THE RISING TREND OF ECSTASY AND MIMIC DRUGS AMONG TEENAGERS IN SANTA CLARA COUNTY, CA

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Santa Clara County Health and Hospital System  
and  
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Evolving Process

Larry

• Working with teens is a fluid process
• Teen subculture changes every 5-7 years
• Trends in clothes, music, language, social gathering, rituals, and rules, drug use, dosing behaviors, drug terms, and drug games change often with this population
• When you think you understand...you don’t! (Knowledge includes intellectual flexibility.)
The Evolution of an Epidemic

- Started 3 ½ years ago:

- Noticed increase in students reporting use of Ecstasy (9/08)

- Several new admissions were 14 and 15 year olds that had been taking it several times with clear complaints of anxiety, memory and concentration problems (10/2009)

- Increased death rate
The Evolution of an Epidemic

Recent Raves in California
Pop 2010: The Dream

- Annual Electronic Festival, 13th year
- 16,500 teens and young adults attended
- Eleven young persons ages 17-25 were admitted to Bay Area Hospitals
- A 23 year old and a 25 year old died from drug OD
- Both lived in Santa Clara County
Evil 105 Subsonic
Halloween 2010 Spookfest

- Held at the Cow Palace on 10/29/2010
- 12,670 attended
- 16 taken to the ED for OD's
- 2 in critical condition
- 2 From San Jose Died

3,4-Methylenedioxymethamphetamine
MDMA

- Ecstasy
- E
- X
- Molly
- XTC
- Thizz
- Thizzelle
Thizz

Bay Area Rappers

- Thizz” & “Thizzelle” are words coined by the late Mac Dre
- Wrote the Thizzelle Dance in 1993 but currently well known by teens
- Mac Dre was murdered in 2004
- BAR transitioned from underground to mainstream Hip Hop in 2005
- Apparently popular in Washington, Oregon, California, parts of Texas and parts of Florida
MDMA

• First synthesized in 1912 by chemist Anton Köllisch for Merck Pharmaceuticals
• Looking for a compound to stop abnormal bleeding and evade Bayer’s existing patent.

Ecstasy
Ecstasy: Triple & Quad Stacks

Molly
02/26/2012 (California)

Test Result Statistics: Summary Data

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Phenylpiperazines

- These drugs mimic the effects of MDMA
- They have psychoactive, stimulating, and euphoric effects
- Pharmacokinetic studies show that after oral dosing, BZP takes 75 mins to reach its maximum plasma concentration (Cmax) [Anita U, et al, 2009]
- For 2010, EcstasyData.org reported Phenylpiperazines as the 3rd highest identified substances next to MDMA and Caffeine

Piperazine Derivatives Used to Mimic MDMA

- Benzylpiperazine (BZP)
- Trifluoromethylphenylpiperazine (TFMPP)
- meta-Chlorophenylpiperazine (mCPP)
Toxic effects of BZP-based herbal party pills in humans: a prospective study in Christchurch, New Zealand
Paul Gee, Sandra Richardsen, Wolfran Watersdorff, Grant Moore

Abstract

Aims: This study describes patterns of human toxicity related to the use of 1-benzylpiperazine (BZP)-based ‘herbal party pills’.

Methods: From 1 April 2005 to 1 September 2005 all presentations associated with party pill use were captured in a prospective data collection form.

Results: There were 81 patients who presented an 80 occasions to the Emergency Department of Christchurch Hospital, New Zealand. Patients with adverse effects took an average of 4.5 tablets/capsules. Patients with mild to moderate toxicity experienced symptoms such as insomnia, anxiety, nausea, vomiting, palpitations, dizziness, and urinary retention. Some adverse reactions persisted up to 24 hours after ingestion. Fifteen toxic features were recorded. Two patients suffered life-threatening toxicity with status epilepticus and severe respiratory and metabolic acidosis.

