Annual Report

2002

DIAGNOSIS OF SUBSTANCE USE DISORDERS

Prepared for

Sex Offender/Chemical Dependency Services Unit

Minnesota Department of Corrections

Prepared by

Norman G. Hoffmann, Ph.D.

Evince Clinical Assessments

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evince clinical assessments

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2002 Annual Report - Diagnosis of Substance Use Disorders

Evince Clinical Assessments
PO Box 17305
Smithfield, RI 02917
Phone 800-755-6299 • 401-231-2993
Fax 401-231-2055
www.evinceassessment.com

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Section 1

Year 2002 Findings

Demographics

A total of 2646 male and 362 female Minnesota inmates was evaluated for substance use disorders in 2002. In general, this is a young population as indicated by the fact that the mean and median ages are 31 and 30 years respectively. Ages ranged from 18 to 79 but more than a quarter were under the age of 24 years. On average, female inmates are approximately two years older than males. This is a statistically significant differential ($p < .001$). Caucasians comprise the majority (53%) of the inmates, and African-Americans constitute the largest minority with 30% of the population. American Indians and Hispanics/Latinos comprised 8% and 6% of the population respectively. The remaining cases were Asians or persons of mixed ethnicity.

The demographics also indicate a population that is undereducated and without stable relationships. Over a third (36%) of the inmates have not graduated from high school. Approximately two-thirds (68%) have never married, and almost 20% are either separated or divorced. Only 13% were married at the time of incarceration.

Although the majority reported being employed either full-time (46%) or part-time (15%), income levels appear to be quite low. This rate of employment is slightly lower than the 64% employment rate found last year. Almost 60% reported incomes no greater than $10,000 per year, and approximately 20% reported incomes over $20,000. Almost a third list their typical occupation as being a laborer or temporary worker, and fewer than a third indicate any skilled or white-collar occupation. The low educational attainment, occupational status, and income suggest that vocational functioning may be an issue in rehabilitation of these inmates to become productive members of society. Basic education and vocational training are likely to be necessary if these individuals are to be capable of earning a legitimate living wage.

Vocational functioning appears to be related to the prevalence of substance use disorders. Those dependent on any substance were least likely to be working full time. Fewer than half the males and only 25% of the females who are dependent on at least one substance reported full-time employment. Not surprisingly, they are also most likely to be in the lowest income group.

In summary, this young population of individuals is undereducated and vocationally impaired. The impairment appears to be related to the prevalence of substance dependence. This combination would suggest that addictions treatment, basic education, and vocational training will be necessary to achieve rehabilitation as productive citizens for a substantial proportion of the Minnesota inmate population.

Table 1
Demographics†

Gender: 88% (2646) Males
12% (362) Females

Age:
Range: 18 to 79
Mean = 31 Median = 30

Ethnic origin:
- Asian 1%
- African-American 30%
- Hispanic/Latino 6%
- American Indians 8%
- Caucasian 53%
- Biracial/multiracial 2%

Marital status:
- Never married 68%
- Married 13%
- Separated 4%
- Divorced 15%
- Widowed ..... <1%

Education:
- Not a high school graduate 36%
- High school only 52%
- Voc/tech/business 7%
- Associate degree 3%
- College graduate (4 yr, +) 2%

Employment prior to incarceration:
- Working full-time 46%
- Working part-time 15%
- Unemployed 14%
- Not working by choice 25%

Personal income in year prior to incarceration:
- None to $10,000 ..... 58%
- $10,001 to $20,000 ..... 21%
- $20,001 to $30,000 ..... 12%
- $30,001 to $40,000 ..... 5%
- $40,001 to $50,000 ..... 2%
- Over $50,000 ..... 2%

† Percentages may not sum to 100% due to rounding.

Since all women incarcerated in Minnesota are evaluated for substance use disorders with the SUDDS-IV, the statistics on female inmates can be considered representative of all women incarcerated during 2002. However, this is not true for males. Although in excess of 80% of all men incarcerated are evaluated, those screened out as being at low risk for substance dependence could differ substantially in terms of their demographic characteristics.

Of the women, fewer than half were employed prior to incarceration. Although more of the women than men had some education after high school, only 31% were working full-time, and an additional 12% were working part-time. While fewer than 2% of female inmates reported being unemployed, 55% indicated that they were not working by choice. Approximately 60% of the women had incomes of under $10,000.

Only 41% of the dependent women reported having a child in the home as compared to 54% of those who had no substance use disorder diagnosis or only abuse. For men, 33% of the dependent inmates reported a child in the household as compared to 38% of those not dependent.

