

# GAIN

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## Global Appraisal of Individual Needs: Administration Guide for the GAIN and Related Measures

**(Version 5)**

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The current version of this instrument was developed by Dr. Michael Dennis and others at Chestnut Health Systems. Its development was supported by grants and contracts from the Center for Substance Abuse Treatment, the Interventions Foundation, the National Institute on Alcohol Abuse and Alcoholism, and the National Institute on Drug Abuse. It also incorporates several scales and questions based on the National Family Violence Survey, the National Household Survey on Drug Abuse, and work by the American Psychiatric Association and the American Society of Addiction Medicine, as well as input from many individuals. While the GAIN can be administered by anyone with sufficient training, it should be interpreted by an appropriately trained clinician. This document and the GAIN materials herein are the copyrighted property of Chestnut Health Systems. Please contact [GAINInfo@chestnut.org](mailto:GAINInfo@chestnut.org) for permission prior to duplication or use.

## First Author's Preface to Version 5

This document is a work in progress and part of a much larger collaboration of many more people than is reflected on the cover. For over 25 years Chestnut Health Systems has been at the forefront of developing better substance abuse treatment. Chestnut was among the first treatment providers to experiment with combining treatment for alcoholics and drug users, social detoxification, diversion of criminal offenders, and case management for adolescents in treatment. In 1986, Chestnut created its Lighthouse Institute in response to the need for research, training, and publications that were more relevant to the needs of line treatment staff members. Chestnut staff members have a long history of using standardized assessments and training, which have helped it to repeatedly achieve "commendation status" (top 10%) in reviews by the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO), and it has been identified as one of the best practice programs by several reviews (Drug Strategies, 2003; Stevens & Morral, 2003).

The development of the GAIN is part of a multipronged response to major changes in substance abuse treatment over the last several years. These changes include new diagnostic criteria (DSM-IV, APA, 1994; DSM-IV-TR, APA, 2000), new accreditation standards (JCAHO, 1995, 2003), new patient placement criteria (PPC-2, ASAM, 1996; PPC-2R, ASAM, 2001), integration into managed behavioral health care, and an increasing emphasis on outcome monitoring. One effect of these changes is that at the same time substance abuse treatment staff members are doing more work with assessing and documenting, they are given fewer resources and time to do so, let alone have time to treat clients. Dissatisfied with available instruments and the nature of others under development, Chestnut launched three overlapping initiatives. First, it developed an organizational structure for sharing management, quality assurance, computer, training, and research resources. Second, Chestnut has been working on developing more appropriate tools (like this one) and outcome-monitoring data to guide decision-making. Third, it is conducting a series of studies on how to develop more effective and cost-effective approaches to treatment.

A secondary goal of this work was to develop scientifically rigorous tools that mapped well onto DSM-IV for diagnosis and PPC-2 for placement, followed JCAHO for integrating assessment into treatment planning, and integrated well into outcome monitoring to facilitate evaluation and meet documentation requirements. Our continuing goal is to develop a flexible, cost-efficient method of integrated research and clinical assessment and to develop computer applications that help clinicians and researchers with diagnosis, interpretation, placement, treatment planning, outcome monitoring and documentation. Needless to say, this has been a challenging and intellectually rewarding process.

In addition to the co-authors, this document would not have been possible without the contributions of Rod Funk and Melissa Ives (formerly McDermeit), who developed much of the syntax and documentation used in analyzing the GAIN; Kathy Rourke, who worked on earlier versions of the standardized assessment chapter; Jim West, Gerry McKean, Jim Ma, and Randy Lucas, who worked on an earlier version of the software and computer applications; and Bryan Garner, Lora Passetti, and Susan Godley, who helped develop several of the computerized reports.

I need to thank Jerry Jaffe for getting me started on this issue; Peter Delany for encouraging me to develop a paradigm for integrating research and clinical assessment; Mark

Godley and Chris Scott for bringing me to Chestnut, helping me to see this become a reality, and being great colleagues and friends; Jim Fraser for being the one who dared to make the initial commitment when everyone pondered the balance of what was needed with the complexities of accomplishing it; Russ Hagen and Peter Bokos for backing it in the DOMS project; Bill White, Ed Senay, and Wilson Compton for providing countless insights and recommendations that influenced the instrument in more ways than they probably realize; Loree Adams, Rick Risberg, Mychele Kenney, Al Sodetz, and the staff members of both Chestnut and Interventions for contributing so much when the returns were so far downstream for them; Tom Babor, Guy Diamond, Jean Donaldson, Susan H. Godley, Jim Herrell, Yifrah Kaminer, and Frank Tims for choosing to use the GAIN in the Cannabis Youth Treatment Experiment; and Randy Muck for supporting the ongoing development and dissemination of the GAIN for substance abuse treatment evaluations.

The list could easily go on to include hundreds of counselors and thousands of clients who have helped shape this effort. While I cannot list them all here, I do also want to thank some who made one or more suggestions that led to a major change in the instrumentation: Doug Anglin, Jim Becnel, Mike Bohlig, Arthur Bonito, Ken Bossert, Mike Boyle, Barry Brown, Marlene Burk, Juesta Caddell, Betty Cavanaugh, Wilson Compton, Ward Condelli, George Deleon, Sam DiMenza, Seth Esienberg, John Fairbank, Mark Fishman, Pat Flynn, Mark Foss, Mike French, Dean Gerstein, John Guyett, Lilia Hristova, Paul Ingram, Georgia Karuntzos, Rick Lennox, Bruce MacDonald, Lou Mattia, Tom McLellan, Andrew Morral, Deb Oberg, Valley Rachal, Ed Ravine, Scott Ray, Pat Shane, Richard Straw, Sally Stevens, Chris Roebuck, Joyce Roland, Joe Rosenfeld, Bill Schlenger, Dwayne Simpson, Murray Strauss, Holly Waldron, Randy Webber, Wendee Wechsberg, Gail Woods, Jim Wrich, and Gary Zarkin.