Conclusions: Herbal party pills have been sold without regulation since 2000, and are now widely used by young New Zealanders. The principal ingredient of these pills is 1-benzylpiperazine (BZP). They appear to have a narrow safety margin when used recreationally by some humans, possibly because of intrinsic pharmacodynamic properties, self-dosing variability, or genetic polymorphism. Those with seizure disorders or coronary disease should avoid BZP as should those taking prescription sympathomimetics or antidepressants. Concomitant with MDMA or amphetamines should also be cautioned against. The results of this study indicate that BZP can cause unpredictable and serious toxicity in some individuals. Furthermore, the results of this study should be carefully considered in any discussion on the legal status of piperazine-based party pills.

BZP Adverse Reactions

Percentage

- sweating
- hyperventilation
- palpitations
- chest pain
- urinary retention
- vomiting
- insomnia
- anxiety
- dizzy
- headache
- dystonia
- tremor
- agitation
- collapse
- confusion
- Seizure

0 10 20 30 40
• MDMA increases Serotonin, Norepinepherine, & Dopamine in the brain

Ecstasy: Subjective Effects

• A general and subjective alteration in consciousness
• A strong sense of inner peace
• Diminished aggression, hostility, and jealousy
• Diminished fear, anxiety, and insecurity
• You feel real happy
• Feelings of empathy, compassion, and forgiveness towards others
• Feelings of intimacy and even love for others
• Feelings of insightfulness
• An intensification of perception, particularly tactile sensation or touch
• Mild psychedelia, consisting of mental imagery and auditory and visual distortions
Ecstasy: Subjective Effects

- Stimulation
- Increased energy and endurance
- Increased alertness, awareness, and wakefulness
- Increased desire, drive, and motivation
- Hypersexuality and aphrodisiac effects
- Analgesia or decreased pain sensitivity

Ecstasy: Overdose

- Acute delirium (Total Confusion)
- Intense muscle twitching
- Rapid breathing
- Palpitations or abnormal awareness of the beating of the heart
- Angina pectoris (Chest Pain)
- **Cardiac arrhythmia (Heart beats in different ways)**
- Circulatory shock or cardiogenic shock
- Vasculitis or destruction of blood vessels
- Damage to the heart
- Cardiac arrest
- Hemorrhage and/or stroke
- **Severe hyperthermia, potentially resulting in organ failure**
- **Trauma**
- Coma and Death (US death rate 100 in 2001)
MDMA: Long Term Effects

- Depression

MDMA: Long Term Effects

- Anxiety
MDMA: Long Term Effects

- Long term memory loss

“E-tarded”
**Ecstasy and fatalities**

Michelle A. Jorden, MD  
Assistant Medical Examiner  
Santa Clara County Medical Examiner/Coroner  
San Jose, CA

**Ecstasy**

- Usually tablet form  
  - 100 mg tablet costs $8-$30  
- Can be ingested orally, placed under the tongue, added to juice, snorted or injected  
- “Candyflipping” – Ecstasy + LSD  
- “Stacking” – Taking three (3) or more ecstasy tablets at once (can be combined with other drugs)  
  - Increases risk of overdose
Current Dosing Behaviors of Teens

- Crushing and snorting pills is common place (to get high quicker)
- Take several pills all at once “Binge Popping”
Current Dosing Behaviors of Teens

• Take several different pills at one (e.g. “Red Playboy Bunny,” a “Green Saints,” and a “Blue Superman)”

• They are naive and unaware of the potential for overdose, drug interaction toxicities, and report impatience

Ecstasy intoxication

• Dilated pupils
• Abnormal “high” behavior
• Repetitive movements
  – Eye movements
  – Extremity movements
Deaths in Bay Area: 2010

A summary:

• Massive drug overdose
  – 16-year-old straight A student told to take 4 tablets to get high (toxicology was 3X fatal levels)
  – Male teenager succumbed to hyperthermia

• Young adult male and female succumbed to hyponatremia-associated Ecstasy intoxication

• Potential of high risk behavior associated with Ecstasy intoxication (suicide, MVA)
Case #1

- 16-year-old female who left her residence at 7:45 am one morning with two (2) friends
- She ingested four (4) tablets of UFC and ingested energy drinks
- She was found unresponsive on the sofa
- Paramedics were summoned and the body was reported as “stiff” and death was pronounced at 1321 hours

