referral to substance abuse treatments and have formed some of the outcome expectations for substance abuse treatments.¹⁰ But as can be seen from the two cases, this type of broad assumption and expectation is at best only partially accurate and fails to truly capture the complexity of individual cases.

The final point about the measurement of addiction, illustrated by these cases is that regardless of the original relationship between the health and social problems accompanying substance use and addiction, these health and social problems are extremely important to measure. These “addiction related” problems are typically reasons for referral to addiction treatment; are often of greater concern to the patient than the substance use itself; and are usually important for deciding upon the setting and content of care.¹¹ Perhaps more importantly, problems in health and social function are typically the major reasons for relapse to substance use following initial care.¹²⁻¹⁵ Again, this is evident in the two cases presented.

Implications: Because of our findings about the importance of the health and social problems of addicted patients, we and others made the early prediction^{12, 16, 17} that variations in the setting, duration, amount or intensity of "addiction focused" therapies (i.e., sessions targeted exclusively on the drug and alcohol use of the patient) - in the absence of other health and social services - would not result in different treatment outcomes. In general, research over the past decades examining different settings of "addiction-focused" treatment,¹⁸⁻²⁰ different intensities

of "addiction-focused" treatment²¹⁻²³ and different theoretical approaches to "addiction-focused" treatment^{21, 24} have failed to show different levels of improvement at follow-up.

The obverse has also been true and has followed from the multi-dimensional measurement approach to addicted patients. We predicted that even modest amounts of addiction-focused therapy (regardless of the setting, philosophy or intensity) could be effective if coupled with adequate amounts of health and social services, especially if those health and social services were a) matched to those specific health and social problems presented by the patients at admission; and b) potent enough to reduce the severity of the targeted health or social problem.

In fact there are now a number of studies that have investigated the addition of health and/or social services to "standard" addiction-focused care in methadone, outpatient and inpatient settings, with adults and adolescents from a range of socioeconomic backgrounds. In summary, these studies have shown that: additional medical and psychiatric services,²⁵⁻²⁹ or additional employment services,^{15, 30-32} or additional couples or family therapy,³³⁻³⁷ or additional health and social services^{15, 24, 27, 30, 32, 38, 39} have all improved the outcomes of standard addiction treatments in a significant and sustained manner.

How was the ASI Developed?

The ASI was originally created in order to permit completion of a "patient-treatment" matching study funded by the Veterans Administration (VA) in 1977.^{40, 41} That study involved six treatment programs operating within the Coatesville and Philadelphia VA Medical Centers. The point of the grant was to evaluate whether admitted patients showed any improvements six months following treatment; and to develop an algorithm that would enable admission staff to match a particular "type" of patient to one of the treatment programs.

Assessing Multiple Domains - Once we got the grant, we presented the study to the treatment staff at these programs and there was an immediate eruption. They could see nothing but extra work in the bargain. They talked about how much time it already took to complete the VA forms of the day and how this “paperwork” was ruining their ability to treat the patients. Sound familiar?

Practical Considerations - Because we wanted to get our research project off the ground, we made a bargain with the treatment staff. We agreed to perform all the admission interviews, representing the many perspectives and issues that were important within the multi-disciplinary staff, and collecting all the information each profession had to report to the VA. This would save administrative time and reduce staff burden. This clinical-research agreement set the early parameters of the eventual instrument. They were:

- It had to be an interview. This was considered not only clinically appropriate - but polite - a way of getting to know the patient and to introduce the treatment experience.
- It had to be multi-dimensional. Measures of substance use were necessary but other areas of patient function (employment, medical/psychiatric symptoms, family/social relationships, illegal acts) had to be covered to be considered comprehensive by the VA and useful by the various professions that were part of the treatment team.
- It had to provide historical, lifetime information on patient function. This was considered germane to a clinical understanding of “who the patient was.”
- It had to provide recent information on problem status. This was necessary both for prioritizing emergent clinical problems at admission but also for measuring change in problem status through re-administration at follow-up after treatment.

- It should inform clinical care. The interview was expected to make some contribution to the early clinical understanding of and initial treatment planning for each patient.

