



# Methamphetamine

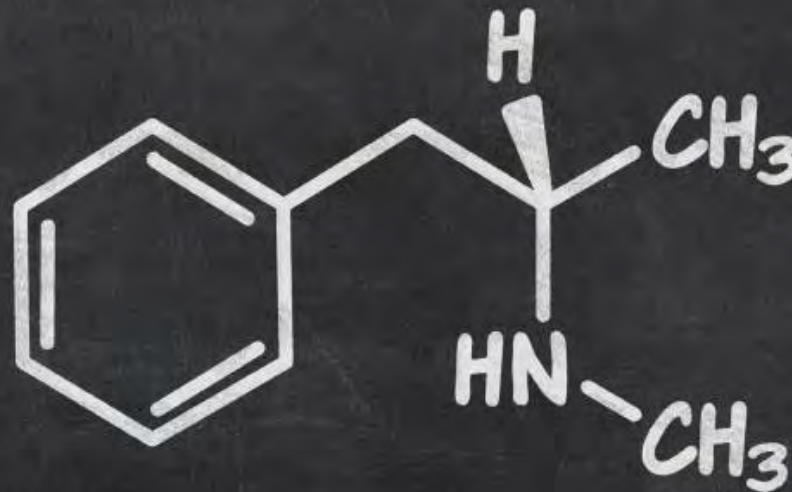
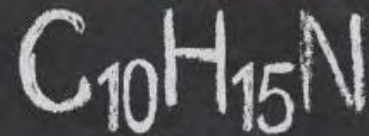
and health effects

## Division of Public Health

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Melody Law, MD, MS, MPH

# Methamphetamine



# What Meth Looks Like



Methamphetamine Powder



Methamphetamine Crystal



Methamphetamine Pills



Methamphetamine **street names** can include:

- Crank
- Cristy
- Crystal
- Glass
- Ice
- L.A.
- Quartz
- Tina

**Pharmaceutical** containing methamphetamine:

Brand names: Desoxyn, Desoxyn  
Gradumet

Drug class(es): anorexiant, CNS  
stimulants

Methamphetamine systemic is used in the  
treatment of:

- ADHD
- Obesity

# Schedule II Drugs

***drugs with a high potential for abuse, and use potentially leading to severe psychological or physical dependence***

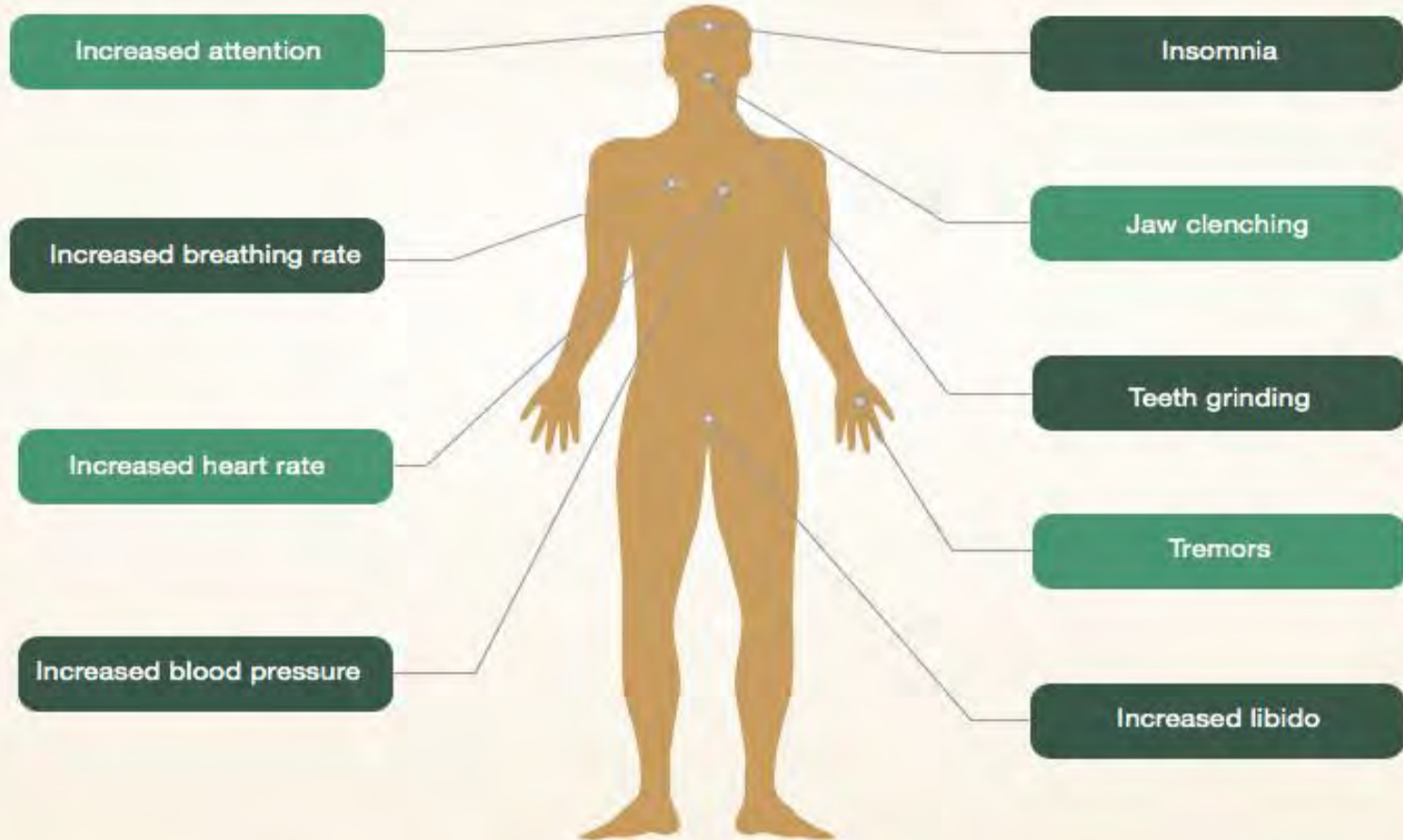


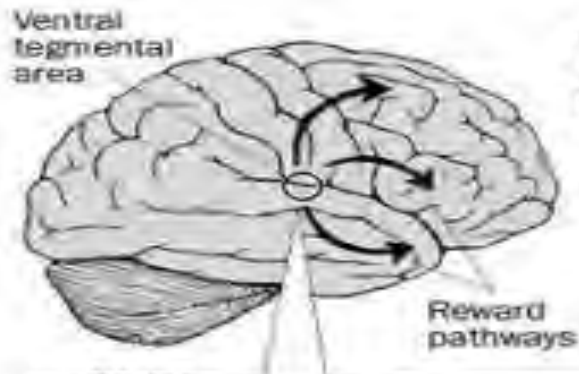
© Study.com



# Crystal Meth Effects

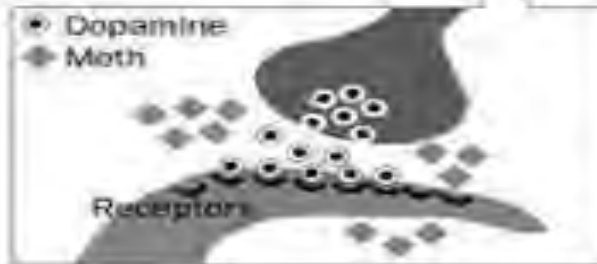
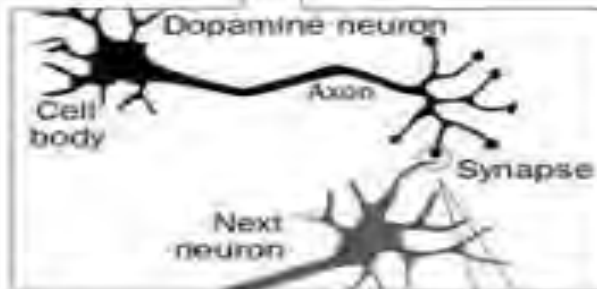
Crystal meth is an extremely powerful stimulant that increases central nervous system activity while speeding up heart rate and accelerating breathing.





## How meth affects the brain

1. We feel pleasure when neurons in "reward pathways" release a neurotransmitter called **dopamine** into various brain areas.
2. Dopamine in the reward centers is released into the gap (synapse) between neurons, crosses to the next neuron and binds to receptors, providing a jolt of pleasure.
3. Methamphetamine stimulates the release of excess dopamine heightening the feeling of pleasure.





System	Mild or Moderate overdose symptoms	Severe overdose symptoms
Cardiovascular	Abnormal heartbeat	Cardiogenic shock (heart not pumping enough blood)
	High or low blood pressure	Cerebral hemorrhage (bleeding in the brain)
		Circulatory collapse (partial or complete failure of the circulatory system)
Central nervous system	Confusion	Acute amphetamine psychosis (e.g., delusions and paranoia)
	Abnormally fast reflexes	Compulsive and repetitive movement
	Severe agitation	Serotonin syndrome (excessive serotonergic nerve activity)
	Tremor (involuntary muscle twitching)	Sympathomimetic toxidrome (excessive adrenergic nerve activity)
Musculoskeletal	Muscle pain	Rhabdomyolysis (rapid muscle breakdown)
Respiratory	Rapid breathing	Pulmonary edema (fluid accumulation in the lungs)
		Pulmonary hypertension (high blood pressure in the arteries of the lung)
		Respiratory alkalosis (reduced blood CO2)
Urinary	Painful urination	No urine production
	Urinary retention (inability to urinate)	Kidney failure
Other	Elevated body temperature	Elevated or low blood potassium
	Mydriasis (dilated pupils)	Hyperpyrexia (extremely elevated core body temperature)
		Metabolic acidosis (excessively acidic bodily fluids)



### SKIN

Acne appears or worsens. Obsessive skin-picking often causes meth users' faces to be covered in small sores and scarring - the result of a common sensory hallucination of bugs crawling beneath the skin.