General Diagnostic Findings

Over half (54%) of the inmates reported symptoms indicating dependence on at least one substance, and an additional 20% reported indications of substance abuse. Only 26% of the inmates evaluated did not have a substance use disorder diagnosis according to DSM-IV (DSM-IV-TM) criteria. These rates are comparable to findings from the pervious year.

Alcohol dependence was the most prevalent diagnosis with almost a third (29%) meeting the diagnostic criteria. Almost half of the inmates (45%) met criteria for either alcohol dependence or abuse. Marijuana was the next most prevalent substance of abuse, followed by cocaine and stimulants. None of the other individual substances were diagnostic for 5% of the population. The category of "other/mixed" includes those who are polysubstance users where the substance use is so intertwined that assigning a specific symptom to a specific substance is not possible.

Table 2
General Prevalence of Diagnoses by Substance

N = 3008

Substance	No Diagnosis	Abuse	Dependence
Alcohol	55%	16%	29%
Marijuana	70%	13%	17%
Cocaine	85%	4%	11%
Stimulants	82%	4%	14%
Heroin/Opiates	97%	<1%	3%
Other/Mixed	92%	2%	6%
Any Substance*	**26%**	**20%**	**54%**

* Composite diagnosis based on the maximum diagnosis for the substance categories listed in the table. Sedatives and hallucinogens are not included due to low use rates.

Of those who are dependent, most (59%) are dependent on only one substance; this means that 22% of the entire evaluation population are dependent on two or more substances. Of all the inmates, 42% are dependent on some drug other than alcohol. Thus, while alcohol dependence is the most prevalent dependence diagnosis, dependence on other drugs collectively is more prevalent. The overlap between alcohol and drug dependence is striking. Of those who are alcohol dependent, 59% are also dependent on another substance; and of those dependent on drugs, 41% are also dependent on alcohol.

Implications of Diagnostic Findings

The marked distinction between abuse and dependence as will be explored in this section and in the next is compatible with the current literature suggesting that dependence is the more severe and chronic condition relative to abuse. Dependent individuals require the greater level and duration of services in order to achieve durable recovery as compared to those who are dependent. In addition, those with demographic and clinical risk factors have been shown to require more services in order to achieve a reasonable probability of durable recovery.

Given limited resources, the implications are that those who meet abuse criteria may not require the same level of services as those who are dependent. Similarly, among the dependent, those with the greater relapse risk may require more services. Making these discriminations through thorough and routine assessments will be the key in developing effective yet efficient programs.

Severity Indications

One of the most striking features of the diagnostic information is the severity of addictions as indicated by the scope of problems reported by inmates. The following table presents both the number of positive dependence criteria and prevalence of specific criteria for those dependent on the respective substances. A minimum of three dependence categories must be positive for an individual to qualify for a DSM-IV (DSM-IV-TM) diagnosis of dependence on a given substance. As can be seen in the table, from 78% to 93% of those meeting dependence criteria exceed the minimum requirement. Even more striking are the proportions who are positive for all seven dependence criteria.

Table 3
Indications of Severity and Extent of Diagnostic Symptoms
For Dependent Inmates *

Characteristic	**Alcohol** n = 880	**Marijuana** n = 508	**Cocaine** n = 323	**Stimulant** n = 421	**Heroin/ Opiates** n = 84
Number of positive dependence categories for those dependent					
4 or more	85%	78%	89%	89%	93%
5 or more	68%	56%	73%	76%	82%
6 or 7	53%	38%	61%	60%	68%
All 7 categories positive	34%	19%	41%	38%	50%
Positive indications for each diagnostic criterion – dependent cases					
Tolerance	83%	75%	74%	82%	90%
Withdrawal	58%	40%	52%	57%	83%
Unplanned use	82%	70%	88%	78%	80%
Desire or attempts to stop/cut down	73%	72%	88%	76%	87%
Much time spent using	86%	92%	93%	98%	89%
Sacrifice of other activities to use	73%	62%	83%	75%	74%
Medical/psychological consequences	85%	81%	90%	97%	89%

* A diagnosis of dependence requires positive findings for a minimum of three of seven dependence categories.

Consistent with findings from the evaluation of treatment programs and findings from last year, marijuana dependent individuals tend to report the fewest dependency indicators. Twenty-two percent met only the minimum criteria, and fewer than 20% were positive for all seven dependence criteria. Part of this may be due to the fact that marijuana dependence does not tend to produce the loss of inhibitions or aggressive behaviors often noted with alcohol or stimulants.

Heroin and other opiates are at the other extreme of severity indications. Those who are dependent on these substances tend to show the most severity in terms of positive findings. Almost all of the heroin dependent individuals exceed the minimum requirement for the diagnosis, and half are positive for all seven dependence criteria. A note of caution is in order for this group since the sample size is relatively small.