Starting with these practical, clinical and administrative requirements, we began with approximately 250 questions culled from the existing instruments at the time, the expressed concerns of the clinical staff at the programs and common sense. Armed with these requirements, a battery of items and the unique enthusiasm of complete naiveté, we began interviewing patients in a private room with a one-way mirror. Each interview was watched, scored and critiqued by the rest of the investigative team and after each interview we compared notes, discussed the flow of the interview, developed conventions for asking and probing each question, and for interpreting answers. These notes and conventions ultimately became the administration manual.⁴²

We not only asked the patients the questions directly, we asked them what they thought the meaning of the question was and whether other patients would understand the question the same way. When a question was unclear to respondents or had multiple interpretations, it was re-phrased or eliminated. By the time the first version of the ASI was developed we had interviewed over 500 patients using this procedure.

Refining the Interview Process - This fundamental process of asking, listening, re-asking and re-thinking was primarily responsible for the eventual order of the problem areas. We found that even in the confines of a protected, clinical environment, it was difficult for patients to begin an interview with a stranger by talking about their most private and socially undesirable problems. We thus found it best to begin with discussions of medical and employment problems since patients told us that these were the issues they felt most comfortable talking about.

Substance use and legal issues were the next most private problems. Virtually all patients

indicated that family relationships and “emotional” (psychiatric) problems were the most private and sensitive issues. Thus, the order of the ASI problems was developed to promote rapport during the interview, building from discussion of those issues of greatest comfort to those issues of greatest sensitivity.

Measures of Lifetime Severity - The third version of the ASI (ASI-3) was published in 1980¹ and included one measure of problem severity in each area; a ten-point, lifetime, problem severity rating. These ratings came about through our communications with clinical staff. The clinicians were frustrated by the lack of summary information in each problem area and asked for a simple interviewer severity rating (ISR) for each problem domain. While subsequent testing showed that these ISRs can be reliable and valid,² it is also true that they have been very difficult to train and can be quite unreliable in normal clinical use. We ultimately suggested dropping these ISRs^{43,44} and have recently developed more reliable lifetime measures to take their place, as will be discussed below.⁴⁵⁻⁴⁷

Measures of Recent Status and Change - Because we were never comfortable with ISRs as outcome measures in research studies due in part to their subjective nature, we developed quantitative composite measures of problem status from combinations of 30-day questions within each of the problem areas.^{2,43,48} Like the severity ratings, these composite scores (CSs) were derived through clinical trial and error rather than modern multivariate statistical methods. Based on shared views of the clinical importance of items within each problem area, and the results of correlation analyses we identified sets of variables to include in each problem composite score, weighted them equally and constructed formulae for these composite scores.⁴³

Throughout the 1980’s our group and others^{3,4,49,50} went on to evaluate the test-retest reliability as well as the concurrent, predictive and discriminant validity of the ISRs and CSs in

multiple samples of patients and in multiple treatment settings. In general, both the ISRs and the CSs showed very satisfactory test-retest reliability across genders, racial groups and treatment setting samples. In addition, the CSs in particular showed satisfactory concurrent, predictive and discriminate validity across genders, racial groups and treatment samples.

The ASI-5: Incorporating New Scientific Findings - By 1990 there had been many new findings from research in alcohol and drug abuse treatment and these findings had not been included in the ASI-3. Thus, in 1992, we published an up-dated version of the ASI (ASI-5) that retained all the original items but added route of administration for each drug as well as questions related to antisocial personality disorder, trauma, relapse environment, and the biological heritability of alcohol, drug and mental disorders. At that time, we also published the first set of “normative values” on key items and composite scores in various populations.^{43, 51}

The ASI-5 contains 164 items (some containing multiple questions) in seven problem areas. It requires approximately 45 - 75 minutes to administer at admission, depending upon the number and nature of the problems presented; and about 20 - 25 minutes to administer at follow-up since the follow-up version of the ASI excludes most lifetime questions.

The ASI-Lite - By 1995 many states, counties and treatment systems had incorporated the ASI as their clinical admission interview. However, staff from treatment programs that had been essentially forced to use the ASI often rebelled, saying correctly that they already collected lots of what was in the ASI. In turn, our group felt a need to provide the most reduced form of the instrument possible; a shortened form that would provide composite scores and historical information but nothing else. We therefore eliminated the interviewer severity ratings, the grid of questions asking about family/genetic heritability of substance use and emotional problems from the ASI-5, as well as a few additional questions used almost exclusively by researchers.