### FACIAL MUSCULATURE AND FAT

Meth, like other stimulants, suppresses appetite and can lead to undernourishment due to long periods without eating. Over time, the body begins consuming muscle tissue and facial fat, giving users a gaunt, hollowed-out appearance.



### TEETH AND GUMS

"Meth Mouth" is caused by several factors; tooth enamel is dissolved by the harsh chemicals of the drug, the blood vessels contained in healthy gums and teeth shrink, increasing the rate of decay, the production of saliva diminishes, allowing harmful acids to further damage the mouth, cravings for sugary foods increases with meth use, oral hygiene is typically neglected while high, and heavy tooth-grinding is an additional side effect of the drug.



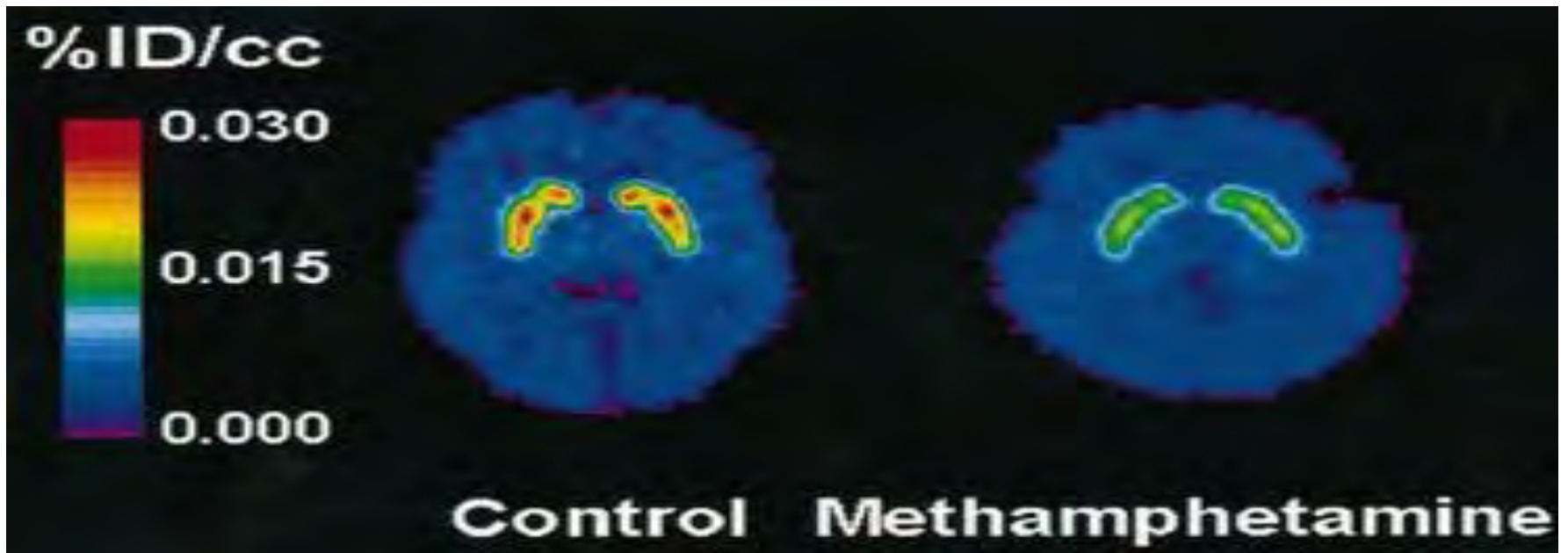
### INCREASING ESTIMATED AGE

The combination of skin issues, facial fat and muscle loss, fivaiene neglect and increased

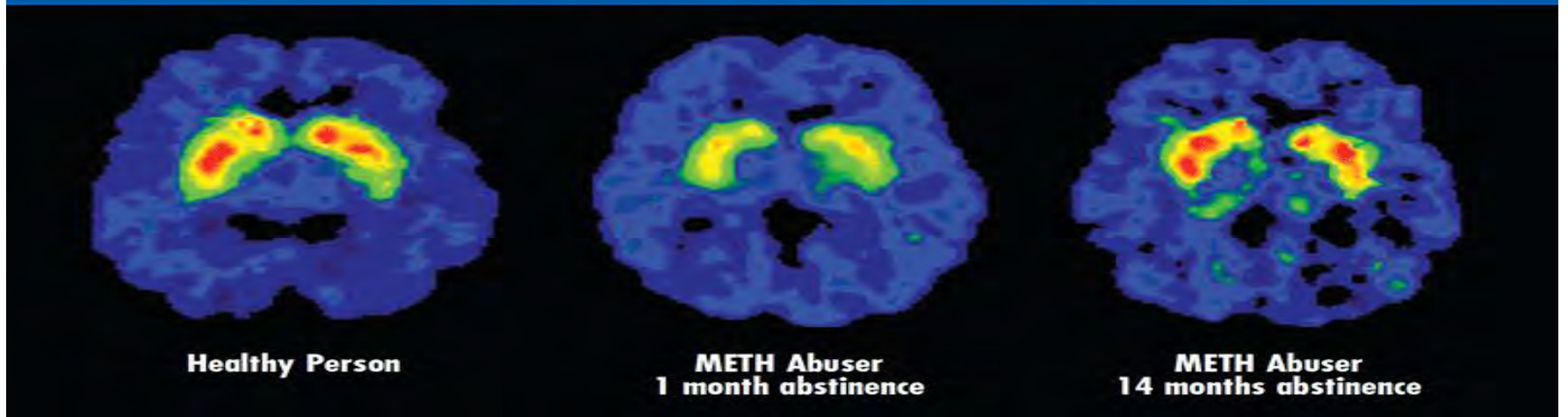


## Methamphetamine Users

Addiction touches nearly every family, ravaging physical and mental health, relationships, and personal finances. Mothers, fathers, brothers, sisters, daughters and sons. No one is immune to the



