

## Part IV Special topics

### 1 Poly drug use: drug set and setting

Besides using a single specific drug frequently several substances are used at the same time or after one another (multiple use). Their effects can be totally different, add, multiply or opposite. The total effect of these different drugs is also influenced by changes of effect over the time (start, course, end) for each single substance.

Drug effects depend not only on the substance itself, but they are heavily influenced through the physic conditions of the user. Above that psychological factors play an import role: emotional state, personal opinion about psychoactive substances and knowledge about drugs (drug set).

Chapter 11.1 gives an overview on patterns of consumption for different psychotropic substances. In chapter 11.2 patterns of use found empirically in several groups of users are described within their specific settings. Chapter 11.3 informs about possible consequences and chapter 11.4 is discussing therapeutic concepts in this field.

There can be several causes why a drug user takes at the same time or at short intervals not only one, but several drugs:

- because of limited availability of a drug, different drugs, which are expected to show similar effects are combined at the same time
- different drugs are used at the same time to multiply or moderate the total effects
- frequently drugs are used alternating for activation or sedation. Depending on the situation and personal needs different drugs are used to produce a specific somatic and/or psychological state. Opposite effects of euphoric or sedative drugs should help through combination to reach the status wanted at that moment.

Effects of specific psychotropic substances can be described from a scientific point of view ( e.g. Parnefjord 2000). Concerning multiple use, however, frequently more detailed information can be found at the user themselves or at self help groups like Eve & Rave. The high risks of multiple drug use at the same time are an important reason, why such scientific experiments only take place in rare occasions. On the basis of these two information sources the following overview of the most important effects of different drugs is given in short notes below in catchwords. The description of possible complications and risks is by far not complete but only a compilation of reported patterns of use and their high risk consequences. As it is based to a large extent on the reports of users, the description is very authentic on one side, but should not be understood as scientifically funded causal relationships.

Alcohol: stimulating, disinhibiting, strong analgetic effect, reduced visual and auditory capability as well as concentration. Coordination of movement decreases with in increased dose, reaction time prolonged. Alcohol is frequently used before, along with and after other

substances like e.g. cannabis, opiates, ecstasy, medical pills and others. Dangerous and unpredictable crossover effects can happen.

**Heroin:** The opiate heroin has a strong euphoric effect, it reducing mental activities and changes mood (reduced anxiety, tranquillity). With increased frequency of use the intensity of effects decreases more and more and tolerance develops. Heroin frequently is used in combination with benzodiazepine, which release anxiety and have sedative effects. Alcohol and cocaine are used for stimulation and activation. Mixing heroin use with additional substances can cause especially dangerous risks (see chapter 11.2).

**Methadone:** The effects of methadone are similar to other opiates, but oral application does not produce euphoria. For a short period of time side effects like exhaustion, insomnia, vomiting, perspiration and others can occur. In addition to methadone frequently agitating substances like cocaine and stimulants are used. Alcohol, benzodiazepine and cannabis are used in addition as well. Parallel use of substances with suppressive effects on the central nervous system (barbiturates, benzodiazepine, alcohol, antidepressants) increase the breath depressing impact of methadone. They can cause paralysis of breathing and death in consequence. Another substitution substance, buprenorphine, has been licensed meanwhile, which offers a broader therapeutic range and less side-effects compared to methadone.

**Cannabis:** The effects of cannabis depend heavily on the users expectations. Relaxation, high spirits, feeling well in the social environment, intensified perception, but also reduced drive, heavy states of anxiety, panic attacks, hallucinations and depressive states can be the consequence. Cannabis frequently is used beside other substances more risky from a pharmacological point of view or applied in a more risky way. One out of four clients with a primary cannabis related problem in out-patient addiction treatment has an alcohol related diagnosis in addition to that. Cocaine and LSD play a role for one out of five. Ecstasy use can have additive as well as antagonistic effects. It damp and reduces effects but can also increase intoxication.