Alcohol, cocaine, and stimulants produce relatively similar severity profiles and patterns of prevalence for the seven dependence criteria. The overall number of positive categories is similar, with alcohol dependence appearing to show somewhat lower levels of severity than the other two substances. For all three, withdrawal symptoms are the least prevalent within each substance category. Conversely, medical/psychological consequences and time spent using are among the most prevalent.

Findings By Gender

Consideration of diagnostic findings by gender reveals that female inmates demonstrate substantially greater severity of substance use disorders than male inmates. This is seen in the prevalence of dependence diagnoses and in the extent of symptoms reported. As is noted in the table below, 66% of female inmates as compared with 52% of males are dependent on one or more substances. Although the rates for alcohol and marijuana dependence are slightly higher for men, more than three times as many women are dependent on cocaine, and five times as many are dependent on heroin. Almost twice as many women are dependent on stimulants.

Table 4
Diagnostic Distributions by Gender

Substance	**Males** N = 2646		**Females** N = 362	
	Abuse	**Dependence**	**Abuse**	**Dependence**
Alcohol	17%	30%	10%	27%
Marijuana	13%	17%	7%	14%
Cocaine*	4%	8%	5%	27%
Stimulants*	4%	13%	2%	22%
Heroin*	<1%	2%	<1%	10%
Mixed/Other*	2%	7%	3%	<1%
Any Diagnosis*	**22%**	**52%**	**9%**	**66%**

* Gender difference statistically significant at $p < .0001$.

Differentials in prevalence are even more compelling in light of the fact that a proportion of the males is screened out as being at low risk. Including all males might further increase these differentials. However, the proportion of individuals with a diagnosis is only part of the gender differences with respect to severity of those individuals who are dependent. Among the dependent, 92% of the women and 88% of the men exceed the minimal criteria for dependence. However, 44% of the women as compared to 37% of the men are positive on all seven of the DSM-IV (DSM-IV-TM) dependence criteria. Ten percent of the women and 5% of the men are dependent on three or more substances. Compared to last year, severity indications were a bit lower for the women this year.

Findings by Gender and Ethnic Groups

For male inmates, four ethnic groups were of sufficient size for making statistical comparisons of diagnostic prevalences. For females, only three groups were of adequate size, but the small number of American Indian women requires some caution in the interpretation of findings.

Table 5
Diagnostic Distributions for Males by Ethnicity

Substance	**Caucasians** N = 1367		**African-Americans** N = 822	
	Abuse	Dependence	Abuse	Dependence
Alcohol*	15%	30%	17%	23%
Marijuana*	12%	15%	16%	19%
Cocaine*	3%	6%	6%	13%
Stimulants*	7%	23%	<1%	<1%
Heroin	<1%	1%	<1%	3%
Mixed/Other*	3%	9%	<1%	3%
Any Diagnosis*	**20%**	**57%**	**23%**	**44%**

Substance	**Hispanics/Latinos** N = 184		**American Indians** N = 195	
	Abuse	Dependence	Abuse	Dependence
Alcohol*	23%	30%	20%	53%
Marijuana*	15%	14%	16%	27%
Cocaine*	4%	10%	3%	2%
Stimulants*	4%	3%	4%	7%
Heroin	0%	3%	<1%	2%
Mixed/Other*	2%	8%	2%	8%
Any Diagnosis*	**28%**	**45%**	**23%**	**66%**

* Differences between the four groups significant at $p < .0001$.

Among the male inmates, statistically significant ethnic differentials were observed for all specific substances except heroin. The lack of statistical differentials for heroin may be due in part to the relatively low prevalence of dependence for this substance. Caucasians and American Indians were most likely to be dependent on at least one substance and Hispanics/Latinos were the least likely to be dependent. Alcohol dependence is most prevalent among American Indians, while cocaine is more prevalent among African-Americans than the other groups. Caucasian males are much more likely to be dependent on stimulants and mixed substances than the other groups. These base rates are comparable to last year's findings.

Among the female inmates, the only statistically significant differentials were for cocaine and stimulants. African-American women were most likely to be dependent on cocaine, and Caucasians were most likely to be dependent on stimulants. Similar differences in prevalence of dependence for these substances were also noted in the males. Although not a statistically significant difference, American Indian women were more likely to be dependent on alcohol. In general, the prevalences of dependence diagnoses for women were somewhat lower in 2002 as compared to the previous year.