**BRAIN RECOVERY WITH PROLONGED ABSTINENCE**

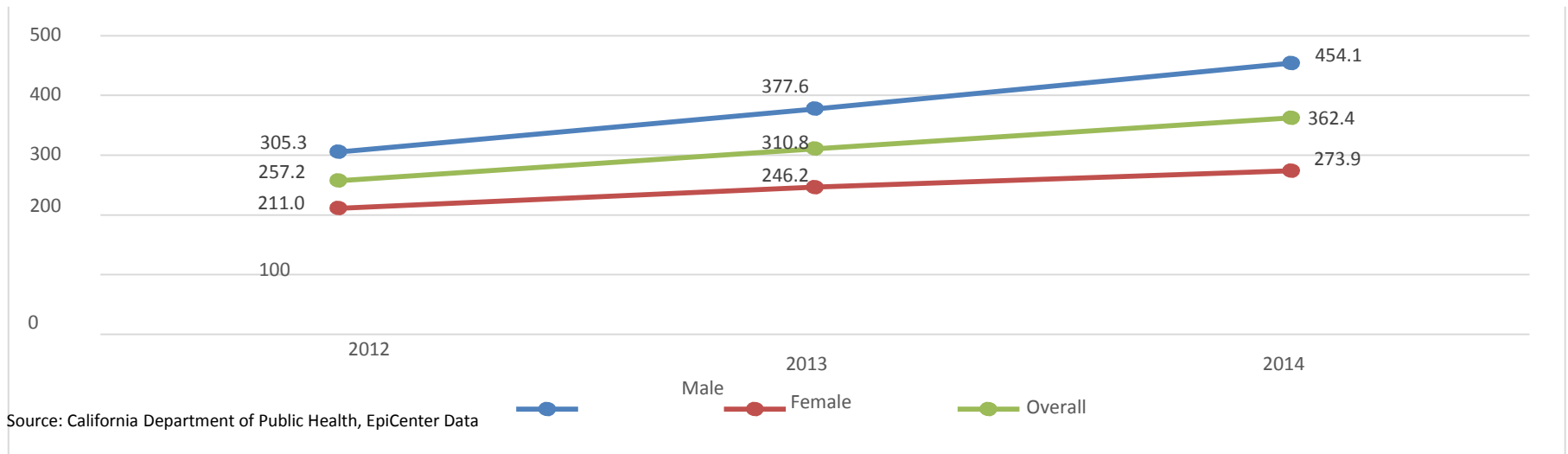


# Association between Meth and STDs

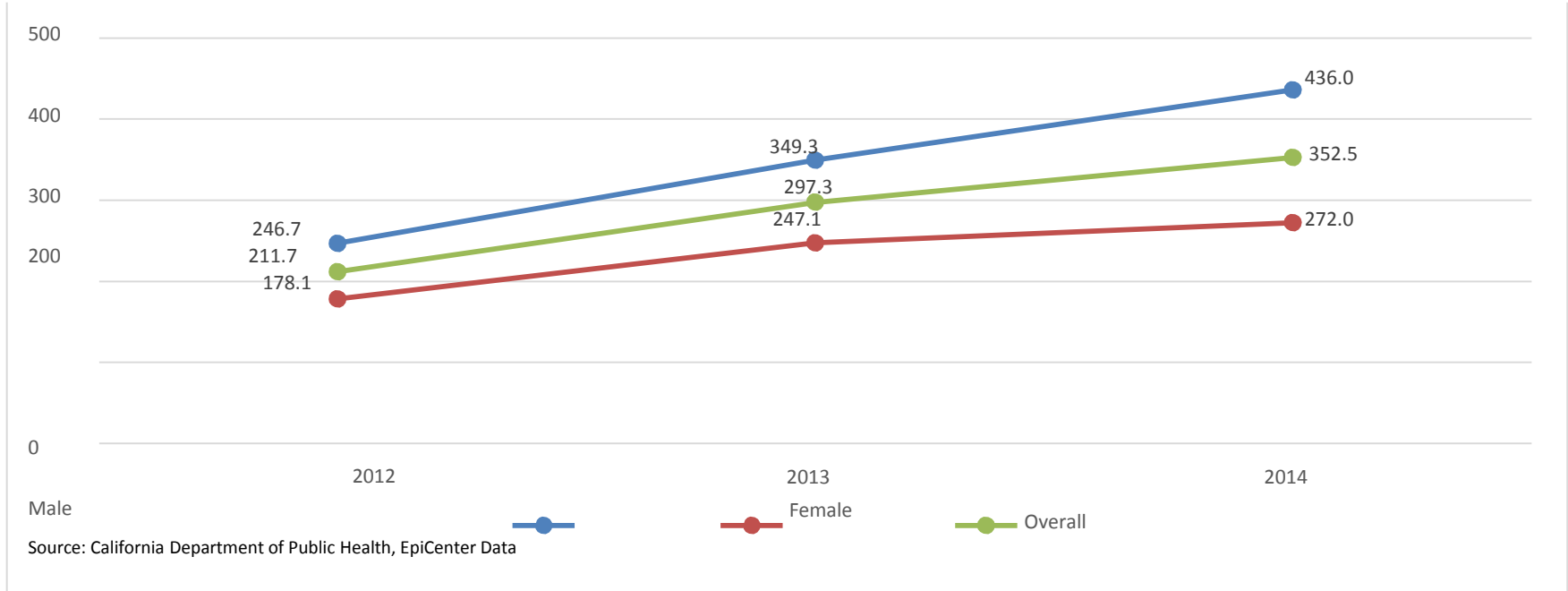
- SF MSM STD clinic study – Meth users (vs. non-users) – Mitchell et al, 2004; Wong et al, 2005
  - had **twice as many partners** in the prior 4 weeks
  - were **1.7 times** more likely to have gonorrhea
  - were **1.9 times** more likely to have chlamydia
  - were **4.9 times** more likely to have syphilis
- STD case interview data for early syphilis in various locations around the country --
  - Increases in proportion of syphilis cases reporting recent meth use (e.g, California)



# Non-Fatal Hospitalization Rates per 100,000 Sacramento County Residents with a Primary or Secondary Diagnosis Involving Amphetamine Usage



# Non-Fatal Emergency Department Visit Rates per 100,000 Sacramento County Residents with a Primary or Secondary Diagnosis Involving Amphetamine Usage



# References

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1. Context and association of meth use and sexual risk behavior by David w. Purcell, JD, PhD. Prevention research branch. Division of HIV/AIDS prevention, NCHHSTP, CCID, CDC. National STD prevention conference. May 10, 2006.
2. Methamphetamine initiative report. Department of health and human services. Division of Behavioral Health Services. Alcohol and Drug services. November 18, 2016.
3. Colkow, ND et al., Journal of Neuroscience 21, 9414-9418, 2001.
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8. Project Know. (2016). Facts About Crystal Meth Overdoses. Retrieved from Project Know: <http://www.projectknow.com/research/crystal-meth-overdose/>
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11. Addiction Blog. (2013, April 1). Methamphetamine overdose: How much meth does it take to OD? Retrieved from Addiction Blog: <http://drug.addictionblog.org/methamphetamine-overdose-how-much-meth-does-it-take-to-od/>
12. Principles of Addiction medicine. 5<sup>th</sup> edition. April 2015.



# Sacramento County Division of Behavioral Health Services

## Alcohol and Drug Services

Methamphetamine Symposium

Lisa Sabillo, Division Manager

November 1, 2017



# National Statistics

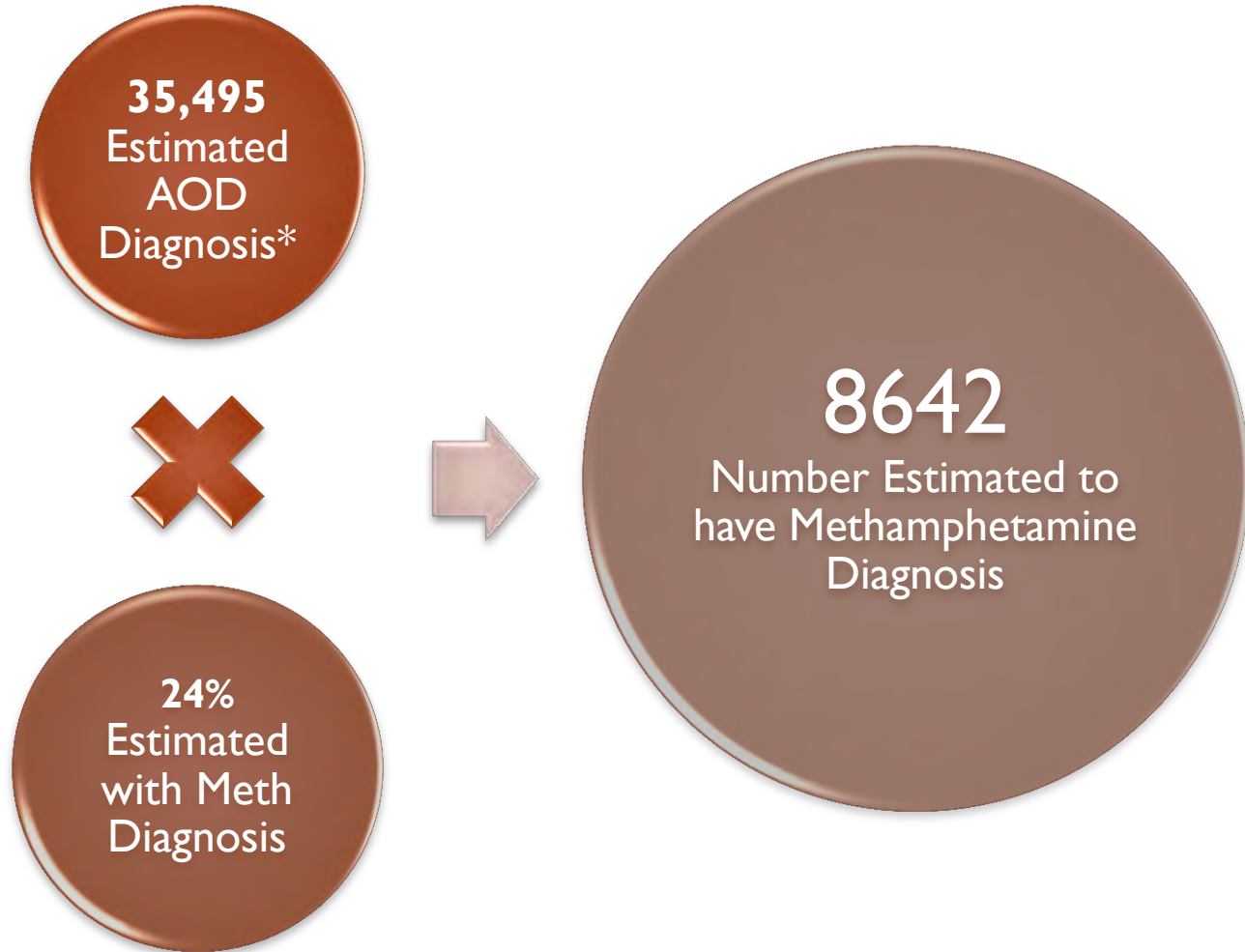


## 2016 National Survey on Drug Use and Health (NSDUH)

Methamphetamine Use in the Past Year and Past Month among Persons Aged 12 or Older		
Frequency of Use	2015	2016
TOTAL PAST YEAR USERS	1,713,000	1,391,000
Average Number of Days Used in Past Year	101.8	114.9
TOTAL PAST MONTH USERS	897,000	667,000
Average Number of Days Used in Past Month	11.6	14

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015 and 2016.