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## 1. Introduction, Questions, and Organization

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### 1.1 Introduction and Organization of the Manual

This manual provides instructions for administering and using the Global Appraisal of Individual Needs (GAIN), version 5. The GAIN is actually a series of related instruments that share the same general instructions, questions (and variable names in most cases), scoring, interpretation, and clinical decision trees. This manual focuses on two main instruments:

- **The GAIN-Initial (GAIN-I)** is a full biopsychosocial assessment, meeting major reporting requirements, that integrates research and clinical practice for diagnosis, placement, individualized treatment planning, and program evaluation. Administration time to complete the full GAIN-I is approximately 120 minutes (see chapter 3 for reasons behind variations in administration time).
- **The GAIN-Monitoring for 90 Days (GAIN-M90)** is a quarterly follow-up to monitor how participants respond to treatment as well as how they do after they have been discharged. It is largely a subset of the GAIN-I, so many items in the full GAIN-I are skipped in the M90. (Item numbers remain the same for the items that appear in both.) Administration time for the full GAIN-M90 is 45-60 minutes.

Also available for the GAIN-I and GAIN-M90 are different core versions that contain all the major information contained in the full GAIN but that do not go into as much depth in collecting details. These core versions are often study-specific versions of these instruments with different subsets of questions or added questions and are about two-thirds the length of the full GAIN. Administration time for the GAIN-I Core is about 60-90 minutes and about 30 minutes for the GAIN-M90 Core, depending on which core version is used and whether any additional items have been added. A critical point here is that the GAIN-M90 monitoring instrument is set up primarily for quarterly administration. Because participants go through a great deal of change in the first three months after treatment, we strongly recommend against skipping this data point. If you do skip quarterly intervals (intake, 3, 6, and 12 months; or intake, 6, and 12 months), it is important to a) use the questions about services since the last interval and b) have another way to document the services provided in the first phase of treatment.

The GAIN-I and GAIN-M90 measures are also frequently supplemented with one or more of the following instruments:

- **The GAIN-Quick (GAIN-Q)** is a subset of items from the GAIN's core pathological, outcome, and service utilization scales and is designed to make the referral process more efficient. Responses to the GAIN-Q can also be used to support brief interventions and can be imported into the GAIN-I. Administration time for the GAIN-Q is approximately 20-30 minutes.

- The **GAIN-Short Screener (GAIN-SS)** is designed for use in general populations to quickly and accurately identify people who would be flagged on the full GAIN as having a drug dependency or mental health disorder. The GAIN-SS is a much shorter instrument, only two pages, containing one total scale (20 symptoms) comprising four subscales for internal disorders, behavioral disorders, substance use disorders, and crime and violence. It is designed to screen for people with clinical disorders among general populations of adolescents and adults. The subscales are based on a series of exploratory and confirmatory factor analyses of psychiatric symptoms and disorders among clinical samples. Administration time for the GAIN-SS is approximately 5 minutes.
- **The Collateral Assessment Form for Intake (GCI) and Follow-up (GCM)** is given to parents, guardians, spouses, or other collaterals to help validate participant self-reports and check for any areas of denial. The GCI and GCM have the same cover page and administration conventions as the GAIN, and where applicable, items have the same item numbers.
- **The Supplemental Assessment Form for Intake (SAF-I) and Follow-up (SAF-F)** are used to add additional scales or to document the results of urine tests. The SAFs have similar cover pages and administration conventions but are limited to questions that do not overlap with the GAIN. They vary from study to study and are used to convey administration and data entry information over multiple small forms. There is no single SAF form available; “SAF” is a generic term often used to describe additional measures used with the GAIN.

Copies of these instruments, as well as additional tools and psychometrics, are available at <http://www.chestnut.org/li/gain>. These instruments are copyrighted, and a current GAIN license is required for their use (see section 1.4 for information on licensing).

Below is a summary of the manual’s other chapters.

- **Chapter 2** provides background and rules for semistructured assessments. It reviews the rules for conducting standardized assessments for reliability (getting the same answer to a question when asked by different people or at different times) as well as common-sense reasons for loosening the rules in order to maximize validity.
- **Chapter 3** provides information on the GAIN’s internal organization, conventions, and general administration, including an alphabetical crosswalk of substances to GAIN class and diagnostic groups.
- **Chapter 4** presents the GAIN’s model of quality assurance, an essential component for maximizing both reliability and validity.
- **Chapter 5** describes the use of the GAIN for diagnosis based on the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR; APA, 2000).

- **Chapter 6** describes the use of the GAIN for level-of-care placement based on the American Society of Addiction Medicine's *Patient Placement Criteria*, Second Edition Revised (PPC-2R; ASAM, 2001).
- **Chapter 7** describes the use of the GAIN to support individualized treatment planning and is based in part on the Individualized Substance Abuse Counseling protocol (ISAC; Dennis, Fairbank et al., 1995) and the Joint Commission on the Accreditation of Healthcare Organizations standards (JCAHO, 1995, 2003).
- **Chapter 8** describes our protocols for training, certification, and clinical supervision of research and clinical staff members on the use of the GAIN.
- **Chapter 9** summarizes our progressive and integrated approach to assessment and program evaluation.

The GAIN's frequently asked questions appear as an appendix after the references at the end of the manual. Updated FAQs are also regularly posted at <http://www.chestnut.org/LI/gain/index.html> (approximately two-thirds of the way down the page).

The training CD that comes with this manual includes a wealth of supplementary material, including blank copies of the instruments, training cases, PowerPoint presentations given at national GAIN trainings, crosswalks of the scales and indices in the GAIN, licensing information, SPSS syntax, and much more. The directory showing all the files on the CD can be found as a stand-alone pdf on the CD itself.

The remainder of this introduction is comprised of a short history of the evolution of the GAIN, including a list of additions to the current version (section 1.2); a short summary of the GAIN's internal organization and psychometrics, which you have permission to use in whole or part in other articles, chapters, or reports (section 1.3); and an overview of the services provided by the GAIN Coordinating Center (GCC), including where to get GAIN-related questions answered (section 1.4).