Table 6

Diagnostic Distributions for Females by Ethnicity†

Substance	**Caucasians** N = 209		**African-Americans** N = 83		**American Indians** N = 46	
	Abuse	**Dependence**	**Abuse**	**Dependence**	**Abuse**	**Dependence**
Alcohol	10%	26%	13%	22%	9%	41%
Marijuana	9%	12%	2%	17%	11%	15%
Cocaine*	4%	18%	7%	48%	9%	28%
Stimulants*	2%	35%	2%	0%	2%	11%
Heroin	<1%	8%	0%	8%	2%	22%
Mixed/Other	4%	<1%	1%	0%	4%	2%
Any Diagnosis	**9%**	**65%**	**8%**	**63%**	**6%**	**83%**

* Differences between the three groups significant at $p < .0001$.

† Groups with sufficient size for analyses.

Special Analyses

The SUDDS-IV collects information relevant to public health and safety in the course of obtaining data necessary for documenting substance use disorders. These variables address health care utilization, motor vehicle accidents, dangerous driving behavior, personal health—in short, behaviors and problems likely to have safety and financial implications for the public.

Table 7
Events with Public Health and Safety Implications
N = 3008

Events occurring in the year prior to incarceration	No Diagnosis	Abuse	Dependence
Use caused medical problem	<1%	1%	17%
Use made a medical problem worse	<1%	2%	23%
Any substance-related medical problem	<1%	3%	28%
Had motor vehicle accident	0%	4%	14%
Drove under the influence	0%	51%	71%
Drove under the influence three or more times	0%	20%	59%
Arrested for DUI	0%	20%	18%

Health Care Utilization

Research has established that substance dependent individuals require inordinate levels of medical services. Several of the SUDDS-IV items address medical consequences of substance use and abuse. The noteworthy finding in the previous table is the dependent individuals, more than abusers, appear to have experienced the most dramatic medical consequences of their use of alcohol and other drugs. Logically, one can assume that some of these experiences have translated into the need for medical services.

Public Safety

The American public has become increasingly aware of the dangers associated with driving under the influence. This area of concern is addressed in several questions on the SUDDS-IV. One question simply asks about motor vehicle accidents while using and ignores the question of whether the individual was impaired. The other questions address driving under the influence and whether the individual was arrested for DUI (Driving Under the Influence).

None of the individuals without a substance use disorder diagnosis reported any accidents in the twelve months prior to incarceration. However, 4% of abusers and 14% of dependent individuals reported motor vehicle crashes. In other words, the dependent individuals were over three times more likely to be involved in a motor vehicle accident than abusers.

A substantial number of abusers reported driving under the influence, but appeared to do so less frequently than the dependent individuals. About half of the abusers acknowledged driving under the influence, but fewer than half that number admitted to three or more such events. In contrast, almost 60% of the dependent individuals repeatedly drove under the influence.

Only on the item concerning an arrest for a DUI did the abuse and dependent individuals have comparable base rates. This may be an artifact that, for the abuse group may have been the event that got them into the abuse category. Legal consequences related to alcohol were reported by half the alcohol abuse cases.

Pregnancy and Substance Use Disorders

Another area of substantial societal concern is the issue of babies harmed by alcohol and drug use during gestation. Although considerable notoriety is given to so-called "crack" babies, fetal alcohol syndrome continues to be the most prevalent and permanent disability associated with substance abuse while pregnant.

Of the women, 19% (68) acknowledged using more alcohol or other drugs than they felt were wise while pregnant. There were no significant ethnic differentials for this response. Alcohol and cocaine dependence were the most prevalent substance use disorders for those who acknowledge excessive substance use while pregnant. African-American and American Indian women were somewhat more likely to think that they had used excessively during pregnancy.

Risks for Sexually-Transmitted Diseases

Thirty-eight percent of men and 34% of women acknowledged engaging in risky sexual activity related to substance use. This can increase the risks for sexually transmitted diseases, including infection with HIV. While the data at hand are limited, they do raise the issue that screening for HIV/AIDS for inmate populations would seem to be appropriate.

Section 2

SUDDS-IV Performance

Internal Consistency Reliability

Internal consistency is the measure of the extent to which items in a scale or instrument correlate with each other. For making substance use disorder diagnoses, the constructs are the criteria for dependence and abuse and the items are those questions that pertain to the respective DSM-IV (DSM-IV-TR) criteria. To the extent that the items on the SUDDS-IV for abuse and dependence show high intercorrelations, they support the conceptualization of dependence and abuse as cohesive syndromes. Scientific literature supports the argument that dependence is a unitary syndrome with good internal consistency. The evidence for the diagnosis of abuse is much less clear.

The internal consistency reliability coefficients for alcohol, marijuana, and cocaine use disorders as determined for Minnesota state inmates are presented in the following table. Consistent with the scientific literature, the Cronbach's alpha coefficient of internal consistency is greater for dependence than for abuse. This suggests that dependence is the more cohesive and consistent syndrome identified among these state prison inmates.