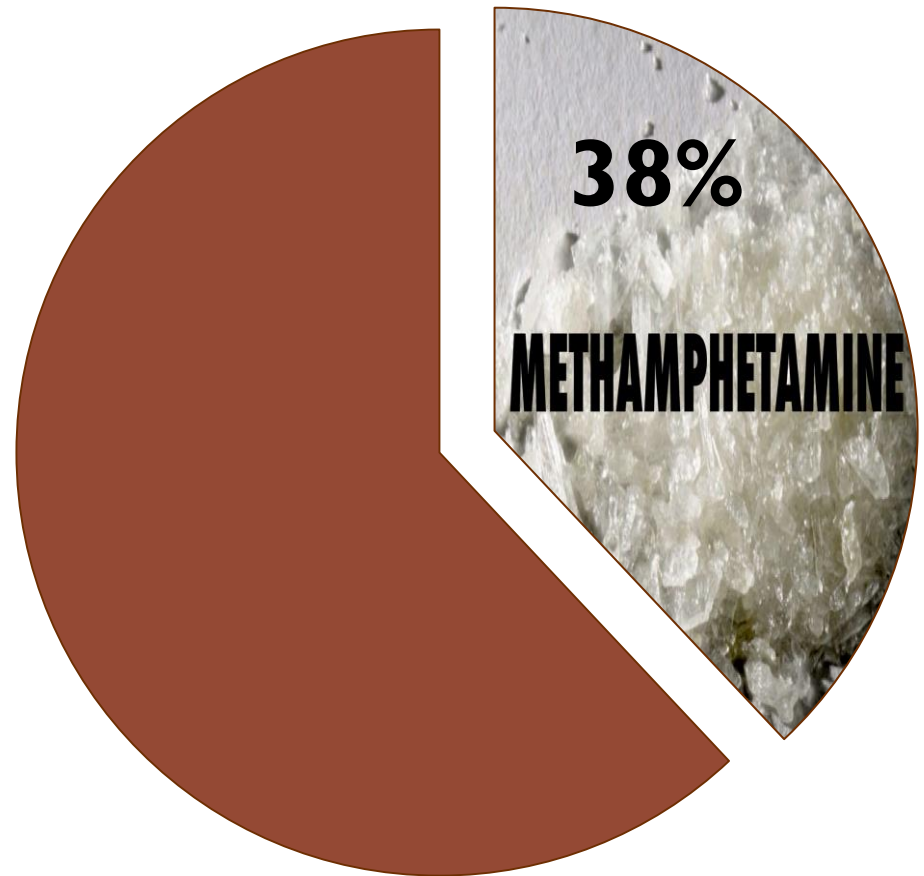
# Sacramento County Prevalence Aged 12+



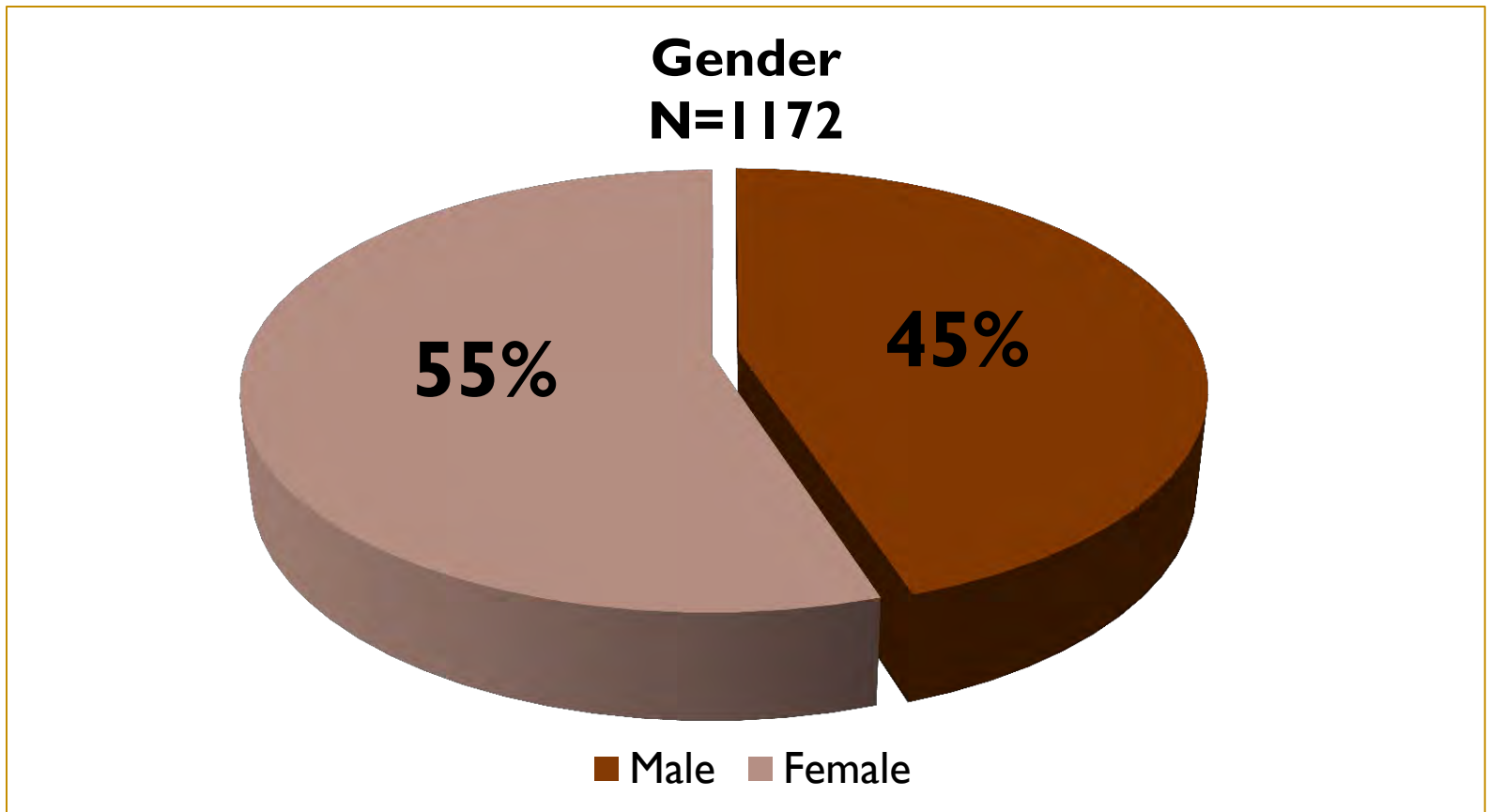
\*Based on 200% poverty population

# Utilization of Sacramento County Alcohol and Drug Services

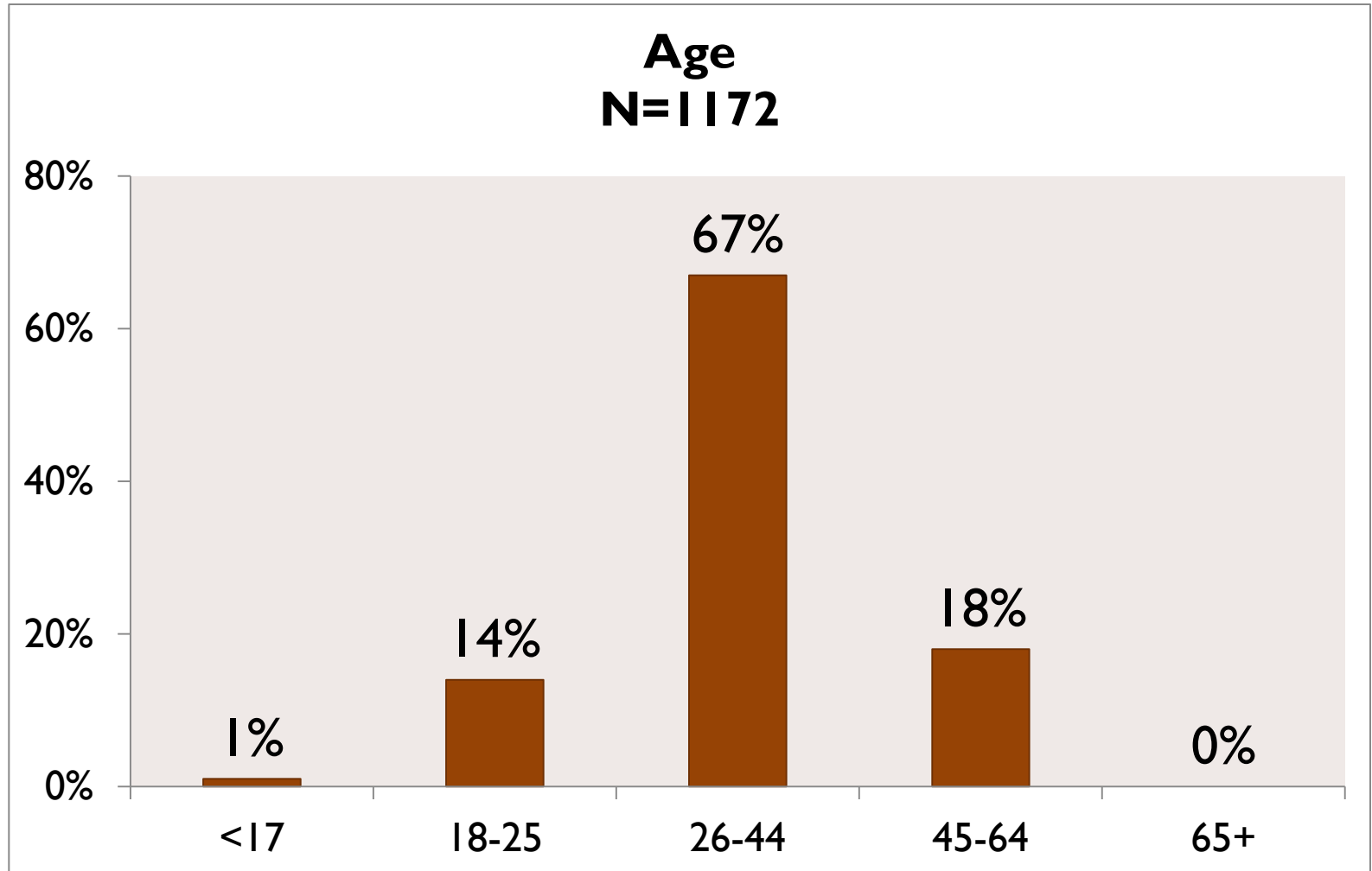
In FY16/17  
methamphetamine  
was the primary  
drug of choice for  
38% of all admissions  
to Detox, Outpatient  
& Residential  
Services (1508 out of  
3969 admissions)