Case #1 (continued)

- Autopsy findings included marked pulmonary edema and brain swelling
- The peripheral blood is positive for:
  - Methylendioxymethamphetamine/MDMA at 3200 ng/mL
  and MDA at 140 ng/mL
- Fatalities start at 1000 ng/mL
Case #2

- 22-year-old female who checked into Motel 6 with a group of friends and was partying all night with Ecstasy
- Sometime during the morning hours, the decedent complained of not “feeling well”
- Her friends left her alone only to come back hours later to find her deceased on the floor

Case #2 (continued)

- Obese woman (morbid obesity, BMI of 44.8), pulmonary and cerebral edema
- The peripheral blood is positive for:
  - Methyleneoxymethamphetamine/MDMA at 140 ng/mL
  - MDA at 20 ng/mL
- Postmortem vitreous electrolyte studies revealed a profound electrolyte abnormality
  - Abnormally low sodium
Literature search, case #2


Death certificate, case #2

- **Cause of death:**
  - Ecstasy-associated hyponatremia

- **Manner of Death:**
  - Accident
Toxicology results

- The peripheral blood is positive for:
  - Methylenedioxymethamphetamine/MDMA at 1600 ng/mL
  - and MDA at 140 ng/mL
Small amount of Methamphetamine

Toxicology results

- The peripheral blood is positive for:
  - Methylenedioxymethamphetamine/MDMA at 940 ng/mL
  - and MDA at 58 ng/mL
Small amount of Methamphetamine
Case #5 (recent case):

• 16-year-old girl driven to boyfriend’s house by her mother so she could spend the night
• Followed by verbal altercation
• Rave party
• She leaves boyfriend’s house to go to a girlfriend’s house
• Girlfriend leaves and decedent texts boyfriend that “she planned on killing herself.”

Case #5, continued

• When the decedent was 15 years of age, she broke up with a boyfriend and made statements saying she wanted to die. The decedent was placed on a 5150 hold and that resulted in her being admitted to a psychiatric hospital in Fremont.
• When the decedent was 16 years of age, she became very intoxicated and was taken to St. Mary’s Hospital in San Francisco, where she was found to be “ten times over the limit.” About this time, the decedent started using marijuana.
• Somewhere around 16 years of age, the parents placed her in an outpatient recovery program sponsored by Kaiser Hospital. They wanted to admit her to an inpatient facility, but the decedent did not want to go.
• For the last three months, the decedent complained to her parents of not being able to sleep so they took her to Kaiser Hospital for evaluation. Recently, she was admitted into a sleep study program. The parents did not know the reason the decedent could not sleep, and as of this date, a diagnosis had not been made as a result of the study.
Case #6 (recent case)

- The decedent went to a party at Lupin Lodge in Los Gatos on the evening of 2-5-11, arriving at about 2330 hours. His birthday is on Feb 6.
- The following morning at about 0600 hours a bystander observed the decedent unresponsive on the floor in the bathroom. The decedent was carried out of the bathroom and placed in a seated position. The bystander called 911. The decedent reportedly was not alert for about ten (10) minutes.
- When the fire department and paramedics arrived the decedent was alert, but unable to remember collapsing in the bathroom. He told paramedics that he took four (4) hits of LSD in paper form. During the transport to the hospital the decedent admitted to taking one (1) tablet of Ecstasy.
  = CANDYFLIPPING
- Upon arrival to the hospital the decedent appeared confused, but was able to speak. He became markedly hypertensive and had a systolic pressure of 250. He became unconscious and developed cerebral edema and hours later the decedent’s intracranial pressure was incompatible with life.