**Ecstasy:** Pills sold as ecstasy on the market are mono or combined substances from the pure substances MDMA, MDA, MDE or others (BKA 2000). Additions (e.g. coffee, Speed) and blending substances (e.g. lactose or saccharose) can also be included. Agitation, mild euphoria and hallucinations, affection to others (entactogenic effect) and others can, depending on the users state, be positive effects. Negative effects can be: increased heartbeat and frequency of breathing, restlessness, increased sweating, as a consequence states of exhaustion, reduced appetite, anxiety and panic disorders, paranoia or depression (Tossmann, Bold & Tensil 2000). Studies (e.g. Schroers & Schneider 1998) show, that frequently agitating and euphoric substances are used. Opiates, cannabis, amphetamines and alcohol cause opposite effects: they reduce the effects of ecstasy bringing the user closer to their normal state again. Ecstasy combined with alcohol stress liver and kidneys and causes effects of dehydration. A combination with cocaine increases risks of circulatory breakdown.

**Cocaine:** Cocaine has short term stimulating and euphoric effects. Dizziness, need for sleep and hunger are suppressed, the user's ability for critical judgement is reduced. Also (Pseudo-

)hallucinations can occur and as a consequence restlessness, thinking disorders, feelings of insecurity and anxiety or aggressive behaviour can happen. At the end of intoxication the user can go through a state of increased aggressiveness, irritability, perceptions of fear and delusions, depression as well as physical and psychological exhaustion. Shock reactions are known as well. Cross reactions with other substances can be very dangerous: Use of cocaine and nicotine can result in heavy vasoconstriction which can produce a stroke. Multiple use with LSD, ecstasy or alcohol can result in a complete loss of control and collapse, as different drug effects heavily stress heart circulation. Because of antagonistic effects persons intoxicated with cocaine do not perceive alcohol in the normal way which might cause heavy drinking. Crack, derived from cocaine, is characterised through an extreme fast flash of intoxication followed by a drop as fast as that and often followed by deep depression.

LSD: The hallucinogenic substances can produce very different effects. The situation seems to play a decisive role in that (drug set). Strong hallucinations can be found with feelings of euphoria and increased fantasy, but also so-called "horror-trips" can happen, with strong feelings of fear, psychoses, fear of death, horror and restlessness. There are reports on horror trips over 70 hours after simultaneous use of amphetamine and met-amphetamine.

Amphetamine/ met-amphetamines: Inhibition of fatigue, to increase performance and drive frequently is the motivation why stimulants are used.. Psychoses and affect disorders can occur after multiple or chronic consumption. Though the effects of amphetamine and ecstasy partly neutralize each other, the substances are used in combination: Users have been noticed, where an increase in amphetamine use goes hand in hand with an decrease in ecstasy use. This can be caused by a longer lasting tolerance for ecstasy after frequent use of high doses of the substance which goes along with changes in the effects of ecstasy ( e.g. disorientation). Multiple use of amphetamines, cannabis and met-amphetamines can produce extreme stress for circulation. Amphetamine / met-amphetamine and LSD can produce horror trips over several days.

Benzodiazepine: Benzodiazepine is found as active agent in psychopharmaceutics and tranquillizers. They reduce fear, sedate, relax muscles and stimulate sleep but also paradox effects are possible, this means activation, euphoria, feelings of fear, insomnia, seizures and hallucinations. There is a risk of mutual reinforcement of effects when benzodiazepine and sleeping pills are used at the same time as heroin, methadone and alcohol. Especially in combination with alcohol there is a risk of overdosing. The effect of alcohol to suppress breathing can be intensified which can cause a risk of asphyxia. Environmental risks (e.g. freezing, burning) are no longer perceived and can lead to considerable health risks.

### **11.1 Patterns of consumption and groups of users**

Patterns of multiple use of drugs and narcotics can be very different depending on the psychological and social context, the user group's motivation and the setting, where substances are administered.

Schroers & Schneider (1998) asked in a study on drug use and prevention in the party scene about patterns of drug use and mixed use (N=385). The results of the survey show, that multiple use is wide-spread. Nearly half of all party visitors have experiences with two up to three drugs. Only one out our 13 was an mono user. Most frequent patterns of multiple use were “ecstasy and speed” followed by “ecstasy and LSD” and “speed and LSD”. Cannabis and alcohol also were used frequently together with other drugs. Mostly drug use took place in the context of techno clubs or events.