This became the “ASI-Lite,” the most popular of all versions - likely because there is less of it. It contains 111 items and requires approximately 30 - 40 minutes to administer at admission as a semi-structured interview. Our group has shown that this reduced version of the ASI retained most of the important elements of the ASI-5 and also produced reliable and valid composite measures of recent problem severity.⁵²

Problems With the ASI-5 - Evolution of the ASI-6

By 2000 there were accumulating reasons to substantially modify the instrument (see Makela, 2004⁵³ for a recent critique). A major revision had been delayed in part because the instrument had been widely adopted and any change might undercut the value of the work done to that point. Nonetheless, a basic tenet in the construction of assessment instruments is that no instrument should be viewed as a fixed entity. Rather, a useful instrument should stand as a dynamic construction that is periodically reevaluated to ensure its consistency with the state of knowledge.⁵⁴⁻⁵⁶

The first reasons to substantially revise the ASI were profound changes during the past 25 years in the nature of the substances abused, patient populations and treatments provided. For example, at this writing, larger numbers of substance abuse patients are women and they have forced recognition of issues that are much less prevalent among men in treatment such as abuse and childcare. There have been cocaine, methamphetamine and synthetic opioid epidemics. Both smoking and gambling have been considered “addictions.” Serious addiction-related public health problems such as HIV/AIDS and hepatitis C have emerged. On the treatment side, there is much less availability of inpatient or residential forms of care. New medications such as naltrexone and acamprosate for alcohol dependence and buprenorphine for opioid dependence have been developed. Interactions with the criminal justice system have increased in number

and complexity through the emergence of drug court and post-release combinations of supervision and treatment. These and many other issues have all occurred since the original development of the ASI.

Another reason for a major revision of any assessment instrument is a change in its projected uses, what has been termed consequential validity.⁵⁷⁻⁵⁹ With regard to the ASI, such uses originally included clinical assessment, treatment evaluation, and clinical research - all with substance dependent treatment populations. However, by 2000, the ASI had been extended to other fields and uses such as clinical case assessment in welfare, criminal justice, employment, homeless and primary psychiatric populations. The ASI and a companion instrument the Treatment Services Review (TSR)⁶⁰ have been used to measure the costs and cost effectiveness of treatments.^{61,62} Finally, the instrument was used in post-marketing studies of new pharmaceuticals to determine abuse liability.⁶³ In turn, these changes in populations and purposes suggested rethinking of the item content and even the problem domains measured.

In addition to these more general and theoretical reasons for an updated ASI, there were longstanding, specific limitations within the instrument that grew in number and importance as more changes occurred within the addiction field. We list them here briefly but they have been detailed in other publications by our group and others.^{44-46, 53, 64-70}

Training - Training with the ASI has been quite structured and generally useful especially for counselors as an introduction to clinical interviewing and the uses of patient history information in clinical decision making and client rapport building. We have upgraded the training process in a number of ways by developing: quizzes⁷¹ and scripted role plays to test interviewer competence; improved training materials via videotapes and manuals; vignettes to help interviewers derive more accurate severity ratings;⁷² self-administered forms of the

instrument;⁷³⁻⁷⁵ and software that provides the interviewer numerous error and consistency checks as well as a clinical narrative report.^{76, 77} ASI Training typically takes two full days. Considering the high turnover rates of counseling staff, many treatment providers have difficulty training new staff. Even after this intensive training, it is always a question whether trainees are able to perform the interview with clinical integrity.

Measurement of Costs and Benefit - While the ASI has been used to make cost-effectiveness, cost-offset and benefit-cost determinations of addiction treatments in several populations, the item content and time periods (lifetime and 30 days) are not fully adequate for these determinations.⁶¹ Consultations with economists suggested that a time frame of at least six months would be desirable as well as more detailed information on cost-related issues such as length of time in specific controlled environments, amounts of specific treatments, etc.