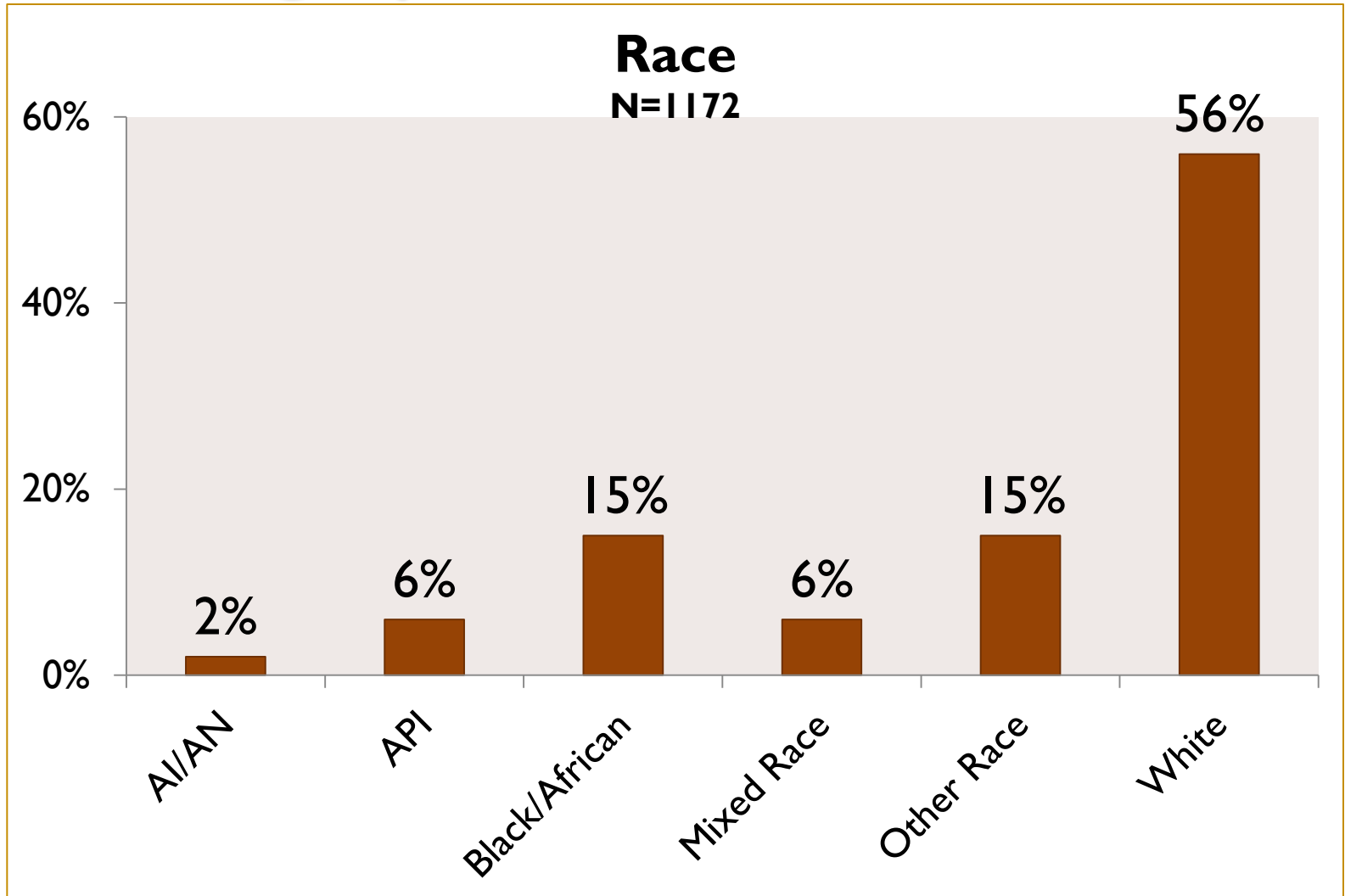
# Demographics of Methamphetamine Users in Sacramento County Alcohol and Drug Services- FY16/17