Table 8
Cronbach's Alpha Coefficient
N = 3008

Substance	Abuse	Dependence
Alcohol	.880	.959
Marijuana	.859	.949
Cocaine	.935	.976
Stimulants	.935	.973

Validity

Several types of validity apply to the diagnosis of substance use disorders. Content, or criteria, validity refers to whether a test, interview, or procedure captures the content or concepts of what is to be measured. For example, a test of mathematical ability would be expected to contain math problems and not ask questions about history. Construct validity refers to the extent to which the measures tap an attribute or quality that may not be directly observable. Examples of constructs include intelligence and diagnoses such as substance dependence, substance abuse, and mental health conditions such as major depressive episodes. Predictive validity refers to the accuracy of predicting future events or probability that a future event such as relapse or recidivism might occur.

Content, or Criteria, Validity

The content of the SUDDS-IV conforms to the content of criteria for diagnoses as stated in the DSM-IV (DSM-IV-TR). Thus, the SUDDS-IV items and their relationship to the abuse and dependence criteria are content valid with respect to the DSM-IV (DSM-IV-TR).

Also, decision rules as used in analyses of the findings conform to diagnostic criteria. Three or more positive findings of the seven dependence criteria are required to indicate dependence for a given substance, and a positive finding in one of the abuse categories meets the criteria for abuse. A diagnosis for dependence supersedes the abuse diagnosis so that individuals meeting both abuse and dependence criteria would receive only the dependence diagnosis.

Construct Validity

Construct validity is relevant for both the DSM-IV (DSM-IV-TR) and the SUDDS-IV. If the diagnostic criteria themselves have construct validity, then the constellation of symptoms included in the definition of dependence should form a consistent pattern or syndrome. If abuse is to be superseded by dependence, then those who are dependent typically should meet abuse criteria as well as dependence. If the SUDDS-IV captures the relevant data compatible with the constructs of the DSM-IV (DSM-IV-TR), data from the interviews should demonstrate this pattern. In other words, evidence of construct validity for the SUDDS-IV will also support the construct validity of the DSM-IV (DSM-IV-TR).

Construct validity for determining a diagnosis for substance use disorders involves the extent to which individuals found to be positive for a given diagnosis are clearly identified and discriminated from those who do not have the diagnosis. Dependent individuals should typically meet clear diagnostic criteria, with a minimal number of cases meeting only marginal or questionable indications of substance dependence. Individuals meeting criteria for abuse only should manifest much milder, or less severe, symptom profiles.

Another issue of construct validity of the DSM-IV (DSM-IV-TR) concerns so-called diagnostic orphans. These are individuals who are found to be positive on one or two of the dependence criteria, but are negative on all four of the abuse criteria. Large numbers of such diagnostic

orphans manifesting serious dependence indicators would pose a challenge to the diagnostic criteria themselves.

This section will provide some detailed analyses of the nature and extent of diagnostic criteria for alcohol and cocaine. This will involve consideration of both the number of positive findings for dependence and abuse as well as each individual criterion. Additional findings with respect to the number of positive findings for other stimulants, heroin, and marijuana will also be provided.

The following table presents data on Minnesota inmates for alcohol and cocaine that clearly support the construct validity for dependence diagnoses of both the DSM-IV (DSM-IV-TR) and the SUDDS-IV. As seen in Tables 9 and 11, inmates dependent on either alcohol or cocaine are positive not only for the majority of respective dependence criteria but also for abuse. Of the alcohol dependent individuals (n = 880), 68% are positive for at least five of the seven dependence categories. For cocaine dependent inmates (n = 323), 77% are positive for at least five dependence criteria. In addition, 76% of both alcohol and cocaine dependent inmates are positive on at least three of the four abuse criteria for the respective substances.

Table 9
Distribution of Positive Categories for Alcohol

	Diagnostic Orphans n = 236	**Abuse Only** n = 481	**Dependence** n = 880
Number of Dependence Criteria			
0		42%	
1	83%	30%	
2	17%	28%	
3			15%
4			17%
5			15%
6			19%
7			34%
Number of Abuse Criteria			
0			2%
1		37%	8%
2		37%	14%
3		23%	31%
4		3%	45%

In contrast to the dependent group, the abuse cases tend to be positive for only one or two of the abuse criteria. This would be compatible with the expectation that abuse is a much milder substance use disorder. Of the alcohol abuse cases, 74% are positive on only one or two of the four abuse criteria. For cocaine the findings are even more dramatic; 91% of cocaine abuse cases are positive on only one or two of the criteria. This compares to 24% of cocaine dependent

individuals who are positive on no more than two of the abuse criteria. Considered from another perspective, 2% of abuse cases are positive on all four abuse criteria as compared to 40% of dependent individuals.