Special Populations - There have been issues regarding the ability of the instrument to adequately represent the clinical needs of special groups such as women, ethnic minorities and groups with special needs, such as those with co-occurring addiction and mental or physical health problems. Although a variety of studies showed that most of the existing ASI items were reliable and valid for women, the coverage of many of the important potential problems typically facing women (e.g. pregnancy, parenting, etc.) was relatively limited, tracing back to the instrument's development with male veterans. Many of the subjective items were not well-suited to patients with severe mental illness.^{65, 67, 69, 78}

Summary Measures – Despite our research studies showing that Interviewer Severity Ratings (ISRs) *could be* reliable and valid under structured research conditions, these ratings have proven to be less reliable when they are done by less intensively trained and monitored interviewers.^{44-46, 64, 70, 78}

As described above, there have also been problems with the composite scores (CSs) used in so many treatment outcome studies. While Alterman, McDermott and colleagues developed new psychometrically sound, standardized indices of lifetime function (Clinical Indices; CIs); and new summary measures of past 30 day status (Evaluation Indices; EIs) both of these measures were derived from the existing ASI items and did not address deficiencies in domain coverage. For example, EIs could not be obtained for the medical and employment domains due to their limited content.^{46, 47, 64}

Problems in Specific Domains

Medical Domain - While the ASI medical section was never intended to be a comprehensive physical assessment, particularly since the interview is typically conducted by counselors or research technicians, the domain still lacks some important information including: current pregnancy status of women; recent medical treatment services including ER visits; compliance with any current medications; and impairment in daily living due to physical problems.

Employment and Self Support - Valid criticisms of the employment section include the lack of distinction between on-the-job problems (e.g., missed days, conflicts with co-workers, etc.) and problems finding work (e.g., motivation to work, days seeking work, etc.).

Alcohol and Drug Use - The most obvious and significant omission in this section has been the absence of information on nicotine use. Clinicians have suggested that age of first use and first regular use of substances should be included for their prognostic value. Additionally, there are commonly abused substances (e.g., ecstasy, steroids, marijuana-phencyclidine combinations) that had not been included. Finally, many clinicians had suggested

that the inclusion of the DSM-IV⁷⁹ criteria necessary to make substance use diagnoses would be very helpful and efficient in the context of an ASI administration.

Legal Problems - Changes that have taken place in the legal system since the late 1970s have rendered some ASI items outdated and uninformative. For example, the legal coercion item did not indicate whether substance abuse treatment was formally mandated and there was no distinction between probation and parole.

Family and Social Relationships - Because of the inherent complexity of this section, the item content focused primarily on serious problems in interpersonal relationships with family and with others (i.e., non family members), neglecting the importance of interpersonal support. The ASI-5 summary scores for this domain focus primarily on the family relationships and do not adequately reflect interpersonal problems outside the family. This restricted focus misses serious and prevalent problems in developing relationships (e.g., loneliness). More importantly, there is a serious need for measuring parental relationships, the status of the client's children, child protective service involvement, etc.

Psychiatric Problems - The psychiatric problem section of the ASI-5 has perhaps been the most reliable and validated of any ASI domain. Nonetheless, trauma and its consequences had not been adequately addressed.

Preview of The ASI-6

Because of the widespread use of the ASI, any improvements in its reliability, validity and efficiency could have broad positive consequences for the field. However, if changes are too great they could reduce the value of existing databases, eliminate continuity of evaluation efforts and require massive re-training. Further, despite the importance of additional information in virtually all of the ASI problem domains, most treatment agencies and even researchers are

facing pressing restrictions on time available for information collection. Thus, an optimally effective revision to the instrument would add more items, reduce training and administration time, and leave its major elements unchanged; a tall order.

A five-year revision of the instrument (under the direction of Drs. Alterman and Cacciola) has attempted this task with consultation from scientists, clinicians, administrators, and policy makers; and by direct input from patient interviews and multivariate data analysis. In collaboration with Dr. Michael French (a health economist), we have also integrated and evaluated cost-related items to improve the ASI's performance in cost benefit and cost effectiveness evaluations.