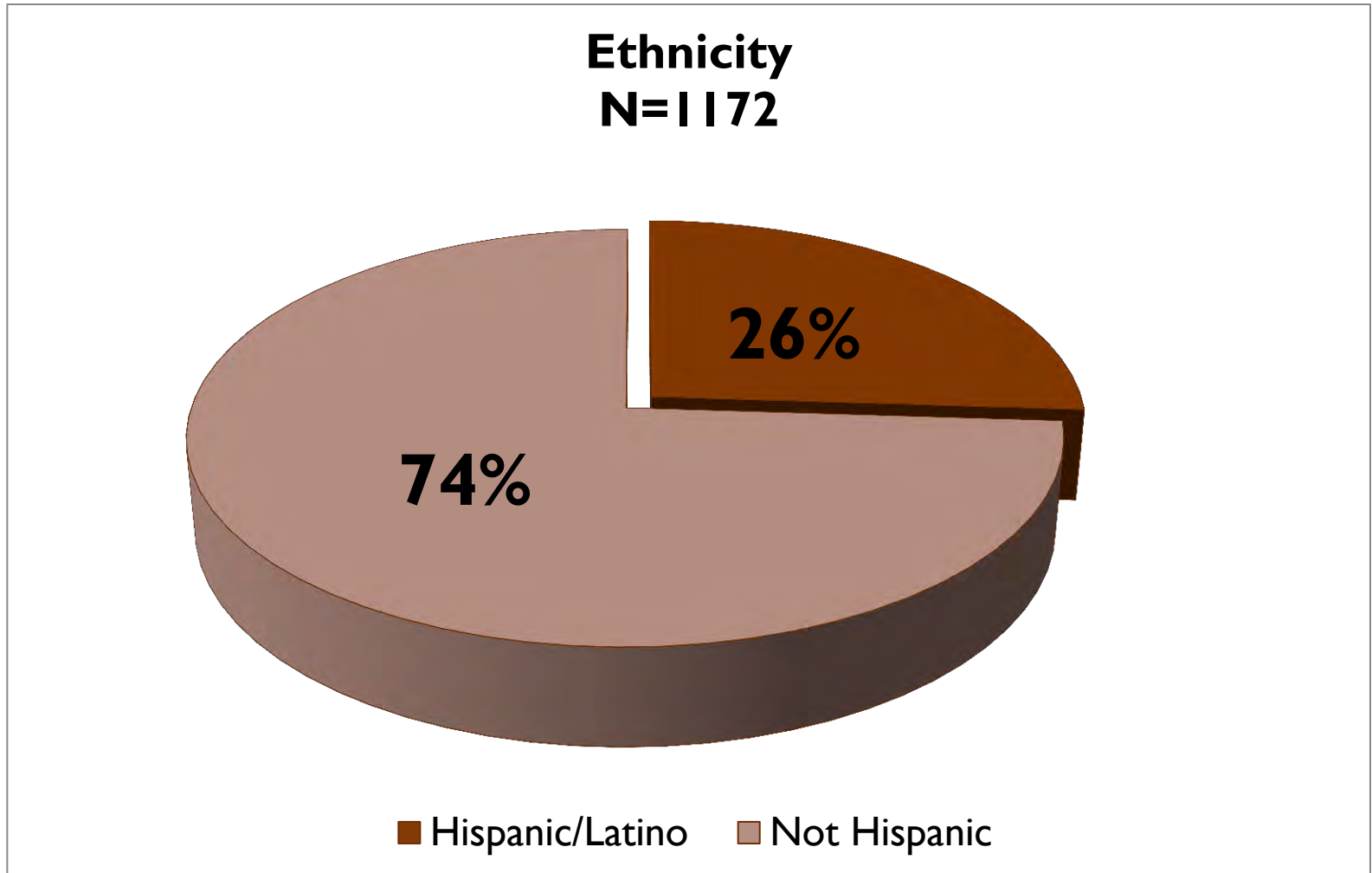
# Demographics Con't



# Demographics Con't



# Demographics Con't



# Consumer Survey October 2016



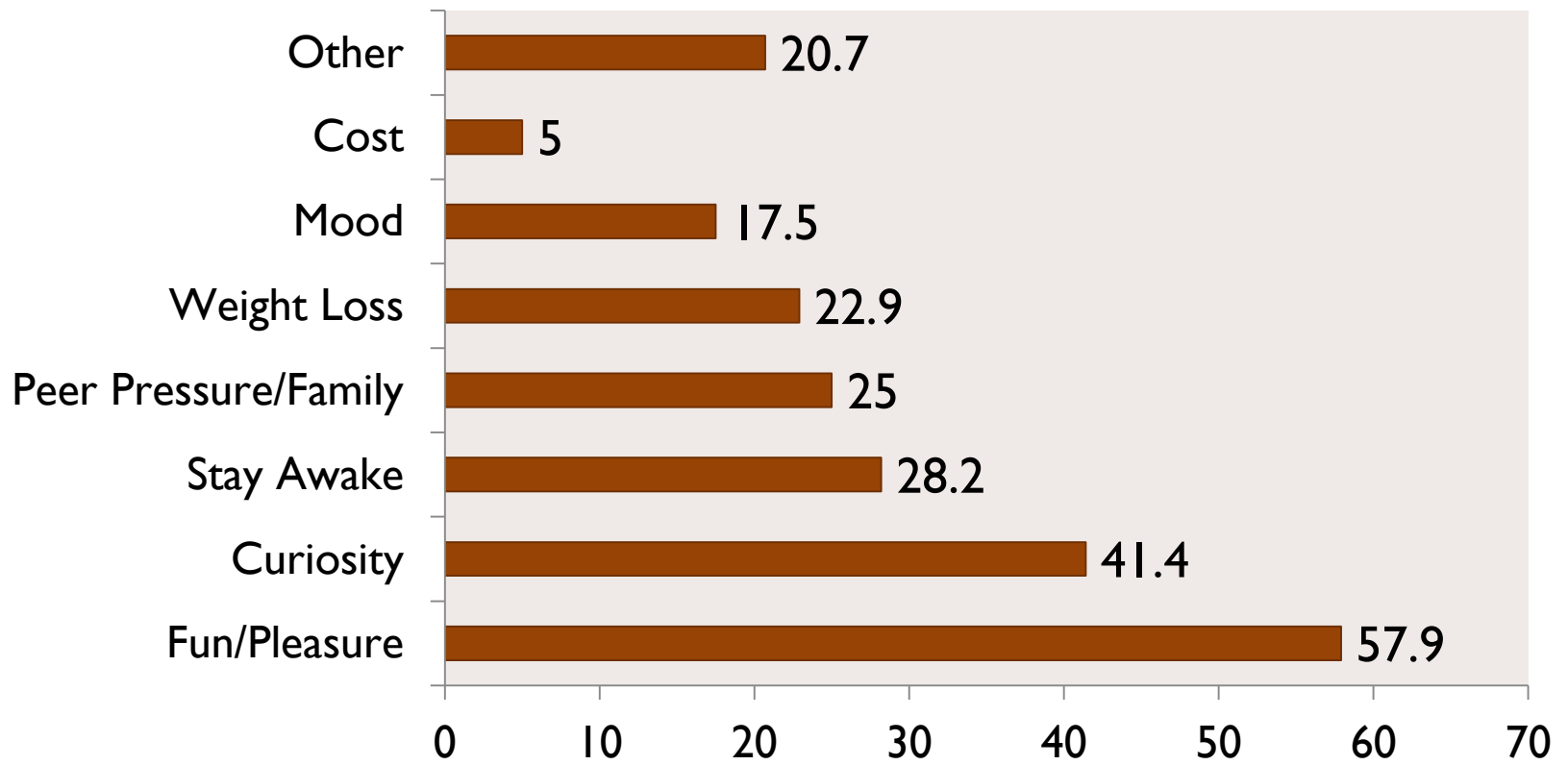
- Provides valuable consumer feedback but can not be generalized to entire population
- 455 Surveys received, 61% (280) receiving treatment for methamphetamine use
  - 67% from residential & 31% from outpatient (2% unknown)
- 58% female, 38% male, 4% unknown
- Average age 34
- Average age at first use = 20 (range 10 to 55 years)