## **1.2 The Evolution of the GAIN and Summary of Changes for Version 5**

The genesis of the GAIN was a conversation with Jerry Jaffe during the first year of the Office of Treatment Improvement (now the Center for Substance Abuse Treatment). Jaffe noted the duplication and waste in the overlap between the information collected by administrators, clinicians, and researchers and argued that we should develop an integrated instrument or system for doing this. This led to a conversation about the paradox that standardized measures were often more reliable but less valid than clinical assessments and the feasibility of making a short standardized assessment battery that was psychometrically sound and clinically valid and relevant. Subsequently, Schlenger and colleagues (1989) developed the initial version of the Individual Assessment Profile (IAP) based on the Addiction Severity Index (McLellan, Luborsky, et al., 1985; McLellan, Kushner, et al., 1992) and an early version of the Client

Assessment Profile (CAP, developed for NIDA's Methadone Quality Assurance Treatment System; Phillips, Hubbard, et al., 1995). Designed as a common measure across their local and cross-site demonstration evaluations, this early version was never used. Instead it was revised well over two dozen times and resulted in the concurrent development of the GAIN and several other instruments used in the National Treatment Improvement Evaluation Study (NTIES; Gerstein et al., 1997), the Individual Assessment Profile (IAP; Flynn et al., 1995), and some of the Target Cities demonstration projects (Stephens, Scott, & Muck, 2003).

The first official version of the Global Appraisal of Individual Needs was developed in 1993-1995 as part of a collaboration between researchers, administrators, and clinicians at the Research Triangle Institute and at three methadone clinics (PBA the Second Step in Pittsburgh, PA, Pathways/Sisters of Charity in Buffalo, NY, and the Santa Clara County Health Department in San Jose, CA) under a NIDA-funded Training and Employment Program (TEP) study to Dennis (R01 DA07964). Starting with the then-current version of the IAP (Flynn et al., 1995), sections were revised to use more symptom count scales, behavior or service utilization counts (e.g., number of days or times the participant engaged in certain behaviors), and to add questions on what the client "wanted" in order to help with treatment planning. There was also an intentional shift away from lifetime epidemiology toward current functioning. Where possible, recommendations from NIDA's diagnostic sourcebook (Rounsaville, Tims, Horton, & Sowder, 1993) were followed in selecting symptom counts or critical assessment areas.

However, review of taped assessments and counseling sessions identified several gaps in participants' histories that needed to be addressed further, including physical and mental distress, violence, environment, problem solving, and victimization. These items were developed and pilot-tested in collaboration with clinical staff members. Question formats were simplified to reduce respondent burden, and information was added for immediate hand-scoring by clinicians. Evaluation of this measure (Dennis, Fairbank et al., 1995) suggested that it had matched or improved the psychometrics of several existing scales, but they were still only mediocre ( $\alpha = .7$ ) and did not map well onto clinical paperwork or decisions. Parts of this version of the GAIN were used to evaluate CSAT's New Orleans Target Cities Project (NOTCP; McDermeit & Dennis, 1999) and Target Chicago project (Scott, Foss, & Sherman, in press), and NIDA's North Carolina Cooperative Agreement to do AIDS outreach (Reif, Wechsberg, & Dennis, 2001). Though the NOTCP's version of the evaluation primarily used version 1, it also introduced the GAIN's substance problem scale, based on DSM-IV (APA, 1994) and done on the primary, secondary, and tertiary substances of abuse.

Version 2.0 of the GAIN was developed from 1995-1996 under a grant from the Interventions Foundations, called the Drug Outcome Monitoring Study (DOMS), and a contract from the Illinois Criminal Justice Information Authority (ICJIA) to evaluate the Madison County Alternative Treatment and Court. This version was revised to better map onto the prevailing diagnostic criteria (DSM-IV, APA, 1994), accreditation standards (JCAHO, 1995), and patient placement criteria (PPC-2, ASAM, 1996). This version was adapted for use with adults as well as adolescents. It incorporated several scales from the National Household Survey on Drug

Abuse (NHSDA) and National Health Interview (NHI) survey to facilitate comparisons with existing epidemiological data in the public domain, and it also incorporated items designed in collaboration with Dr. Michael French to facilitate comparisons with economic analysis. The adaptation for use with adolescents, including new questions, scales, and interpretative tools, was developed and tested with the help of senior clinical staff members from Chestnut and Interventions (particularly Loree Adams, Seth Esienberg, Mychele Kenney, Ed Ravine, Rick Risberg, Joe Rosenfeld, Ed Senay, Al Sodetz, Randy Webber, and Bill White) and an external advisory board (Mike Boyle, Wilson Compton, Sam DiMenza, Mike French, Rick Lennox, Holly Waldron, and Jim Wrich). While version 1 of the GAIN placed a great deal of emphasis on using scales that had been widely published, it produced a bias toward older measures that did not do as well statistically or map onto clinical needs. As we shifted our criteria toward the latter, it was clear that many of the scales in the NHSDA or developed by clinical staff members worked much better. The substance problem scale (collected here for alcohol and again for other drugs), for instance, had an alpha of .9 (compared to alphas of .7 in other screeners) and mapped directly onto the diagnostic criteria. The DOMS effort was singled out by the Institute of Medicine (Lamb, Greenlick, et al., 1998) as a model for bridging the gap between research and practice. It led to a NIDA white paper on the integration of research and clinical assessment (Dennis, 1998), demonstrated the feasibility of predicting ASAM placement decisions made by clinical staff members (Dennis, Scott, et al., 1998, 2000), and produced some of the first norms of a single assessment battery across adult and adolescent levels of care (Dennis, Scott, et al., 1999).

Version 3.0 of the GAIN was developed in 1997-1999 with funding from several grants, including the Assertive Aftercare Program (AAP) experiment by Drs. Godley, Godley & Dennis (NIAAA grant no. RO1 AA10368), the 5 CSAT Cannabis Youth Treatment (CYT) cooperative agreement grants by Drs. Dennis (TI-11320), Babor (TI-11324), Tims (TI-11317), Godley (TI-11321), & Diamond (TI-11323), and the 10 CSAT Adolescent Treatment Model (ATM) grantees by Drs. Bennett (TI-11423), Fishman (TI-11424), Stevens (TI11422 & TI11892), Morral (TI-11433), Shane (TI-11432), Liddle (TI-11871), Stewart-Sabin (TI-11888), Godley (TI-11894), and Battjes (TI-11898) and the Multisite Analytic Center (CSAT contract no. 270-98-7047). The primary focus of these revisions was to further adapt the GAIN to work with adolescents, add items to meet CSAT's reporting requirements, and incorporate the feedback from researchers and clinicians who had used the earlier version. The substance problem scale was revised into a single scale (across alcohol and drugs) that could be used as a measure of change and for course specifiers, and a grid (initially developed by Rick Risberg) was added to do detailed diagnoses by substance. This version also led to the development of parallel versions for family members or other collaterals, the shorter Quick version (Titus & Dennis, 2000), and numerous psychometric studies summarized below and in appendix 3.