Frequency and patterns of multiple use amongst consumers of ecstasy (N = 527) also were topics studied by Flüsmeier & Rakete (1999). Especially they studied, which drugs were used secondary and parallel (immediately before, during or after the consumption of ecstasy) or instead of this substance during a period of one year. Results show, that the following substances are used most frequently in combination with ecstasy: cannabis (76% secondary, 85% substitution), nicotine (79% secondary, 81% substitution) and alcohol (69% secondary, 83% substitution). Between 36% and 59% have used cocaine, LSD and amphetamines. Cocaine, cannabis and LSD are used highly significantly more for substitution. On the total there is a dynamic increase visible: the longer the ecstasy use, the higher the use of other psychotropic substances. Especially for more risky patterns of use alcohol is drunk significantly more often in addition. LSD, cocaine and amphetamines are used in addition as well as substitutes.

A study conducted in European metropolis Amsterdam, Berlin, Madrid, Prague, Rome, Vienna and Zurich also found frequent multiple use in the techno party scene (Tossmann, Bold & Tensil 2000). More then 71% of the ecstasy users in this research had used in a defined period of time (six ours before res. after the intake of ecstasy) in addition cannabis, more than 66% alcohol. Amphetamine, cocaine and hallucinogens also were frequently used parallel, opiates however only rare (Table 35).

**Table 1: Drug use in addition to ecstasy**

	6 hours before and/ or after ecstasy use	6 hours before ecstasy use	6 hours after ecstasy use
Cannabis	71%	56%	56%
Alcohol	66%	57%	42%
Speed	29%	19%	20%
Cocaine	25%	16%	18%
Hallucinogens	12%	7%	9%
Opiates	3%	1%	2%

Source: Tossmann, Bold & Tensil (2000)

Patterns of consumption and parallel consumption in a group of clients which were much less socially integrated were analysed by Prinzleve (2001). 84 drug homeless addicts living from the open Hamburg drug scene were interviewed about use of heroin, cocaine, cannabis, benzodiazepine, methadone and alcohol over the last 30 days using a semi structured interview (Europe’s). The sample includes 23% female and 77% males, the average age was 27 years (female) res. 32 years (male). 31% were under substitution. The sample mainly

showed multiple intravenous use, 77% were diagnosed multiple addiction according to ICD10 (Dilling et al. 1993). They used more than one substances daily or several times a day. Heroin and cocaine were used intravenously in nearly 90% of all cases, benzodiazepine in more than 40%. Using cluster analysis four different patterns of use were distinguished:

- Cluster 1 is the biggest group with 57%. It consists from heroin addicts with heavy cocaine use as well as some use of benzodiazepine
- In Cluster 2 there is no regular use of heroin, but mostly use of cocaine and methadone as well as some alcohol use
- Cluster 3 includes homeless people outside of substitution services with frequent use of heroin, cannabis and alcohol
- Cluster 4 shows the especially problematic use of benzodiazepine, opiates, cocaine and cannabis.

Similar patterns of use also can be found within the clients of the out-patient drug help system in Hamburg, who are generally better integrated in society. Data from the basis documentation were used to describe different types of clients by means of cluster analyses (Schmidt, Simmedinger & Vogt 2000). More than half of all clients registered during 1999 in 28 treatment facilities were in substitution treatment at that time. Six clusters could be filtered out of this group of clients during the analysis (Table 36) :

- Cluster 1: Heroin users with additional use of cocaine
- Cluster 2: mostly persons in methadone substitution (71%), who partly also use Cannabis (37%) and Alcohol (19%).
- Cluster 3: Persons in methadone substitution, who frequently also use cocaine/ crack (42%)
- Cluster 4: Users of cocaine/crack, methadone (29%) rest. Cannabis (26%) are used by about one quarter of them each
- Cluster 5: Heroin users with little additional use of cannabis, alcohol and benzodiazepine.
- Cluster 6: Clients with heavy multiple use. Mostly under substitution. (88%).

Cluster 3 includes 30% of all adults clients - the biggest group in this age range (Table 37).

**Table 2: Clusters of patterns of use**

	<b>Cluster 1</b> Heroin Cocaine	<b>Cluster 2</b> Methadone Cannabis	<b>Cluster 3</b> Methadone Heroin, Cocaine	<b>Cluster 4</b> Cocaine Methadone Cannabis	<b>Cluster 5</b> Heroin, no methadone	<b>Cluster 6</b> All substances	<b>Signif.- niveau</b> $p > 0,001$ Cramers V
Heroin	100%	-	100%	-	100%	71%	0,948
Cocaine/ Crack	100%	-	42%	100%	-	70%	0,821
Alcohol	6%	19%	13%	19%	15%	89%	0,567
Cannabis	7%	37%	14%	26%	17%	92%	0,545
Benzodiazepine	4%	8%	10%	6%	6%	55%	0,466
Methadone	-	71%	100%	29%	-	88%	0,806
	528	1.111	1.013	550	825	544	