In orienting ourselves to this revision, we decided that its primary use would continue to be with adults in substance abuse treatment or research though we have kept in mind that the ASI has become increasingly used in other populations (e.g., criminal justice, psychiatric, welfare, mental health). Additionally, we decided to retain four hallmarks of the ASI:

- 1) Lifetime and past-30 day time frames remain the primary assessment intervals.
- 2) The inclusion of both objective (i.e., verifiable) items and subjective items (i.e., patient-rating scales).
- 3) The original seven problem areas of the ASI.
- 4) The paper-and pencil interview format. At the same time, we recognize there are computer-assisted ASI-5 interviews^{76,77} and computer self-administered versions of the ASI-5,^{74,75} and have made provision for these forms of administration in the near future.

While these fundamental aspects of the instrument are the same, several other aspects have changed. Interviewer Severity Ratings (ISRs) have been eliminated because of the problems outlined above. We are confident that standardized indices of lifetime functioning (i.e., CIs) can

be derived as replacements.⁴⁶ We have added a 6-month time frame for key items, especially those relevant for cost analysis, in addition to the standard ASI 30-day and lifetime intervals. While we have added items to correct many of the problems noted earlier, in order to keep the length of the interview to less than an hour, screening questions with “skip-outs” have been employed. In this way the ASI-6 obtains considerably more information than the ASI-5, but takes no longer to administer. Also, the ASI-6 is a more structured interview and should be easier to train. The instrument should be released for use and an article describing its psychometric properties published in 2006.

Updated Normative Values: Admission ASI Data from the Drug Evaluation Network System

Over the years that the ASI has been in use, there have been substantial changes in the characteristics of substance abusers and the nature of substance abuse treatment. Also, there is every indication of continued change within the substance abuse treatment field in the years to come. If there were a way to rapidly collect, analyze and report comprehensive information about the nature of the drug problems presented by those coming into treatment, we would be able to track trends such as the emergence of new types of drug problems (e.g. Oxycontin, ecstasy, etc.) as well as changes in system utilization by different populations (e.g. homeless, welfare-to-work clients, drug court clients etc.). This trend reporting would provide local, state, and national policy makers early warnings of important developments within the field and allow them to plan more coordinated and efficient strategies to deal with these emerging trends.

To this end, the Drug Evaluation Network System (DENS) was initiated in 1996 by the Office of National Drug Control Policy (ONDCP) to provide a clinically useful way for treatment programs to simultaneously collect admission information to plan treatment at the

individual patient level; and (through computer networking) to report regional, aggregate level data on emerging trends for policy development and planning. The ASI was chosen as the admission instrument for this purpose since it was used by more treatment programs than any other instrument and because it collected the widest range of information. A computer-assisted software program was developed to make the collection of the ASI easier and more clinically useful, through generation of narrative assessment reports and initial treatment plans.⁷⁶ This software program continues to be provided free to any program willing to share their de-identified data. Finally, a nationally representative sample of treatment programs was drawn from the National Substance Abuse Treatment Services registry, and the DENS was installed in that national sample.

Since 1996, the DENS has been used by over 300 substance abuse treatment programs across the nation, and has been adapted for use in treatment systems in several countries outside the US (e.g. Sweden, Ireland, Egypt, Thailand, etc.). During this period over 70,000 ASIs from over 300 public and private treatment programs in the U.S.A. representing all modalities have been collected by the Treatment Research Institute in Philadelphia and made freely available through the company's website.⁸⁰ From this larger database we have selected a sample of over 8,400 admission ASI-5 interviews collected during the past three years from 42 programs that were part of the original nationally representative sample. This sample provides an opportunity to update normative data on the ASI.

As we did in 1992⁴³ and in 2000⁵¹ we provide summary information (means and standard deviations) on selected demographic and lifetime ASI items (**Table 1**), as well as CSs, CIs and selected 30-day status items within each of the seven problem domains (**Table 2**). In each table,

data are presented for the total sample in the first column and then subdivided by gender, major drug problem and setting of care.