Version 4.0 of the GAIN involved the development or revision of several key modules related to substance use, motivation, relationships, and illegal activity. It was done with support from the Early Re-Intervention (ERI) experiment by Drs. Dennis and Scott (NIDA grant no. DA11323), the Mothers at the Crossroads (MAC) evaluation by Dr. Godley (IL state grant no PI 00567), the

Persistent Effects of Treatment Study (CSAT contract no. 270-97-7011), and the Bloomington ATM site (Dr. Godley, TI-11894). The ERI and subsequent PETS version incorporated several of the items from Dr. Scott's earlier Target Chicago evaluation (which became the 10-year Pathways to Recovery longitudinal study funded under NIDA grant and R01 DA15523) and Dr. Godley's MAC and ATM versions, which incorporated modules to address information gaps, identified by clinical staff members, related to insurance and clients coming from controlled environments. Some of the other key developments in version 4.0 included collecting information on peak substance use and substance use patterns, a more detailed treatment history grid, the addition of items to better cover several diagnostic criteria (for tobacco dependence, major depression, generalized anxiety disorder, and conduct disorder), a more detailed illegal activity grid (which also captured whether illegal acts were done under the influence or to obtain substances), and the addition of several individual questions on house arrest, electronic monitoring, public assistance benefits received, and service needs. While most of these modifications improved the measure, no project had all of the modules in use.

Version 5.0 of the GAIN is designed to incorporate the best of these modules and to take advantage of many valuable lessons we have learned from doing quality assurance work with clinicians and researchers in a wide range of settings. Some key changes in version 5.0:

- Improved wording of questions that confused interviewers and participants.
- Changes in interviewer instructions that confused some interviewers and were often the focus of quality assurance review comments.
- Incorporation of transitional statements used by several interviewers to let participants know when the response set was changing.
- Simplifying the cognitive-impairment screener to use days of the week instead of names of the months (which raised literacy questions).
- Expansion of the gender and race questions to address federal guidelines and allow self-identification of gender, race, ethnicity, and tribal identity.
- Simplifying the literacy questions and moving them before the anchoring/general directions section to improve the flow of the interview.
- Simplification of insurance questions (which many participants could not answer).
- Removing a skip-out before barriers to access to care that was often problematic.
- Expanding the list of drug codes and ordering by DSM-IV.
- A more detailed grid on substance use and peak use that has a different skip-out pattern to better measure adult usage patterns.
- Adding a module to get at the date of the participant's last use of individual substances and the amount they last used (for insurance and comparison to urine tests).
- Adding a module to capture pre-controlled environment use where necessary.
- Adding questions about the use of halfway houses and recovery homes.
- Simplification of the types of substance abuse treatment and the addition of a more detailed treatment history to allow better tracking of treatment careers.
- Adding process questions on treatment in general, treatment groups, and family nights.

- Adding the reasons for quitting (RFQ) questions from Sampl and Kadden (2001) to allow the generation of a personal feedback report (PFR) for use with motivational interviewing.
- Collecting information on pregnancies “caused” by male participants.
- Collecting information on HIV status (where allowed by law).
- The addition of questions to track medication management related to health problems.
- Incorporating a diagnostic module for tobacco dependence.
- Incorporating new items to more accurately assess major depression, generalized anxiety, and conduct disorder.
- The addition of questions looking at the extent to which mental health symptoms appear to interact with substance use.
- The addition of questions to assess past and ongoing problems with cutting and other forms of self-mutilation.
- The addition of questions to facilitate medication management related to mental health problems.
- Adding questions about access to other people in recovery (regardless of whether they are in self-help groups or treatment).
- Adding a question about the age of first victimization.
- Adding questions about the frequency of participating in religious or spiritual activities.
- Removing most of the Likert scales to reduce administration time.
- Changing questions about illegal acts from yes/no to number of times and asking about problems while involved in the criminal justice system to facilitate economic analysis of the cost to society.
- Adding questions about house arrest and electronic monitoring (both of which are becoming increasingly common).
- Adding questions on participation in Temporary Assistance for Needy Families (TANF) and any loss of such benefits.
- Reordering and revising the income questions to make them flow better.
- Spelling out the administrative rating sections to make them easier to use for new staff members and changing the administrative ratings to make them easier to understand.
- Adding administrative ratings on the degree of privacy that was established for the interview.
- Adding an item on whether the participant was required or mandated to go to treatment.
- Changes to the S7 treatment history grid requiring information on whether the participant is still in treatment and the length of stay in number of days (in addition to the dates that were previously required).
- Adding a question in the Legal section on whether the participant is awaiting charges for crimes.

The changes were done in a way that maintains comparability across the core scales in versions 2 to 5 and for many of the simple behavioral counts back to version 1. Version 5 of the GAIN has been and continues to be used in several major studies, including multiple grants from CSAT’s

Strengthening Communities for Youth (SCY), CSAT's Adolescent Residential Treatment (ART), CSAT's Effective Adolescent Treatment (EAT), Assertive Adolescent Family Treatment (AAFT), the Young Offenders Reentry Program (YORP), and Drug Court, as well as individual grants to work with adults and adolescents from CSAT, NIAAA, NIDA, and the Robert Wood Johnson Foundation (RWJF). Version 5 has also been set up for computer assisted interviewing using the Assessment Building System (ABS; Hodgkins & Dennis, 2002), a collateral assessment form (GAIN-CM), and the GAIN-Q (Titus & Dennis, 2002).