Case #6, continued

- Admission labs taken on 2-6-2011 (his birthday) at 07:55 hours:
  - Sodium 116 mEq/L (137-147)
  - Chloride 82 mEq/L (96-108)
  - Creatine Kinase 541 Units/L (55-170)
- Another example of hyponatremia-associated Ecstasy intoxication
Conclusion:

- Ecstasy’s potential national spread should be watched for and anticipated

- Suspicious deaths ages 12 thru 30 should include testing for phenylpiperazines

- Medical Examiners/Coroners and toxicologists may be the first to identify local increases in the use of these drugs in their communities and as surveillance monitors provide an early warning to others as a “call to action”

Current Trends—Nationally
### MDMA Use by Students
*Monitoring the Future Survey, 2011 (in bold) (with past 4 year comparison)*

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<th>8th Grade</th>
<th>10th Grade</th>
<th>12th Grade</th>
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<td><strong>Lifetime</strong></td>
<td>2.6% (3.3) [2.2][2.4]</td>
<td>6.6% (6.4) [5.5][4.3]</td>
<td>8.0% (7.3) [6.5%][6.2]</td>
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<td><strong>Past Year</strong></td>
<td>1.7% (2.4) [1.3][1.7]</td>
<td>4.5% (4.7) [3.7][2.9]</td>
<td>5.3% (4.5) [4.3][4.3]</td>
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<td><strong>Past Month</strong></td>
<td>0.6% (1.1) [0.6][0.8]</td>
<td>1.6% (1.9) [1.3][1.1]</td>
<td>2.3% (1.4) [1.8][1.8]</td>
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() = 2008, [] = 2009, {} = 2010
Monitoring the Future

- **Marijuana** use, which has been rising among teens for the past three years, continued to rise in 2011 in all prevalence periods for 10\textsuperscript{th} (34.5\%--ever use) and 12th graders (45.5\%--ever use.)
- **Alcohol** use, including *binge drinking*, continued its longer term decline among teens, reaching historically low levels in 2011 in all three grades under study.

Teen Exposure to Anti-Drug Messages Drops Dramatically by Two-Thirds as Drug Use Goes Up

- Monitoring the Future (MTF) [2010]
- Lloyd Johnston, the principal investigator of the study
- Recalled exposure of drug abuse prevention messages are lower in 2010 than they have been since his research team began tracking 8\textsuperscript{th}, 10\textsuperscript{th}, and 12\textsuperscript{th} graders nearly two decades ago.
SAMHSA’s Drug Abuse Warning Network (DAWN) Recent Findings

- National early warning system that analyzes ER visits and Deaths from substances
- Findings for 2008 just released (03/2011)
- Santa Clara County does not participate
- DAWN showed ER visits related to use of ecstasy jumped from 10,200 in 2004 to 17,865 in 2008…a 74.8% increase.
- 17.9% were between ages 12 and 17.
Current Trends—Locally

Findings: “Ever Use”
Ecstasy = 25.32% (469 out of 1,852)
Findings: Past 30 Day Use
Ecstasy = 8.48% (157 out of 1,852)

Additional Surveys collected October 2010

- Surveyed 508 students
- Some from higher socio-economic regions than before
- First time survey of middle school students
- Adding these students (High School Only) into existing data: As many as 25.80% of all respondents from all surveys admitted to “ever use” of Ecstasy (609 out of 2,360).
The California Healthy Kids Survey (CHKS)  
Conducted 2009-2010

• Examining this survey’s “ever use” of Ecstasy for the schools we surveyed was reported as 11% for 9th graders and 15% for 11th graders
• All values exceed all national values for use of this drug.

Comparison: Use of Ecstasy

2001
• High year for use
• Ages for high use: 17-25
• 100 US deaths
• $20 per pill
• Attend raves to buy and use
• Dose at rave event
• Dose 1-2 pills

2010
• High year for use
• Ages for high use: 14-25
• ? US deaths (5+2 deaths in SCC)
• $3-$10 per pill (Aver. $5)
• Buy local, SF, Oakland, San Jose, Santa Cruz
• Dose before rave event, at home, school, friend’s house
• Ingest multiple and different pills (1-10 pills) [Average 2-4]
So What is Causing This Problem?