It is important to note that while we believe this is the largest and most representative and diverse set of ASI data currently available, even this large sample of programs and patients likely no longer represents patients entering the national treatment system. This is true not only because of the many changes in the nature of drug problems each year, but also because the high rates of treatment program closures and re-organizations⁸¹ make it unlikely any nationally representative sample will be truly representative for very long. Additionally, because so many drug problems are peculiar to specific regions of the country, regionally representative samples may ultimately be more informative. Despite these important caveats, we offer the data for those who wish to compare the patient profiles in their own programs or treatment systems to these national data. For those who desire more fine-grained comparative analyses, this dataset will soon be available for download.⁸⁰

TABLE 1								
LIFETIME ASI Data from a Nationally Representative Sample of Treatment Programs	ALL n=8429	Male n=5539	Female n=2890	Alcohol n=1935	Opiate n=611	Poly-drug n=2129	Inpatient n=3133	Outpatient n=3885
DEMOGRAPHIC FACTORS								
Age (SD)	34 (11)	35 (11)	34 (10)	36 (12)	38 (10)	34 (10)	36 (10)	33 (11)
Gender (% male)	66%	100%	0%	73%	60%	55%	61%	69%
Race/Ethnicity								
% White	60%	61%	60%	75%	55%	61%	48%	68%
% Black or African American	23%	21%	27%	6%	24%	27%	28%	20%
Marital Status								
% Never Married	53%	55%	45%	46%	49%	51%	48%	54%
% Married or living as married	17%	16%	16%	19%	22%	14%	14%	16%
% Separated or Divorced	29%	26%	33%	31%	27%	31%	32%	26%
% Satisfied with Marital status	72%	72%	71%	77%	69%	68%	63%	77%
Years of Education								
% <12 yrs.	33%	32%	34%	25%	33%	36%	36%	32%
% H.S. Graduate	53%	53%	51%	60%	48%	51%	47%	54%
% 2 Yrs. College/Tech.	9%	9%	10%	8%	12%	10%	11%	9%
% College Graduate or more	4%	5%	4%	6%	8%	3%	5%	4%

SUBSTANCE USE								
ALCOHOL								
% previously treated	49%	51%	44%	77%	20%	64%	57%	44%
% with past history of DT's	8%	6%	11%	3%	30%	15%	13%	4%
DRUGS								
% previously treated	47%	43%	54%	7%	86%	70%	63%	37%
% with past history of Overdoses	9%	10%	8%	11%	6%	10%	15%	6%
% Used Heroin	17%	15%	17%	1%	87%	17%	22%	7%
% Used Cocaine	41%	37%	50%	9%	64%	62%	61%	30%
% Used Amphetamines	20%	16%	26%	6%	21%	35%	26%	18%
% Poly Drug Users	49%	47%	53%	18%	75%	77%	62%	41%

PERSONAL HEALTH								
MEDICAL								
% reporting a chronic medical problem	29%	25%	35%	24%	45%	31%	32%	26%
% taking medications	25%	21%	33%	27%	32%	25%	26%	24%
PSYCHIATRIC								
% previously treated	19%	15%	27%	15%	22%	27%	26%	17%
% taking medications	29%	23%	40%	28%	37%	33%	31%	28%
% lifetime history of depression	49%	41%	64%	38%	55%	61%	63%	43%
% lifetime history of anxiety	44%	38%	57%	35%	54%	54%	58%	38%
% lifetime history of suicide attempts	15%	10%	24%	10%	14%	21%	20%	14%

SOCIAL FUNCTIONING								
EMPLOYMENT								
% who have worked full-time	82%	82%	77%	83%	84%	78%	79%	81%
Employment Pattern, Past 3 Yrs:								
% Working (Full time or Part time)	72%	77%	61%	76%	63%	66%	72%	73%
% Unemployed	15%	8%	27%	8%	23%	20%	20%	12%
FAMILY/SOCIAL								
Living Situation past 3 years								
% With Sexual Partner	36%	34%	40%	37%	38%	36%	34%	36%
% With Family	32%	30%	35%	29%	30%	32%	29%	34%
% With Friends	7%	7%	6%	10%	6%	7%	7%	7%
% Other Living Situation	23%	26%	16%	22%	25%	23%	27%	21%
% Satisfied with living situation	65%	66%	63%	78%	65%	56%	54%	70%
% Reporting physical abuse in lifetime	36%	23%	61%	25%	38%	50%	48%	31%
% Reporting sexual abuse in lifetime	21%	8%	45%	12%	23%	31%	28%	17%
LEGAL								
% Convicted of Crime	62%	66%	53%	47%	66%	65%	62%	64%
% incarcerated in lifetime	51%	58%	40%	35%	60%	57%	59%	50%