Source: BADO 2000((Schmidt, Simmedinger & Vogt 2000)

**Table 3: Clusters of patterns of use and gender**

	male	female	total	21 years and below		more than 21 years	
				male	female	male	female
<b>Cluster 1</b> Heroin - cocaine	12%	11%	12%	12%	17%	12%	11%
<b>Cluster 2</b> Methadone, cannabis	24%	27%	24%	41%	21%	21%	24%
<b>Cluster 3</b> Methadone, Heroin, Cocaine	21%	26%	22%	9%	10%	22%	30%
<b>Cluster 4</b> Cocaine, methadone, Cannabis	12%	11%	12%	13%	15%	12%	10%
<b>Cluster 5</b> Heroin, no methadone	19%	16%	18%	15%	29%	19%	12%
<b>Cluster 6</b> All substances	12%	10%	12%	10%	10%	12%	11%
N	3.343	1.201	4.544	183	144	3.021	990

Source: BADO 2000((Schmidt, Simmedinger & Vogt 2000)

The situation of the total group of clients of out-patient drug treatment centres in Germany is rather similar to that. The treatment monitoring system EBIS (Sonntag & Welsch 2001) shows for persons in out-patient treatment in the year 2000 that especially persons with a main diagnosis related to opiates or cocaine (harmful use of dependence syndrome following the definitions of ICD10) patterns of multiple use are frequent (tables 34 and 35). Many clients, who come to treatment mainly because of opiate use, have an additional diagnose related to cannabis (female 44%, male 68%), cocaine (female 36%, male 48%) or alcohol (female 37%, male 31%). These figures are especially critical in relation to the practice of substitution treatment in Germany.

**Table 4: Multiple patterns of use amongst male drug addicts**

Single diagnoses	Main diagnosis						
	Alcohol	Opiates	Cannabis	Sedatives Hypnotics	Cocaine	Other Stimulants	Hallucino- genics
Alcohol	-	44%	28%	80%	40%	33%	31%
Heroin	2%	-	7%	21%	27%	12%	14%
Methadone	0%	-	1%	4%	3%	1%	1%
Codeine	0%	-	1%	10%	3%	2%	1%
Other opiates	0%	-	1%	4%	2%	2%	2%
Cannabis	4%	68%	-	36%	65%	88%	82%
Barbiturates	1%	10%	2%	-	4%	3%	7%
Benzodiazepine	1%	24%	3%	-	8%	5%	4%
Other Sedatives/ Hypnotics	0%	2%	0%	-	1%	2%	2%
Cocaine	1%	48%	15%	17%	-	39%	42%
Crack	0%	2%	1%	1%	-	1%	1%
Amphetamines	1%	14%	16%	14%	24%	-	40%
MDMA	1%	13%	23%	13%	26	-	41%
Other stimulants	0%	1%	2%	1%	4%	-	8%
LSD	1%	16%	14%	12%	24%	38%	-
Mescaline	0%	1%	1%	1%	1%	2%	-
Other hallucinogens	0%	3%	4%	3%	6%	7%	-

Source: EBIS 2000 (Strobl et al. 2001)

**Table 5: Multiple patterns of use amongst female drug addicts**

Single diagnoses	Main diagnosis						
	Alcohol	Opiates	Cannabis	Sedatives / Hypnotics	Cocaine	Other stimulants	Hallu- cinogens
Alcohol	-	31%	22%	28%	27%	16%	17%
Heroin	1%	-	6%	3%	29%	8%	0%
Methadone	0%	-	2%	0%	4%	0%	0%
Codeine	0%	-	1%	2%	3%	1%	0%
Other opiates	0%	-	1%	1%	1%	1%	6%
Cannabis	2%	47%	-	9%	53%	52%	56%
Barbiturates	1%	8%	2%	-	2%	2%	0%
Benzodiazepine	2%	21%	3%	-	11%	3%	0%
Other Sedatives/ Hypnotics	0%	1%	1%	-	0%	2%	0%
Cocaine	1%	36%	12%	2%	-	19%	6%
Crack	0%	2%	1%	0%	-	1%	0%
Amphetamines	0%	9%	13%	2%	17%	-	22%
MDMA	0%	9%	22%	2%	12%	-	28%
other stimulants	0%	1%	2%	0%	1%	-	6%
LSD	0%	9%	10%	2%	11%	20%	-
Mescaline	0%	1%	1%	1%	2%	1%	-
Other hallucinogens	0%	1%	3%	1%	4%	2%	-