These findings showing the clear distinction between abuse and dependence are further reinforced by the data presented in Tables 10 and 12. Dependent individuals consistently have higher prevalence of positive responses for all but one of the individual abuse as well as dependence criterion. As one might expect, from four to ten times as many of the dependent cases endorse the individual dependence criteria as the abuse cases. However, the differentials tend to persist for individual abuse criterion as well. For example, five times as many alcohol dependent individuals acknowledge positive findings on the first abuse criterion (failure to fulfill role obligations) than the abuse cases, and this proportion is similar for cocaine as well. Only for legal consequences do the cocaine abuse cases have a slightly higher rate of positive findings.

These findings not only support the diagnostic utility of the SUDDS-IV in discriminating abuse from dependence; they also provide evidence for the construct validity of both the DSM-IV (DSM-IV-TR) and the SUDDS-IV interview. The data also indicate the value of the SUDDS-IV data in identifying clinical severity. The dependent individuals have greater severity of their clinical symptoms, but there is also considerable variation within dependent groups. Those with lesser levels of symptoms may be treatable with lower levels of care or may require fewer services than the more severely impaired. This is an important consideration in providing efficient as well as effective treatment services aimed at recovery and reducing criminal recidivism.

Table 10
Positive Findings by Criterion for Alcohol

	Diagnostic Orphans n = 236	**Abuse Only** n = 481	**Dependence** n = 880
Dependence Criteria			
Tolerance	69%	20%	83%
Withdrawal	3%	4%	58%
Unplanned/excessive use	12%	18%	82%
Desire/attempts to restrict use	4%	7%	73%
Excessive time spent using/recovering	8%	12%	84%
Sacrifice of activities to use	3%	7%	73%
Medical/psychological consequences	18%	19%	85%
Abuse Criteria			
Failure to fulfill role obligations		15%	75%
Use causing danger to self or others		74%	84%
Legal consequences		47%	62%
Interpersonal conflicts		54%	88%

Addressing the issue of diagnostic orphans requires looking at both the number and pattern of positive dependence symptoms. For both alcohol and cocaine, diagnostic orphans typically are positive on only one criterion. For alcohol, the most prevalent positive finding is tolerance (See Table 10). The next most prevalent category is for a medical or psychological consequence (including blackouts). Tolerance and medical consequences could be associated with heavy drinking in the absence of abuse or other dependence indications. Thus for alcohol, diagnostic orphans can be accounted for as being distinct from either abuse or dependence.

Table 11
Distribution of Positive Diagnostic Categories for Cocaine

	Diagnostic Orphans n = 83	**Abuse Only** n = 122	**Dependence** n = 323
Number of Dependence Criteria			
0		54%	
1	94%	29%	
2	6%	17%	
3			11%
4			12%
5			17%
6			19%
7			41%
Number of Abuse Criteria			
0			1%
1		63%	6%
2		28%	17%
3		7%	36%
4		2%	40%

The most prevalent finding for cocaine diagnostic orphans is also tolerance followed by excessive time spent using. Findings for 2002 are a bit different from 2001 in that last year the time spent using was the most frequently endorsed criterion for cocaine orphans. Frequent "recreational" use of cocaine could result in both some level of tolerance and spending considerable time using or recovering from use.

Thus, the relatively small number of diagnostic orphans for both alcohol and cocaine can be explained in terms of frequent and/or heavy use in the absence of sufficient symptoms to warrant a diagnosis of either abuse or dependence. It is quite possible that some of these individuals will develop either abuse or dependence in the future, but this is speculation.

Table 12
Proportion Positive for Cocaine Dependence and Abuse

	Diagnostic Orphans n = 83	**Abuse Only** n = 122	**Dependence** n = 323
Dependence Criteria			
Tolerance	57%	11%	76%
Withdrawal	0%	2%	52%
Unplanned/excessive use	5%	16%	88%
Desire/attempts to restrict use	1%	8%	88%
Excessive time spent using/recovering	40%	10%	93%
Sacrifice of activities to use	1%	7%	83%
Medical/psychological consequences	2%	11%	90%
Abuse Criteria			
Failure to fulfill role obligations		20%	88%
Use causing danger to self or others		30%	76%
Legal consequences		62%	54%
Interpersonal conflicts		38%	89%

Table 13
Distribution of Positive Diagnostic Categories for Stimulants

	Diagnostic Orphans n = 88	**Abuse Only** n = 127	**Dependence** n = 421
Number of Dependence Criteria			
0		39%	
1	94%	30%	
2	6%	31%	
3			11%
4			13%
5			16%
6			22%
7			38%
Number of Abuse Criteria			
0			1%
1		55%	5%
2		26%	13%
3		18%	30%
4		<1%	51%