# Reason Began Using Methamphetamine

**Why did you start meth?**

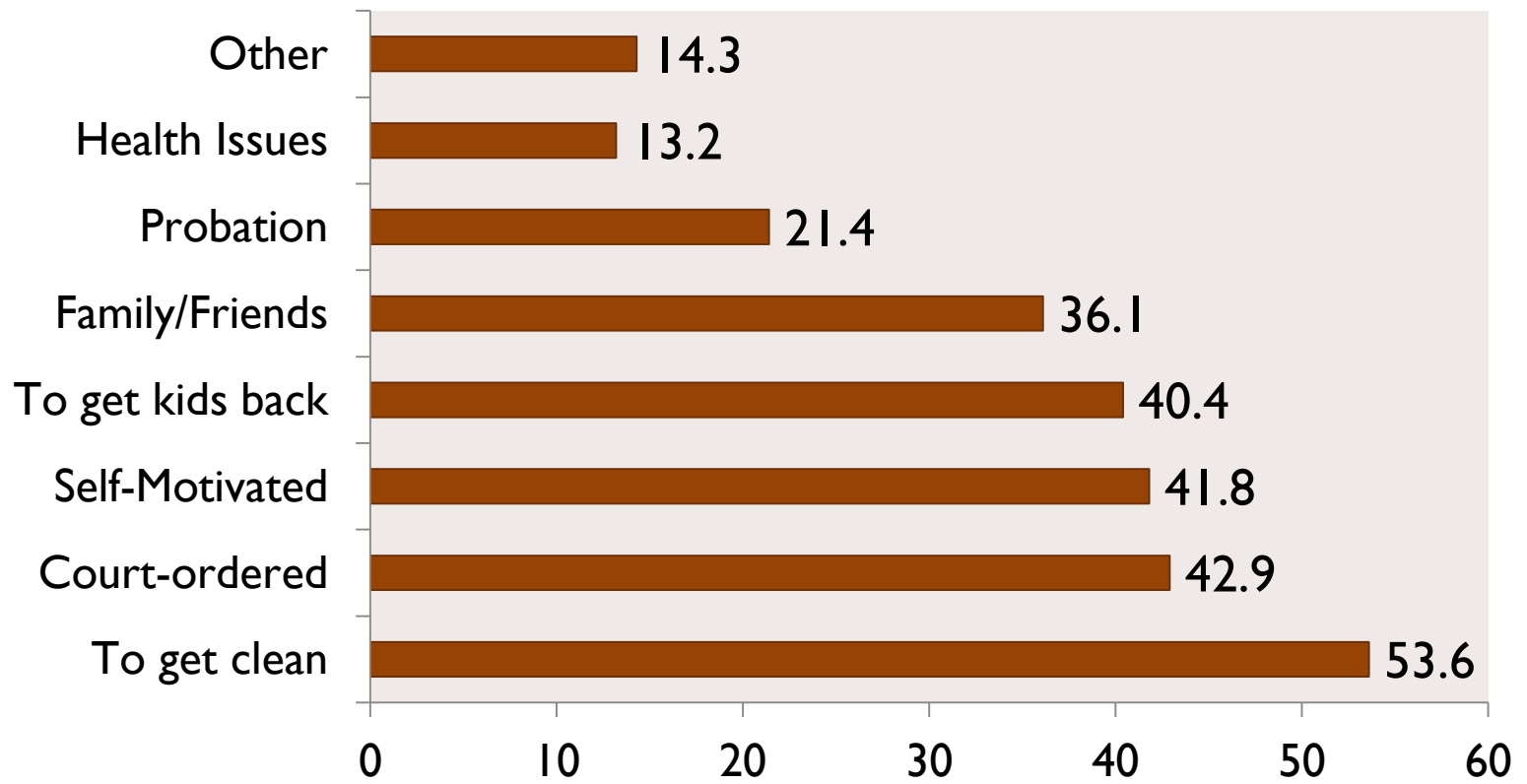
**N=280**



# Motivation to Seek Treatment

**What motivated you to seek treatment?**

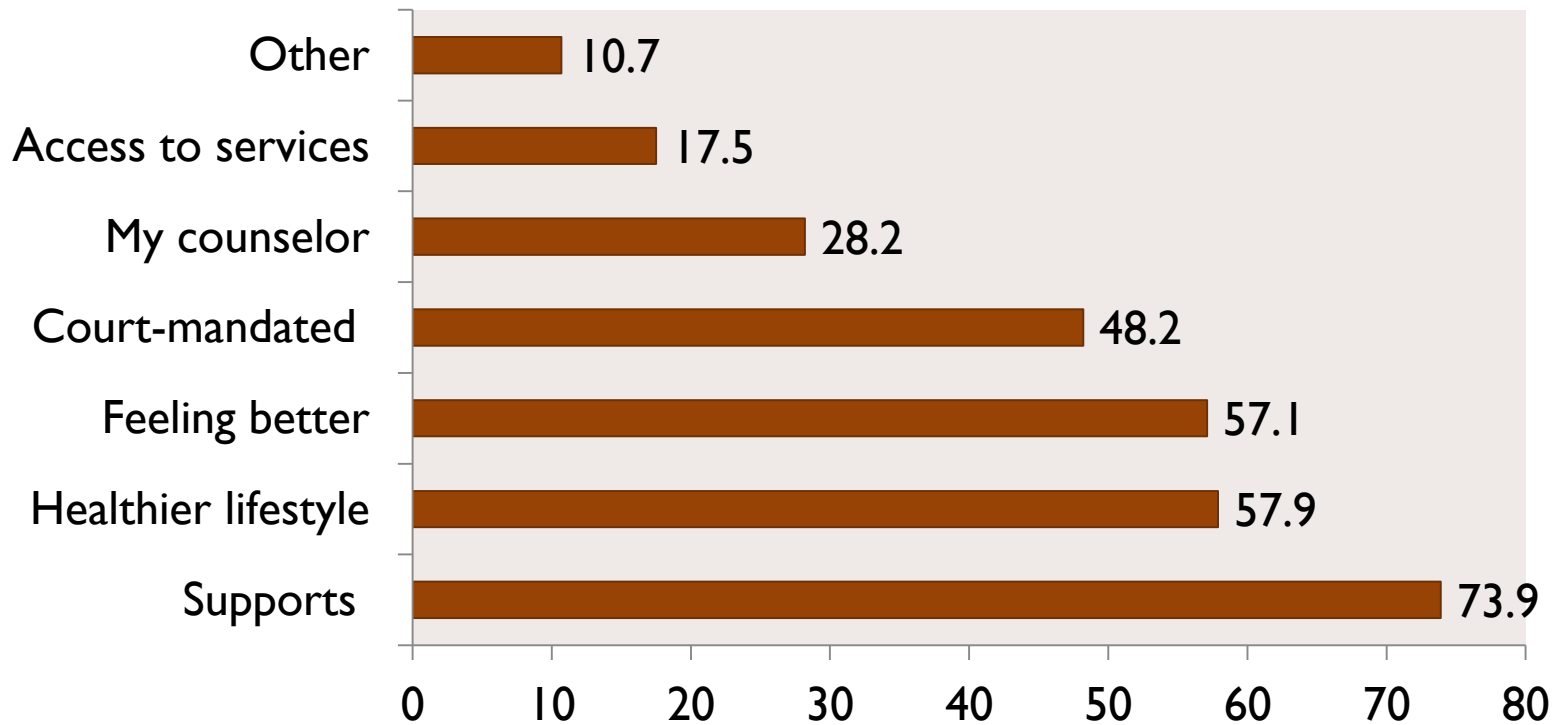
**N=280**



# Motivation to Remain in Treatment

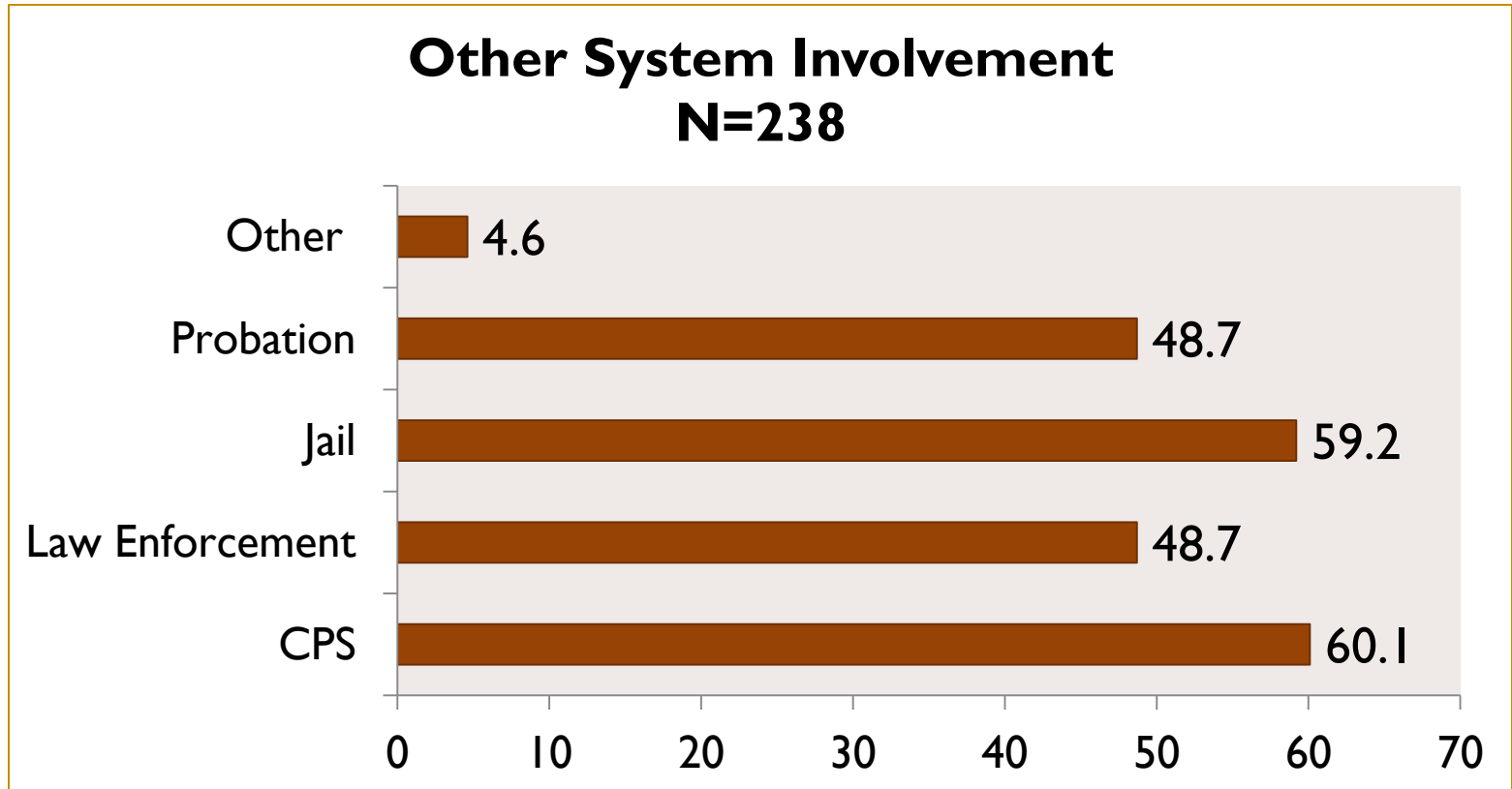
**What helps you remain in treatment or sustain recovery?**

**N=280**



# Other System Involvement

- 85% reported involvement with at least one other system
- 59.7% reported involvement with multiple



# Data Challenges



Thank  
You

# **Methamphetamine Symposium**

## **Mental Health Impacts**

November 1, 2017

Glen Xiong, MD

Sacramento County

Mental Health Treatment Center (MHTC)

# Mental Health Problems

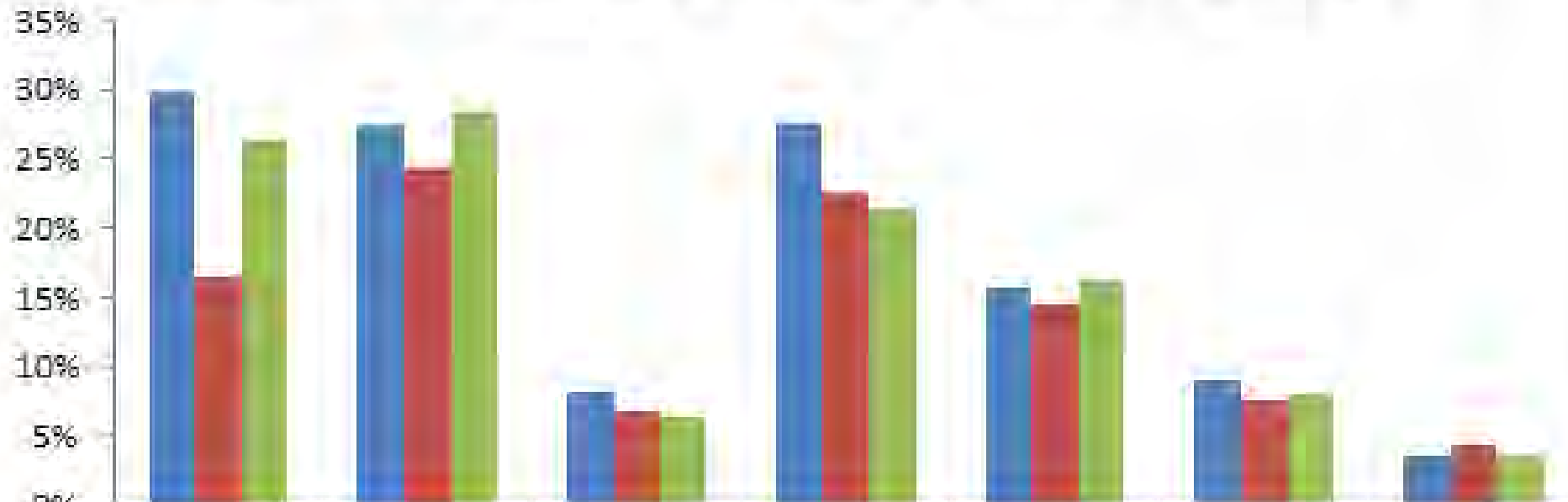
- Depression, anxiety, and irritability
- Memory problems, long-term cognitive deficits
- Obsessive/repetitive behaviors
- Paranoia (psychosis): transient → permanent
- Suicidal thoughts, Suicidal attempts
- Violence, traffic accidents, homicides



# Amphetamines and Methamphetamines

- Unfortunately there is ***no strong evidence supporting pharmacologic treatment*** for amphetamine and or methamphetamine use disorder
- Some hope for naltrexone-but there is a lack of well designed studies that support its use
- Possible evidence supporting using prescribed stimulants as replacement therapy

## Percentage of Referrals to the Mental Health Treatment Center, Intake Stabilization Unit with Positive Toxicology Screens



	Poly	Amphetamine	ETOH	THC	Benzo	Opiate	Other
FY 14/15	30%	27%	8%	28%	16%	9%	4%
FY 15/16	16%	24%	7%	22%	14%	8%	4%
FY 16/17	26%	28%	6%	21%	16%	8%	4%



# **GUEST HOUSE HOMELESS CLINIC**

**EL HOGAR**

**COMMUNITY SERVICES, INC.**

# OVERVIEW OF SERVICES

- Serves up to 500 individuals who are experiencing mental health challenges, as well as homelessness.
- Services provided- Case Management, Medication Support, Therapy, Advocacy and Linkage, groups and more
- Connections Lounge-Drop in center for all who are experiencing homelessness.
  - Goal: To assist in meeting the basic needs of individuals while building rapport in order to link with Mental Health services.