### 1.3 Summary of Psychometrics

The Global Appraisal of Individual Needs has been normed on both adults and adolescents (Dennis, Scott, Godley, & Funk, 1999, 2000; Dennis, Titus, Diamond, Donaldson, Godley, Tims, et al., 2002; Dennis, Scott, & Funk, 2003), is used as the biopsychosocial clinical assessment in several major treatment agencies (e.g., Chestnut Health Systems, Fayette Companies, Operation PAR), and is currently one of the most widely used measures in adolescent treatment studies in the U.S. (Dennis, Dwaud-Noursi, Muck & McDermeit, 2003; Dennis & White, 2003). It has been used in over 500 agencies and research projects, including over two dozen CSAT grants with the Cannabis Youth Treatment experiment (CYT; Dennis, Titus, Diamond et al., 2002), the Adolescent Treatment Model (ATM; Stevens & Morral, 2003), and Strengthening Community for Youth (SCY), as well as dozens of Adolescent Residential Treatment (ART) and Effective Adolescent Treatment (EAT) grants and several individual grants funded by NIDA, NIAAA, and RWJF. This work includes sites with large number of adolescents, females, African Americans, Hispanics, and Native Americans, as well as clients who are pregnant, homeless, injection drug users, or have co-occurring mental disorders. From a systems perspective the GAIN is used across levels of care, as well as by student and employee assistance programs, criminal and juvenile justice agencies, mental health agencies, and child protective service and family service agencies.

**Scales and Internal Consistency.** The GAIN is based on a measurement model that combines both classical scales (i.e., truth + error) and summative indices (i.e., effect indicator or formative sums of unique variance) into a hierarchical system that gives clinicians and researchers information to look at overall severity, major sources of variation (substance use severity, internal distress, external behavior problems, crime/violence), clinically orientated subscales (e.g., dependence, depression, anxiety, ADHD, conduct disorder), and even the item level for salient issues (e.g., suicide attempts). The internal consistency of the classical scales has been consistently good to excellent across over two dozen studies with populations varying by gender, race, age, and geography, as well as across levels of care and several clinical subgroups (e.g., pregnant woman, injection drug users, homeless people, people with co-occurring mental disorders). The summative indices have also been demonstrated to be both reliable and predictive across this range of populations (see Bollen & Lennox, 1991; Dennis, Lennox, et al., under review; and Nunnally & Bernstein, 1994, for a further discussion of the issues involved in evaluating summative indices).

Key indices (and their alphas for adolescents and adults where applicable from DOMS) are:

Scale Index	Adolescent alpha	Adult alpha
Cognitive Impairment Scale	Summative	Summative
Substance Frequency Scale	.80	.77
Current Withdrawal Scale	.92	.95
Treatment Resistance Index	Summative	Summative
Treatment Motivation Index	Summative	Summative
Self-Efficacy Scale	.71	.72
Problem Orientation Scale	.92	Summative
Substance Problem Scale—Lifetime	.90	.89
Health Distress Scale	.73	.79
Health Problem Scale	.73	.86
Internal Mental Distress Scale	.94	.97
Traumatic Stress Scale (subscale of the Internal Mental Distress Scale)	.92	.96
Behavior Complexity Scale	.94	.96
Emotional Problem Scale	.79	.86
Environmental Risk Scale	.71	.63
General Conflict Tactic Scale (subscale of the Crime and Violence Scale)	.85	.89
General Victimization Scale	.82	.86
Personal Sources of Stress Index	Summative	Summative
Other Sources of Stress Index	Summative	Summative
General Social Support Index	Summative	Summative
Illegal Activities Scale	.82	.86
Employment Activity Scale	.92	.96
Training (School) Activity Scale	.93	.91
Recovery Environment Risk Index	Summative	Summative

Most of these scales have two to four subscales as well (Dennis, Scott, et al., 1999, 2000). The GAIN also includes individual questions designed for comparison to the National Household Survey on Drug Abuse (OAS, 1996) and have been or are currently being “valued” for adults and adolescents at the unit level (e.g., day, time) by Dr. Michael French under separate grants from NIAAA, NIDA, and CSAT.

**Factor Structure.** Using data from 1,028 adolescents from 14 outpatient and residential programs (Dennis, Dwaud-Noursi, Muck, & McDermeit [now Ives], 2003), we found that the GAIN scales replicated earlier results in terms of high internal consistency on both the summary dimension scales and their more specific subscales, including:

- **Substance Problem Scale (SPS; 16 items, alpha = .90)** and its subscales: Substance

Issues Index (SII; 5, .67), Substance Abuse Index (SAI; 4 .70), Substance Dependence Scale (SDS; 7, .83), and Substance Use Disorder Scale (SUDS; 11, .87).

- **Internal Mental Distress Scale (IMDS; 43 items, alpha = .94)** and its subscales: Somatic Symptom Index (SSI; 4 items,  $\alpha = .69$ ), Depressive Symptom Scale (DSS; 9 items,  $\alpha = .77$ ), Homicidal Suicidal Thought Scale (HSTS; 5 items,  $\alpha = .83$ ), Anxiety/Fear Symptom Scale (AFSS; 12 items,  $\alpha = .77$ ), Traumatic Stress Scale (TSS; 13 items,  $\alpha = .92$ ), and General Mental Distress Scale (GMDS; 26 items,  $\alpha = .88$ ).
- **Behavior Complexity Scale (BCS; 33 items, alpha = .91)** and its subscales: Inattentive Disorder Scale (IDS; 9 items,  $\alpha = .88$ ), Hyperactivity-Impulsivity Scale (HIS; 9 items,  $\alpha = .81$ ), Conduct Disorder Scale (CDS; 15 items,  $\alpha = .82$ ), and ADHD Scale (ADHDS; 18 items,  $\alpha = .90$ ).
- **Crime/Violence Scale (CVS; 31 items, alpha = .90)** and its subscales: General Conflict Tactic Scale (GCTS; 12 items,  $\alpha = .89$ ), Property Crime Scale (PCS; 7 items,  $\alpha = .75$ ), Interpersonal Crime Scale (ICS; 7 items,  $\alpha = .67$ ), Drug Crime Scale (DCS; 5 items,  $\alpha = .53$ ), and General Crime Scale (GCS; 19 items,  $\alpha = .84$ ).