TABLE 2								
ASI Data from a Nationally Representative Sample of Treatment Programs	TOTAL n=8429	Male n=5539	Female n=2890	Alcohol n=1935	Opiate n=611	Poly-drug n=2129	Inpatient n=3133	Outpatient n=3885
SUMMARY SCORES & PAST 30-DAY DATA								
SUBSTANCE USE*								
ALCOHOL COMPOSITE SCORE	.21 (.26)	.22 (.25)	.20 (.26)	.29 (.22)	.06 (.13)	.26 (.27)	.33 (.27)	.16 (.23)
ALCOHOL CLINICAL INDEX	55 (10)	56 (10)	54 (10)	60 (6)	48 (9)	58 (9)	60 (9)	53 (9)
Mean Days of Alcohol Drinking	5 (8)	5 (8)	5 (9)	7 (8)	1 (4)	6 (9)	8 (10)	4 (7)
Mean Days of Heavy Drinking**	3 (7)	3 (7)	3 (7)	4 (7)	.3 (2)	4 (8)	5 (9)	2 (6)
DRUG COMPOSITE SCORE								
DRUG COMPOSITE SCORE	.12 (.13)	.10 (.13)	.15 (.14)	.07 (.03)	.26 (.13)	.15 (.13)	.11 (.14)	.09 (.11)
DRUG CLINICAL INDEX	40 (11)	38 (11)	42 (10)	30 (3)	51 (9)	43 (9)	39 (12)	38 (9)
Mean Days of Heroin Use	2 (6)	2 (6)	2 (7)	0 (1)	10 (12)	1 (5)	2 (8)	0 (2)
Mean Days of Cocaine Use	3 (7)	2 (6)	4 (9)	0 (0)	3 (7)	4 (8)	3 (8)	2 (6)
Mean Days of Marijuana Use	2 (6)	2 (6)	2 (6)	0 (2)	2 (6)	3 (7)	2 (6)	2 (6)
PERSONAL HEALTH*								
MEDICAL								
MEDICAL COMPOSITE SCORE	.17 (.30)	.15 (.28)	.21 (.32)	.14 (.27)	.30 (.37)	.19 (.31)	.16 (.29)	.15 (.28)
MEDICAL CLINICAL INDEX	44 (13)	43 (13)	47 (13)	44 (12)	50 (14)	45 (13)	45 (13)	43 (12)
Mean Days of Medical Probs.	5 (10)	4 (9)	6 (10)	4 (9)	8 (12)	5 (10)	4 (9)	5 (10)
PSYCHIATRIC								
PSYCHIATRIC COMPOSITE SCORE	.19 (.23)	.15 (.21)	.27 (.25)	.15 (.21)	.22 (.24)	.25 (.25)	.20 (.24)	.16 (.22)
PSYCHIATRIC CLINICAL INDEX	51 (9)	50 (9)	54 (9)	49 (9)	53 (9)	54 (10)	51 (10)	50 (9)
% Reporting Depression	30%	24%	44%	22%	33%	42%	31%	25%
% Reporting Anxiety	34%	28%	45%	27%	39%	43%	35%	29%
Mean Days of Psych Probs.	8 (11)	6 (10)	10 (12)	5 (10)	8 (12)	10 (12)	8 (12)	6 (11)