Other stimulants and heroin/opiates produce similar profiles in that a relatively small proportion of dependent individuals met only the minimal criteria for dependence. Severity indications in

the form of the proportion of cases found positive for all five of the dependence criteria for heroine are among the highest for any individual substance category. In addition, the vast majority of dependent individuals are also positive for at least three of the four abuse criteria. In sharp contrast, most of the abuse-only cases are positive for only one criterion and virtually none are positive on all four. In short, the findings for stimulants and heroine are very similar to those for alcohol and cocaine. Heroine has some of the most dramatic differentials of all the substances with respect to dependence criteria. Interestingly, heroine dependent individuals have some of the lower prevalences of multiple abuse criteria. The extremely small number of heroine abuse cases makes interpretation of findings for this abuse-only group impossible, and the relatively small number of abuse cases also requires some caution in the interpretation. However, since the findings are so similar for other substances discussed, it is likely that these findings will be supported by analyses of larger samples.

Table 14

Distribution of Positive Diagnostic Categories for Heroin

	Diagnostic Orphans n = 35	**Abuse Only** n = 8	**Dependence** n = 84
Number of Dependence Criteria			
0		12%	
1	97%	88%	
2	3%	0%	
3			7%
4			11%
5			14%
6			18%
7			50%
Number of Abuse Criteria			
0			3%
1		62%	11%
2		38%	18%
3		0%	39%
4		0%	29%

Marijuana also produces data supporting the distinction between abuse and dependence but has a slightly less dramatic scope of severity as indicated by the total number of dependence criteria. Over 20% of marijuana dependent individuals meet only three dependence criteria as compared to between 7% and 15% for other substances. Although 51% of marijuana dependent individuals are also positive on three or more of the abuse criteria, this compares to 76% to 80% for other substances. Still, the general patterns are the same for marijuana as the other substances but a larger proportion appear to exhibit a less severe profile in terms of the number of positive diagnostic indicators.

Table 15

Distribution of Positive Diagnostic Categories for Marijuana

	Diagnostic Orphans n = 225	**Abuse Only** n = 380	**Dependence** n = 508
Number of Dependence Criteria			
0		34%	
1	89%	34%	
2	11%	32%	
3			22%
4			22%
5			18%
6			19%
7			19%
Number of Abuse Criteria			
0			5%
1		57%	14%
2		33%	30%
3		9%	30%
4		1%	21%

One possible explanation of the lower observed number of indicators concerns the amotivational syndrome associated with marijuana. Chronic marijuana users often exhibit a lack of motivation or a lethargy associated with the effects of use. This may result in functioning impairments that frequently may not be associated with use. In addition, marijuana does not tend to produce the disinhibitory influences as may be noted with alcohol or the tendency toward aggression associated with stimulant use. Thus, marijuana dependent individuals may be less likely to manifest behaviors associated with the DSM-IV diagnostic criteria.

Predictive Validity

Although not designed to make predictions, a number of the variables on the SUDDS-IV have been associated with prognosis. These include both demographic and clinical variables.

The demographic risk factors for relapse to substance use are being under the age of 25, not having a high school or equivalent diploma, being unemployed, and never having married. Three or more of these four factors are associated with needing more treatment services and risk for relapse. Over 20% of Minnesota inmates fall into this high-risk range.

At least one study of treatment outcomes found that those in the high demographic risk range required considerably more services to achieve a reasonable probability of recovery in community treatment programs. It is likely that inmates meeting these risk parameters may also require more services or services over a longer duration upon release than older individuals or those with better educational and vocational backgrounds.

Clinical risk factors on the SUDDS-IV include ever having injected drugs, positive diagnosis for either marijuana or cocaine, any weekly or more frequent drug use, and meeting all seven dependence criteria. Unlike the demographic risk factors that appear to have a threshold above which risks increase sharply, the clinical factors seem to form a more graduated risk index.

Although these risk factors have been found to be related to outcomes in a number of studies, no data exist on their predictive validity for Minnesota inmates. Likewise, there are no data at present to suggest that those at greater risk for relapse to substance use have an elevated risk for reoffending. Based on the scientific literature, it is very likely that the SUDDS-IV information would be predictive of outcomes for inmates; however, at this time specific studies of this have not been conducted.

Assessing Clinical Needs

The scope or severity of the substance use disorder plus the indications for relapse risk are critical to assessing clinical needs and treatment planning. Information from the SUDDS-IV provides useful information relevant to treatment planning and placement compatible with the American Society of Addiction Medicine patient placement criteria (ASAM PPC-2R).