More recently, Dennis, Scott, Lennox, Funk, and Ives (under review) have used data from 2,968 adolescents and adults entering substance abuse treatment in 61 clinics in 17 cities to conduct a psychometric meta-analysis for four subgroups: adolescent outpatient, adolescent residential, adult outpatient, and adult residential. In each of these four groups the GAIN's General Individual Severity Scale and the four scales that are hypothesized to represent its core dimensions (Substance Problem Scale, Internal Mental Distress Scale, Behavior Complexity Scale, and Crime/Violence Scale) had alphas over .9. Alpha was over .7 in all but 1 of 32 evaluations (four groups x eight subscales) of the classical scales that were hypothesized to be internally consistent. Alpha factor analysis confirmed the presence of the hypothesized four factors. The only deviations from the hypothesized structure suggested by the above scales were that a) hyperactivity symptoms were a function of both internal and external distress and b) conduct disorder symptoms were a function of both external behavior complexity and crime and violence. Maximum likelihood confirmatory factor analysis supported a single general severity second-order factor as the source of the covariance among the first-order factors that justified a single total score, but at the same time it supported the uniqueness of the first-order factors, and individual subscales hypothesized in the GAIN's mixed measurement model. There was strong evidence of invariance across adolescent and adult populations and across outpatients and residential treatment settings in terms of the Comparative Fit Index (CFI = .97 constrained vs. .98 constrained) and root mean square error of approximation (RMSEA = .04 vs. .04). The results suggest that the structure of the GAIN's psychopathology measures are valid and capable of supporting scoring across populations at the level of the general score, factor score, and subscale level.

**Test-Retest Reliability.** A 1- to 3-day test-retest study with 75 adults 2 years after intake revealed good reliability in terms of the need for treatment ( $\kappa = .78$ ), frequency of use ( $r = .94$ ) and substance problems ( $r = .81$ ), recovery environment risk ( $r = .75$ ; Dennis, Scott, & Funk, 2003;

Scott, Dennis, & Foss, under review). A test-retest study of the days of use in the past 90 days and lifetime DSM-IV abuse/dependence symptoms over 48 hours or less with 210 adolescent outpatients revealed consistent but increasing numbers of days of marijuana use ( $r = .74$ , 31 vs. 34 days), days of alcohol use ( $r = .74$ , 6 vs. 7 days), abuse/dependence symptoms ( $r = .73$ , 4.6 vs. 5.3 lifetime), and lifetime diagnosis ( $\kappa = .55$ , 40% vs. 44% lifetime dependence; Dennis, Titus, et al., 2002). We have also reported that self-reported data on treatment utilization from the GAIN was largely consistent with agency records ( $r = .78$ ; Godley et al., 2002). Further test-retest studies with an adult sample are currently underway as part of the ERI study.

**Validity Studies.** In the CYT sample ( $n = 600$ ), adolescents were more likely than family members or other collaterals to report a greater number of days of any substance use (39 vs. 31 days,  $t_{(527)} = 7.0$ ,  $p < .001$ ) and cannabis use (37 vs. 30,  $t_{(505)} = 6.0$ ,  $p < .001$ ) during the preceding 90 days. They reported slightly fewer days of alcohol use (7 vs. 8,  $t_{(505)} = -2.2$ ,  $p < .05$ ) and about the same number of abuse and dependence symptoms during the preceding month (2.4 vs. 2.6 of 11 symptoms,  $t_{(594)} = -1.6$ , n.s.d.), preceding year (4.6 vs. 4.6 symptoms,  $t_{(594)} = 0.1$ , n.s.d.), and lifetime (5.1 vs. 5.2 symptoms,  $t_{(594)} = -0.9$ , n.s.d.). Consistent with the assessment of other psychiatric disorders (see Ezpeleta et al., 1997), family members reported somewhat different symptoms, particularly role failure, tolerance, and substance-induced psychological problems.

Adolescent self-reports were consistent ( $\kappa$  in the .7 to .9 range) with parent reports and on-site urine tests for any cannabis metabolite (THC 5ng/ml,  $n = 600$ ) and for gas chromatography/mass spectrometry (GC/MS,  $n = 74$ ) tests specifically for delta-9-tetrahydrocannabinol ( $\Delta^9$ -THC 50ng/ml; Dennis, Titus, Diamond, et al., 2002). In a study of 143 adolescents entering residential treatment we found that adolescent self-reports on the GAIN were largely consistent ( $\kappa = .53$  to .69) with collateral reports and on-site urine testing (Godley, Godley, Dennis, Funk, & Passetti, 2002).

In a sample of 308 adult outpatient and residential clients at 24 months after intake, self-reports on the GAIN were found to be consistent with a multimethod estimate (based on any self-report or positive urine or saliva) for any drug ( $\kappa = .56$ ), cocaine ( $\kappa = .52$ ), opioids ( $\kappa = .55$ ) and marijuana ( $\kappa = .75$ ; Dennis, Scott, & Funk, 2003). While the prevalence rates by self-report (56%), urine (62%), and saliva (57%) were not significantly different, they were not always produced by the same people and were each substantially lower than the combined estimate (76%). Relative to the combined estimate, urine appeared to miss the fewest people for cocaine (12% false negative), saliva for opioids (6%), and self-report for marijuana (12%). Each method was largely consistent with the combined estimate ( $\kappa$  of .59 for self-report, .69 for urine, and .56 for saliva).

A preliminary cross-validation of the main symptom counts (e.g., internal distress, external distress, conduct disorder) in the GAIN's GCM (completed by 600 parents) to the Child Behavior Checklist (CBCL; Achenbach, 1991; Achenbach, Howell, McConaughy, & Stanger, 1995) has found that the similar scales were correlated around .6, while ones that were not related were

generally correlated from 0.0 to 0.4 (Dennis, Titus, Diamond, et al., 2002). Additional comparisons of client and collateral symptom counts among adults are currently underway in an evaluation of Chestnut's residential program being conducted by Drs. Godley and Titus.

Using data from the GAIN-I for 187 adolescents admitted to residential treatment in the Oakland ATM site (Shane, Jasiukaitis, & Green, 2003), we were able to use discriminant analysis to accurately predict independent and blind staff psychiatric diagnoses of co-occurring psychiatric disorders including ADHD ( $\kappa = 1.00$ ), mood disorders ( $\kappa = .85$ ), Conduct Disorder/Oppositional Defiant Disorder ( $\kappa = .82$ ), Adjustment Disorder ( $\kappa = 0.69$ ), or the lack of a non-substance use diagnosis ( $\kappa = .91$ ) and to discriminate the co-occurring disorders across these conditions ( $\kappa = .65$ ). These analyses are currently being replicated with other samples of adolescents and adults.