SOCIAL FUNCTIONING*								
EMPLOYMENT								
EMPLOYMENT COMPOSITE SCORE	.65 (.32)	.62 (.32)	.70 (.30)	.55 (.31)	.70 (.32)	.71 (.30)	.65 (.32)	.63 (.32)
EMPLOYMENT CLINICAL INDEX	52 (8)	52 (8)	52 (8)	51 (7)	52 (8)	53 (8)	52 (8)	52 (8)
Mean Days Paid for Working	8 (10)	9 (11)	5 (9)	11 (11)	6 (10)	6 (10)	8 (10)	9 (11)
Mean Days of Employment Probs.	8 (12)	8 (12)	9 (13)	6 (11)	9 (13)	10 (13)	8 (12)	9 (12)
FAMILY/SOCIAL								
FAMILY COMPOSITE SCORE	.16 (.21)	.13 (.20)	.22 (.23)	.10 (.17)	.15 (.19)	.20 (.23)	.15 (.21)	.13 (.20)
FAMILY CLINICAL INDEX	45 (10)	44 (9)	49 (10)	42 (8)	46 (9)	48 (11)	46 (10)	44 (10)
Mean Days Family Conflicts	3 (7)	2 (6)	4 (9)	1 (5)	2 (6)	4 (9)	3 (8)	2 (7)
Mean Days Social Conflicts	1 (5)	1 (4)	2 (6)	1 (3)	1 (5)	2 (6)	2 (6)	1 (5)
% Currently living with person with alcohol problem	12%	10%	15%	9%	11%	15%	13%	11%
% Currently living with person using or abusing drugs	9%	7%	12%	2%	15%	11%	7%	8%
LEGAL								
LEGAL COMPOSITE SCORE	.18 (.21)	.18 (.21)	.19 (.21)	.21 (.22)	.17 (.22)	.18 (.20)	.20 (.22)	.18 (.20)
LEGAL CLINICAL INDEX	52 (9)	53 (8)	50 (9)	49 (8)	53 (10)	52 (9)	50 (9)	53 (8)
Percent in Controlled Environment	44%	43%	45%	49%	36%	53%	68%	28%
Mean Days Illegal Activity	1 (4)	1 (4)	1 (5)	0 (0)	1 (5)	1 (5)	1 (5)	1 (4)
Mean Days Incarcerated	3 (7)	3 (7)	2 (7)	1 (4)	3 (8)	3 (8)	2 (6)	3 (8)

*All values reflect the 30 days prior to the admission interview. Values are means (with standard deviations).

**Heavy drinking on the ASI is defined as 5 or more drinks in one day.

Discussion and Conclusion

The first version of the Addiction Severity Index (ASI) was created over 25 years ago by a young group of addiction treatment researchers informed without the benefit of 25 years of experience, and without the most recent 25 years of advances in the fields of addiction and psychometrics. Relying largely on clinical trial and error and using a restricted sample of male veterans in residential and methadone maintenance treatment, we developed a dynamic instrument that remains both relevant and broadly applicable.

In reviewing this history, we believe that there are three reasons for its acceptance and longevity in the field. The most important reason is that the ASI characterizes and quantifies the severity of the multiple health and social problems found among those with substance use disorders. The instrument was among the first to measure more than just the amount, duration, and intensity of substance use. While it is still not possible to know definitively whether the health and social problems so often seen in an addicted person are the cause, the result or simply coincident with the substance use problems, it is quite clear that knowledge about the nature and severity of these health and social problems is key to developing an appropriate treatment plan; for predicting the course of treatment and for fully evaluating the ability of treatment interventions to resolve or improve the so-called “addiction related” problems of crime, employment, excessive healthcare utilization, etc.⁸²

The second reason for the continued use of the ASI is that it has been free and in the public domain. This is because it has been generously supported over the past 25 years - first by the Department of Veterans Affairs and then by the National Institutes on Drug Abuse, the National Institute on Alcoholism and Alcohol Abuse, the Office of National Drug Control Policy and the World Health Organization. This support has allowed us to make better training manuals and software applications, and enabled us to provide assistance to those seeking to translate or

adapt the ASI for their particular research project, clinical organization, or country. The fact that the instrument has been made freely available to all parties also accounts for the wide commercial interest in developing software and training products to foster the use of the ASI.⁷³

⁷⁴ In this regard, the recent publication of standards for naming ASI variables and for storing ASI information in “standard ASI databases”⁸³ should provide software developers with a standard database to host their products and thereby, a larger market for their clinical support software programs. In turn, we hope these decision support tools will help clinicians reduce the burden of “data” collection and increase the “information” that derives from the ASI.

We think the final reason for the continued use of the ASI beyond its shaky start, has been the continuous effort to refine, validate and improve its ability to measure contemporary issues in addiction treatment. As indicated, the ASI is now in its fifth version and the sixth is imminent. These revisions have been necessary to keep the instrument contemporary with the new discoveries in the addiction field and to correct problems in early versions that have been discovered by clinicians and researchers.⁵³ There have also been significant developments in psychometric research^{84, 85} and we will continue to apply these newer methods to the refinement of the ASI. In the future perhaps we will see the ASI-10!

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