8BIS 2000 (Strobl et al. 2001)

## 11.2 Health and social consequences

Drug related death causes mono or multiple drug use is continuously registered by the Land Criminal Police Offices (Landeskriminalämter, LKAs) and then collected and evaluated in the “case register narcotics” by the Federal Criminal Police Office. The figures from the year 2000 (BKA 2001) make clear, that there is a considerable risk in mixed use especially for clients with a primary consumption of opiates. Since a long time for registered cases the main cause of death has been overdose of heroin either alone (2000: 34%) or in combination with other drugs (2000: 27%). During the last years there has been a clear increase in the number of deaths linked to intoxication through mixed narcotics, with alcohol und/or substitution substances (2000: 30%; 1999: 21%; 1998: 12%; 1997: 9%) (Table 40).

**Table 6: Drug related deaths**

Causes of death	%	Number of cases
1. Overdose :		
Heroin	34%	683
Heroin in combination with other drugs	27%	545
Cocaine	2%	40
Cocaine in combination with other drugs	6%	130
Amphetamines	0%	4
Amphetamine in combination with other drugs	2%	38
Ecstasy in combination with other drugs	1%	23
Pharmaceutics / substitution substances	2%	49
Narcotics in combination with alcohol/ substitution substances	30%	605
other narcotics/ not known	7%	151
2. Suicide	7%	148
3. Long term harms	8%	170
4. Accident( others	2%	49
5. Total	100%	2.030

Source: Rauschgiftjahresbericht 2000 (BKA 2001d)

The danger of crossover effects through the use of multiple substances is also shown by the results of a study which analysed drug related deaths in the Laender of Baden-Württemberg (Kraus & Ladwig 2001) and Bavaria (Kraus et al. 2001). As part of these projects in the years 1999 and 2000 amongst chemical-toxicological analyses were done for drug related deaths with an overdose through accident. In Baden-Württemberg as well as in Bavaria the biggest proportion of drug related deaths came from the age group 25 to 34 years. They died at the age of 31 on an average. Results show, that most of them were exposed to multiple effects of several groups of substances while only in very rare cases very high or lethal concentration of single substances were found in the blood. The substances detected most often were: morphine (Bavaria 61%, Baden-Württemberg 64%), benzodiazepine (Bavaria 86%, Baden-Württemberg 60%) and alcohol (Bavaria 62%; Baden-Württemberg 20%). In both Federal Laender nearly all female deaths showed benzodiazepine. Methadone was found at about one third of the deceases, dihydrocodeine (DHC) was considerable less frequent (Bavaria 22%; Baden-Württemberg 12%).

### **11.3 Special approaches to the interventions**

Researchers and practitioners agree, that multiple use and multiple addictions have considerably increased over the last years. Also the number of drug related deaths through overdose by accident and multiple use, which again increased since 1995 has caused alarm nation-wide. However, until now there is no global solution to overcome the risks of multiple use. Instead the standard methods are applied in the two biggest sub-groups in this area - heroin addicts and the ecstasy scene - trying to minimise as many risk factors as possible. This includes alert messages about high purity heroin supply on the market (see press releases by police and drug help in Augsburg end of July 2001). In addition a broad information on interaction effects of psychotropic substances is important as part of targeted prevention as done for example within the 3CP project in Hamburg. Low threshold facilities also inform about risks of multiple use, offer tips for "safer use" and information how to behave in case of drug emergencies. While substitution is widely applied to reduce heroin use the question remains open, what should be done with the big number of other substances used. The development of special programmes for specific groups of consumers found empirically could be useful in this respect.

### **11.4 Methodological issues**

Most problematic drug users today are polydrug users at the same time. Despite this fact patterns of use can still be rather different in relation to risks and harmful consequences. This is no homogenous group, which can be described easily. So, for example, heroin addicts with a parallel use of cocaine and cannabis still are - as a group - quite distinct from people going to rave parties, who might mix up cannabis, ecstasy and to a certain extent also cocaine.