#### **1.4 Overview of the GAIN Coordinating Center (GCC)**

To support the use and dissemination of this instrument, we have created the GAIN Coordinating Center (GCC). The goal of the GCC is to help bridge the gap between science and practice by:

- Providing a core set of tools for measuring and using information related to diagnosis, placement, treatment planning, outcomes, costs, and benefits.
- Facilitating the use of these tools in research, program development and evaluation, and individual practice.
- Facilitating the pooling of data for replication, benchmarking, meta-analysis, and comparison to epidemiological data and to answer new questions.
- Translating assessment into usable, clinician-friendly reports that support evidence-based decisions about diagnosis, placement, interventions, and program planning.

Currently there are over 500 licensed agencies and research projects using the GAIN across the U.S. and Canada. GAIN research projects managers and coordinators assist agencies and projects using the GAIN to meet these needs via communication, coordination, and follow-through and act as the first point of contact for anyone interested in using the GAIN. We also provide a password-protected website for licensed GAIN users that provides updates and information. See the GAIN contacts handout on the CD for more information.

#### **Core Service Areas**

The following sections provide a brief description of the GCC's four core services areas: product registration and information, training services and quality assurance, software development and technical assistance, and data management and analytic services. This is followed by descriptions of two cross-cutting services (training and certification, product and

report development) and attachment 1-1, a short glossary of several key roles referred to throughout this manual.

**Product Registration and Information.** This core service area pertains to licensing for the GAIN (see the CD for further information) and the GAIN ABS online application (see separate GAIN ABS manual for further information), registration and arrangements for our national train-the-trainer events (see “Training Services and Quality Assurance” below for more information), accreditation of trainings so that trainees can obtain Continuing Education Credits (CEUs), and GAIN website materials. A signed license agreement and usage agreement is required for use of the GAIN and its materials. Questions about starting a regional implementation project, multisite licenses, purchasing a license to use the GAIN or GAIN ABS, or completing the license agreements should be directed to [GAINInfo@chestnut.org](mailto:GAINInfo@chestnut.org).

**Training Services and Quality Assurance.** This core service area pertains to scheduling, planning, and materials reproduction for national training events and on-site GAIN trainings, quality assurance review and certification services, and GAIN support help. Our comprehensive quality assurance and services rely on a pool of quality assurance reviewers that conduct reviews of taped administrations and a core team that oversees certification decisions, issues certificates, answers questions, and maintains records of reviews and certifications. The pool of reviewers are very important to the ability of the GCC to provide feedback on taped submissions within one week of tape receipt and to manage the large number of tapes received, especially following a major training. This pool of reviewers includes several part-time consultants drawn from experienced Local Trainers in agencies and sites already using the GAIN, acts as a network that provides cross-agency assistance, provides an opportunity for these reviewers to advance their skills. Details on our training and certification models are discussed further below. Questions about training, quality assurance, and certification should be directed to our GAIN support team at [GAINSupport@chestnut.org](mailto:GAINSupport@chestnut.org).

**Software Development and Technical Assistance.** This core service area includes the GAIN ABS applications. Services include application development, application testing, software training, and software support. A separate manual is available (see <http://www.chestnut.org/li/abs> for more information) and is included in the national training package. Questions about GAIN ABS should be directed to [ABSSupport@chestnut.org](mailto:ABSSupport@chestnut.org).

**Data Management and Analytic Services.** This core service area focuses on helping Agencies and sites using the GAIN by setting up useful management reports that track assessment and treatment receipt and referral and by collaborating with clinical agencies and multi-site research projects to collect, clean, prepare, and store analytic data files. Services include data receipt and tracking, data cleaning, preparation of analytic datasets, production and distribution of cross-site reports for multisite research studies and regional training centers, answering questions related to datasets, and analytic services for data collected using the GAIN. Interest in setting up ongoing data collection, cleaning, report, or analysis services should be

directed to [GAINInfo@chestnut.org](mailto:GAINInfo@chestnut.org). Questions regarding GAIN datasets, management reports, and analytic services should be directed to [DataSubmit@chestnut.org](mailto:DataSubmit@chestnut.org).

**Cross-Cutting Services: Training and Certification**. We strongly recommend training and certification when using the GAIN, both as a way to more easily transition into using the instrument at an agency or site and to maintain quality service and records management. Our national train-the-trainers model is designed to help two or three staff members to return to their site and become Local Trainers (see role descriptions in attachment 1-1) who can then train and supervise others at their site to administer the GAIN. The 4 days of training comprehensively cover the GAIN, the GAIN-Quick, and the GAIN ABS user manual. For more information and to view training agendas for upcoming training, see our website at <http://www.chestnut.org/LI/gain/GAIN%20Training/index.html>. The tuition for this training includes a preset amount of follow-up technical assistance with the software and instrument. The process to reach these certification levels is described in detail in chapter 8 of this manual; below is an overview.

- **Coursework certification** is issued to all trainees completing at least 23 of the 26 hours of national training.
- **Administration certification** is issued to those with Coursework certification who complete the process of submitting audiotapes and assessments for review and feedback until mastery of the instrument is achieved. This process is described in detail in chapter 4.
- **Local Trainer certification** is issued to certified Administrators who then train local staff (to be certified as Site Interviewers, similar to Administrators; see below) to administer the GAIN, review taped submissions of these trainees' administrations, and submit to the GCC the trainee's tapes, assessments, and feedback for a blind rereview to determine the Local Trainer's ability to train and provide feedback.
- **Site Interviewer certification** can be recommended by certified Local Trainers by submitting only a trainee's feedback (no tapes or assessments) to the GCC with their request to review for certification. The main difference between a certified Administrator and a certified Site Interviewer is that an Administrator has completed coursework in a train-the-trainer event and is therefore eligible to continue on to Local Trainer certification, whereas a Site Interviewer cannot go on to any other levels of certification without first completing train-the-trainer coursework.

This model allows for GAIN-licensed agencies and sites to receive initial training, technical assistance, and certification from the GCC, but it also prepares them to competently train staff and therefore "detach" from the GCC and become self-sufficient in using the GAIN. The GCC can also provide a range of customized training options for a given agency or region. Some examples of on-site customized trainings models that we have conducted include:

- Trainings for clinical divisions that are using the GAIN and are interested in advanced

training in scoring and interpretation.