The greatest value of the SUDDS-IV information in assessing needs of Minnesota inmates is likely to lie in the indications of severity and to some extent the prognostic indicators. The SUDDS-IV information can provide indications for treatment needs and the level of services and supervision that should be considered upon release. Individuals who are dependent are likely to require more intensive and protracted services than abusers. Likewise, those with greater severity of their dependence may require more services. Severity of dependence and other relapse risk indications are compatible with information required for Dimension 5 (Relapse, Continued Use, or Continued Problem Potential) of the ASAM PPC-2R.

Depression and anxiety screening items on the SUDDS-IV can provide indications for Dimension 3 (Emotional, Behavioral, or Cognitive Conditions and Complications) of the ASAM PPC-2R, but these items are usually omitted at this time by the Minnesota Department of Corrections. Omitting the depression and anxiety screens saves some time in administration. It is also possible that circumstances might make this screen less useful in the correctional intake process. One might expect some situational depression or anxiety at admission. These data may be of greater value for probation or supervised release applications.

Section 3

Trends From 2001 to 2002

Similarities and Differences

In comparing the findings from 2001 and 2002, the general similarity of the statistical analyses is perhaps the most striking feature. While there were some differences between the two years, similarities in the extent of substance use disorders and their association with a range of public health and safety issues are striking. In addition, the observed severity of substance use disorders suggests that proper diagnosis and treatment will be essential in meeting needs efficiently as well as effectively.

General prevalence rates for the various substances were similar between 2001 and 2002. With the exception of stimulants, most of the substance categories showed some small decreases in prevalence of dependence. The overall prevalence of either abuse or dependence did not change due to a slight increase in observed rates of substance abuse. The increase in stimulant dependence is due to the increase among males since the rate actually decreased for females.

Table 16
General Prevalence of Diagnoses by Year

	2001 N = 2715		**2002** N = 3008	
Substance	**Abuse**	**Dependence**	**Abuse**	**Dependence**
Alcohol	15%	31%	16%	29%
Marijuana	12%	19%	13%	17%
Cocaine	4%	13%	4%	11%
Stimulants	2%	11%	4%	14%
Heroin/Opiates	1%	2%	<1%	3%
Other/Mixed	3%	5%	2%	6%
Any Substance	**19%**	**56%**	**20%**	**54%**

General relative prevalence of substance use disorders and relationships between gender groups are comparable between the two years. Alcohol dependence remains the most prevalent

diagnosis, and heroin dependence is the lowest. However, while 2002 dependence prevalence rates for males tended to be within 3% of the 2001 observations, female inmates showed larger decreases in dependence for alcohol and cocaine. As seen in the table below, dependence for alcohol and cocaine showed identical reductions of 7% in the absolute prevalence rate, but alcohol saw a slight increase in the rate of abuse. Prevalence rates for dependence for each of these substances dropped from 34% in 2001 to 27% in 2002. Overall, there was an absolute decrease in dependence of 9% in the second year, and a 3% increase in the rate of any abuse. While, these differences are not large, they do suggest that the current year's inmates may have somewhat lower rates of substance involvement. This is also consistent with somewhat lower rates of severity as indicated by fewer meeting all the dependence or abuse criteria.

Table 17
Diagnostic Distributions for Females by Year

Substance	**2001** N = 304		**2002** N = 362	
	Abuse	**Dependence**	**Abuse**	**Dependence**
Alcohol	9%	34%	10%	27%
Marijuana	8%	16%	7%	14%
Cocaine*	6%	34%	5%	27%
Stimulants*	1%	25%	2%	22%
Heroin*	1%	11%	<1%	10%
Mixed/Other	3%	2%	3%	<1%
Any Diagnosis	**6%**	**75%**	**9%**	**66%**

Relative prevalences among the gender and ethnic groups were similar with alcohol being more prevalent among American Indians, cocaine dependence being more prevalent among African-Americans, and other stimulant dependence being more common among Caucasians.

Implications for public safety and health were very similar between the two years. Dependent individuals reported almost identical rates of motor vehicle incidences and health-related problems associated with their substance use.

While most of the differences in findings between 2001 and 2002 are small, differences in prevalence and extent of problems could indicate some trends. The question is whether trends will continue or reverse with subsequent years. The differentials between these two years may be due to random fluctuations, or they might signal more durable trends. Only subsequent monitoring of the data from 2003 will provide indications of whether prevalence or severity will continue to decline or whether the declines observed are transitory or simply random fluctuations. More detailed analyses of the composition of the inmate population and general indications of prevalence of substance use in the general population might provide some indications to account for difference. However, such an effort may not be either necessary or of practical value unless trends continue for a third year.