• The drug’s euphoric effects
• Teenage developmental stage
• Endorsed by peers and subculture
• A society that preaches no waiting and more is better
• Decrease in social connectedness
• Availability and cost of the drug
• Lack of information
• Lack of prevention interventions
• Lack of community interventions

Information VS Misinformation

• Used to take several months-to-years to spread misinformation.
• Now misinformation can spread virally in days-to-weeks over the internet, blogs, and texting.
• Our antiquated governmental policies and systems make it difficult to distribute accurate information fast enough and where they go to get information.
Increase in access to Legal “Designer Drugs”

- Synthetic THC (aka: Spice, K2, JWH-018) sold as incense to evade FDA control Used frequently by youth on probation to evade a positive drug test.
- Mephedrone sold as Bath Salts (A powerful substance likened to MDMA)
- Synthetic Cocaine sold as "Glass Cleaner"

We need to Communicate with Teens Their Way

- At schools
- Internet
- Facebook
- YouTube
- Twitter
- Texting
Our Three Main Messages To Teens

- When it comes to Ecstasy/Thizz pills, you never know what you will get
- Ecstasy and other drugs in ecstasy pills can kill you
- Ecstasy/Thizz is brain poison and can leave you depressed, anxious, unfocused, and forgetful for a long, long time

The Evolution of an Epidemic From Jan 2010 to Present

- Surveyed nearly 4,000 teens and presented to 6,400 youth within Santa Clara County on their substance use and provided presentations on the risks of Ecstasy.
- Completed Early Research (7/7/2010)
- Consulted with LA County.
- Participated in “Summit” meetings (coalition of stakeholders from the county to further assess and develop interventions = SUPPRESS)
- Our county Public Health Officer Marty Fenstersheib, MD has agreed Youth Ecstasy use a emerging crisis in SCC.
- Lectured at 4 workshops to 350 people spanning all county regions and disciplines
The Evolution of an Epidemic
From Jan 2010 to Present

- Trained 23 trainers to provide presentations to youth and others
- Created “E-nough Gazette” Newsletter
- Presented to:
  - County Police Chiefs Association
  - the American Academy of Forensic Sciences 63rd Annual Scientific Meeting (Chicago)
  - the AB74 Forum
  - Los Gatos Police and Los Gatos Drug-Free Community Committee
  - Sunnyvale Public Safety Group
  - Emergency Room Nurses Association
  - SCC Pediatric Grand Rounds
  - Santa Clara Police Department
  - Lyons Club

- Proposing: Creation of a Youth Early Warning Surveillance System to identify future teen drug trends
- Presented/surveyed 425 7th graders at an Intermediate School (San Jose)
- Spanish Speaking Only presentation

We Need a Three-Pronged Approach (CEP)

- **Prong One: Collaborate** to control the drug’s access.
  - Interagency collaboration, Inter-county collaboration, Interstate Collaboration, Inter-country collaboration
- **Prong Two: Educate**
  - Schools, Kids, Parents, Legal, Medical, Legislature
  - Trainers, Media, Ads, Flyers
- **Prong Three: Prevent**
  - Rapid Surveillance System
  - Rapid dissemination of information to combat misinformation
Ecstasy: Lives out of Balance

- Film is 25 minutes
  - Genuine not scary
  - Factual
  - Contemporary
  - 2 positive messages and only 3 messages related to the risks in taking this drug
- Music video is 4 minutes and ties into the film
- Implemented a local and national media campaign

Findings of Focus Groups
Ecstasy: Lives out of Balance Film
11/17/11 thru 02/09/12-------1,347 Surveys-----5 Different Schools

- 90% of the teens said they liked the movie.
- 86% of the teens accurately identified the message that “Balance” is what we need to find in our lives.
- 58% correctly identified all three messages related to Ecstasy and 90% identified at least two of the messages.
- 92% stated they felt the film was “totally true.”
- 79% stated that the movie convinced them not to use Ecstasy.
Findings of Focus Groups
Ecstasy: Lives out of Balance Film
11/17/11 thru 02/09/12-------1,347 Surveys-----5 Different Schools

- It’s an awesome movie and I’m sure it will help other people
- I really liked it; it can change people’s lives
- It made me never, never want to take it in my life
- I really liked the movie, it really got to me
- You are telling people the truth and they need to hear it
- I believe Thizz is not cool
- It really makes us teens think about drugs and how to avoid them
- Very powerful