- Advanced trainings on our online applications. While the national training model includes user training and basic administrator training, the GCC can also provide more advanced GAIN ABS administration training and developer training so that agencies can then produce their own local clinical and management reports using GAIN ABS.
- Administrator trainings to support clinical line or research interviewers, including QA review support and certification, which is often done to help an agency get started even if they have a Local Trainer who will then be responsible for ongoing supervision and training, such as in the event of staff turnover.
- Trainings specifically on the GAIN-Quick (for agencies that want to use this version rather than the full GAIN assessment), which may include training on the online applications.
- Quality assurance follow-up trainings for agencies that have done the initial Coursework training of their local staff to use the GAIN but find themselves pressed for time to do all of the follow-up quality assurance work to reach initial certification (which typically involves two to four taped submissions and 4 to 8 hours to review each submission).

These examples are a sample of what we can do to help your agency or research site use the GAIN. For further questions or to inquire about holding training in your area, please contact [GAINInfo@chestnut.org](mailto:GAINInfo@chestnut.org).

Both the national training model and our on-site training assume use in a single agency or research project. The GCC also works with county, regional, and state agencies interested in using the GAIN throughout their systems. In these situations there is often a middle group (e.g., an agency or university) interested in becoming a regional GAIN training center for which the GCC provides initial training and support with the goal of having the regional center become the primary source of support for the region's ongoing needs, with the GCC providing backup support as needed. Some examples of regional GAIN training centers include:

- A state department of family services interested in implementing the GAIN in all of its agencies that prefer to have a more local source of GAIN support, such as a university or head agency for the department.
- A state or regional health department interested in using the GAIN for assessment and evaluation among all substance abuse treatment agencies, mental health agencies, and child protective service agencies.
- A state or county department of justice seeking to implement the GAIN-Quick to assess both adolescents and adults for drug court, centralized intake systems, or probation services and the full GAIN to assess those for whom services are recommended for referral and placement.
- A community agency interested in using the GAIN to coordinate services for adolescents

and adults for screening, referral, placement, treatment planning, diagnosis, and evaluation across their school system, juvenile justice system, mental health services system, department of family services system, health clinic system, state or local public assistance system, and substance abuse treatment system.

For more information on starting a regional GAIN training center, please contact [GAINInfo@chestnut.org](mailto:GAINInfo@chestnut.org).

**Cross-Cutting Services: Product and Report Development**. A second cross-cutting area is the GCC's ongoing commitment develop new assessment products (such as GAIN-I Core versions and GAIN collateral versions) and reports to use the information they gather. Currently we are working on translating the instruments into Spanish and identifying adaptations to make them more appropriate for use with Native Americans and in rural settings. In the near future we also hope to adapt a version to American Sign Language. Some of the clinical reports that have already been developed include:

- **GAIN Recommendation and Referral Summary (GRRS)**: a narrative report designed to approximate a biopsychosocial summary of the interview for diagnosis and placement decision-making.
- **Instrument Report**: provides the ability to print out a hard copy of each instrument with the participant's responses for when the interview is done online but there is a need to review or transmit a hard copy.
- **Validity Report**: used to identify bad data or inconsistencies across items. This report can be run at the end of the assessment and used to clarify responses before the participant leaves the interview.
- **Individual Clinical Profile (ICP)**: provides detailed information on diagnosis, placement, and treatment planning. It includes the core scale scores, detailed tables, and notes about the questions and conditions that met the various criteria.
- **Personal Feedback Report (PFR)**: a text-based report designed to support the Motivational Enhancement Therapy/Cognitive Behavioral Therapy (MET/CBT) developed by Sampl and Kadden (2001).
- **Government Performance and Results Act (GPRA) Report**: designed to subset, reorganize, and collapse the data into CSAT's reporting requirements under GPRA.

We are currently collaborating with several agencies to refine these reports and add knowledge gained from benchmarking diagnosis and placement decisions from GAIN data collected to date. Product and report development is a team effort of many people inside the GCC and Chestnut Health Systems, who help alpha-test changes, updates, and new products and reports, as well as collaborating agencies who help beta-test products and reports before they are distributed. This team is led by Michael Dennis, senior research psychologist and primary developer of the family

of GAIN instruments and clinical reports. The GAIN-Quick development, translation, and cultural adaptation development is led by Janet Titus, research psychologist.

## **1.5 Getting Started**

If your agency or research project is interested in using the GAIN, please contact

**GAIN Coordinating Center**  
**Chestnut Health Systems**  
**448 Wylie Drive**  
**Normal IL 61761-0078**  
**[GAINInfo@chestnut.org](mailto:GAINInfo@chestnut.org)**

## Attachment 1-1: Definition of key GAIN roles and terms

- **Administration Quality Assurance (A-QA)** – A process by which someone submits audiotaped assessments for review and feedback and continues submissions until mastery level is achieved (see chapter 4 for more information on the QA model).
- **GAIN Administrator** – Someone certified to administer the GAIN assessment. This person must have been trained through the national training model, received Coursework certification, and completed the QA review process for administering the GAIN as described in chapter 8.
- **GAIN Local Trainer** – Someone certified to conduct GAIN training for interviewers at a local site. This person must already be a certified Administrator and have completed the Local Trainer process described in chapter 8.
- **GAIN Site Interviewer** – Someone trained by a Local Trainer and certified to conduct interviews using the GAIN. This person cannot pursue Local Trainer certification without attending a national training.
- **Administration GAIN QA reviewer** – A person who conducts quality assurance reviews of GAIN Administrators and Site Interviewers. Initially, this role is performed by the GAIN Coordinating Center (GCC), though a certified Administrator can conduct reviews while working toward Local Trainer certification. A certified Local Trainer performs the ongoing role of QA review at the site level.
- **GAIN Coordinating Center (GCC)** – assists agencies and research sites using the GAIN.
- **GAIN Assessment Building System (GAIN ABS)** – An online assessment application that can be used for computer-assisted interviewing and data entry for multiple instruments and reports. The former stand-alone version is now referred to as Legacy ABS.
- **GAIN ABS administrator** – A staff member at a local site who maintains the site's GAIN ABS account, performing required maintenance and troubleshooting.
- **Local Data Manager** – A person (may be the same or different from the ABS Administrator, above) who works with field staff using ABS to either data enter or administer the GAIN to get data in and is responsible for determining who has access to which assessments and coordinating with the GCC regarding data export and submission.
- **GAIN ABS developer** – A person trained and certified to develop additional local clinical and management reports using GAIN ABS as well as develop third-party ActiveX components.