# HOW DOES METHAMPHETAMINE USAGE IMPACT OUR PROGRAM?

- Mental Health
  - Exacerbates mental health sx
  - Makes it difficult to find baseline and create treatment plan.
  - Challenges with stigma
  - Challenges with limited referral options
  - Masking past trauma, difficult to move forward.
- Homelessness
  - Safety(use to stay safe vs.realty)
  - Length of time homeless
  - Challenges with stigma

# WHAT DO WE DO IF SOMEONE APPEARS TO BE USING?

- Use opportunity to offer safe space and build rapport
- Provide guidance around and referrals to community resources
- Collaborate with community partners-
  - Local NA/AA groups
  - Sacramento County AOD specialist on-site
  - El Hogar co-occurring specialist groups

# VISION FOR THE FUTURE

- Immediate services when desire presents itself
- Continued relationship with Sacramento County AOD and potentially an increase in collaboration as the need arises.
- Continue to utilize the Connections Lounge as a safe space that can be an alternative to use.

# Methamphetamine Abuse: A Front-Line View from the ER

Rosemary Younts  
Sr. Director, Behavioral Health Services  
Dignity Health  
Nov. 1, 2017





## Methamphetamine Abuse: A Front-Line View from the ER

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- Methamphetamine use considered by our ER physicians as one of the largest and most rampant social problems in the community
  - Not bound by race, ethnicity or socio economic status
- There were 2,545 patients on methamphetamine seen at the 4 Dignity Health hospitals in Sacramento County over the last 12 months
  - 2,000 alone at Mercy San Juan Medical Center
  - Volumes are under-reported - only represent primary methamphetamine abuse diagnoses
  - Reflects 5% increase over last year
  - Largest percentage of patients seen are in their 30s, 40s and 50s, but ages range from 14 to 67
  - More male than female patients

# Methamphetamine Abuse: A Front-Line View from the ER

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- Methamphetamine characterized by our ER physicians as the “evil” drug
  - Brings out the worst in people – violence, hostility, agitation
  - Patients often need intramuscular or IV drugs for sedation
  - Drug takes 20 to 24 hours on average to metabolize, requiring constant reassessment
    - Results in time delays for treatment and long length of stays in the ER
- Patients referred to substance abuse cessation resources, but many not willing to go
- Most methamphetamine users present with multiple and chronic health conditions
  - Mental and physical health and more often than not, both
  - Many patient health conditions are in advanced stages at very early ages

# Effects of Methamphetamine On Health Outcomes

Most Common Behavioral Health Conditions Seen	Most Common Medical Conditions Seen
Suicide Ideology	Heart Failure
Anxiety Disorder	Sepsis
Depression	COPD
Hallucinations	Hypertension
Schizophrenia	Kidney Failure

- Many of these conditions are acute and require inpatient admission, often with long costly stays
  - A few case examples
- ...*What about the babies?*

Thank You

# Emergency Department Data & Trends

Christina Y. Bilyeu, M.D. –  
Site Lead ED and Consultation-Liaison Psychiatric Services Kaiser Sacramento

Liz Roccucci, M.F.T. –  
Behavioral Health Manager I

November 1, 2017

# Kaiser Sacramento Emergency Department Workflow

Patient is  
brought in by:

- Ambulance
- Law enforcement
- Family/friends
- Self-present

ED Physician  
evaluation

- Medically stable for discharge
- Further consultation required
- Admit to hospital

Crisis Team  
evaluation

- Remain on 5150 application placed by law enforcement
- Recommend discharge (lift 5150/1799)
- Remain in ED for re-evaluation after further metabolization of methamphetamine

Psych MD  
evaluation

- Medication adjustments for both psychotic symptoms and potentially aggressive behaviors
- Recommend medical admission for further work-up

# Common Presentations

Abscess

Altered mental status

Anxiety

Cellulitis

Chest pain

Dehydration

Dizziness

Heart attack

Heart failure

Heat exhaustion

Hypothermia

Ingestion of drugs

Palpitations

Psychosis

Sepsis

Stroke

Suicidal

Syncope

Tachycardia

# Raw Numbers

From 4/1/2017 – 9/30/2017

- 800 patient encounters (age range 19M – 80Y)
  - 686 unique patient encounters (86%)
  - 6 patient encounters (<1%) were positive for amphetamines only\*
  - 1 patient presented 8 times in this time period
  
- 4 patients per day
  
- ED length of stay equivalent to:
  - 12,480 hours
  - 520 days
  - 72 hours of patient care/day



# Co-morbid Substance Use

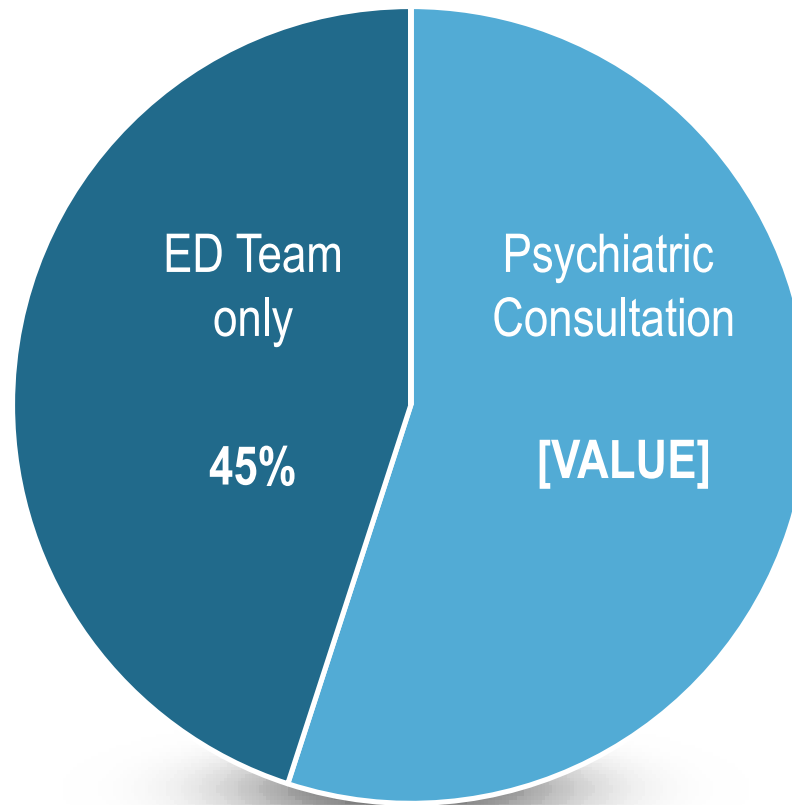
Alcohol

Cannabis

Cocaine

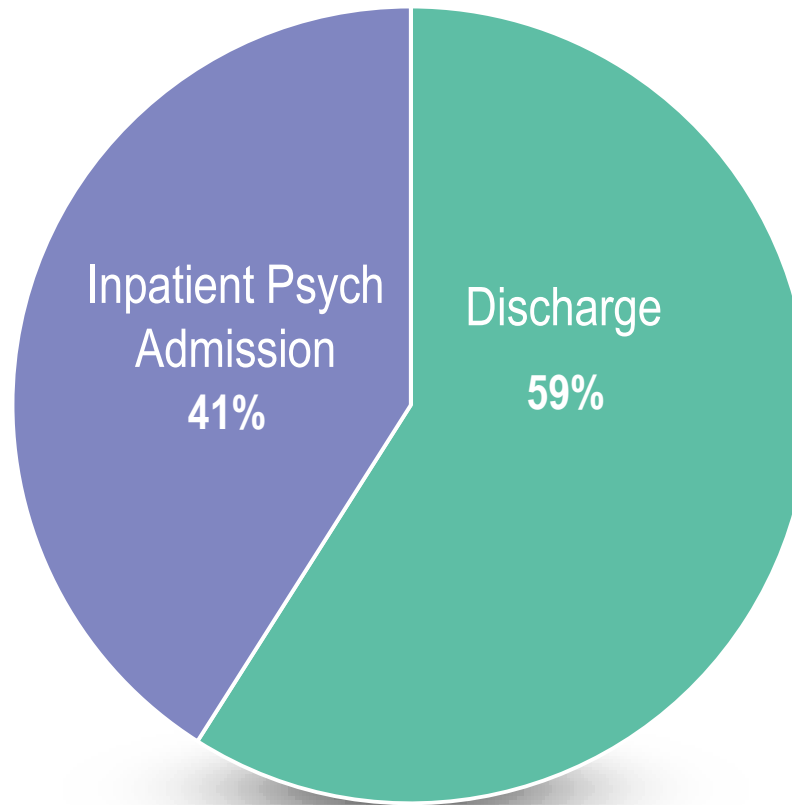
Heroin

# Raw Numbers



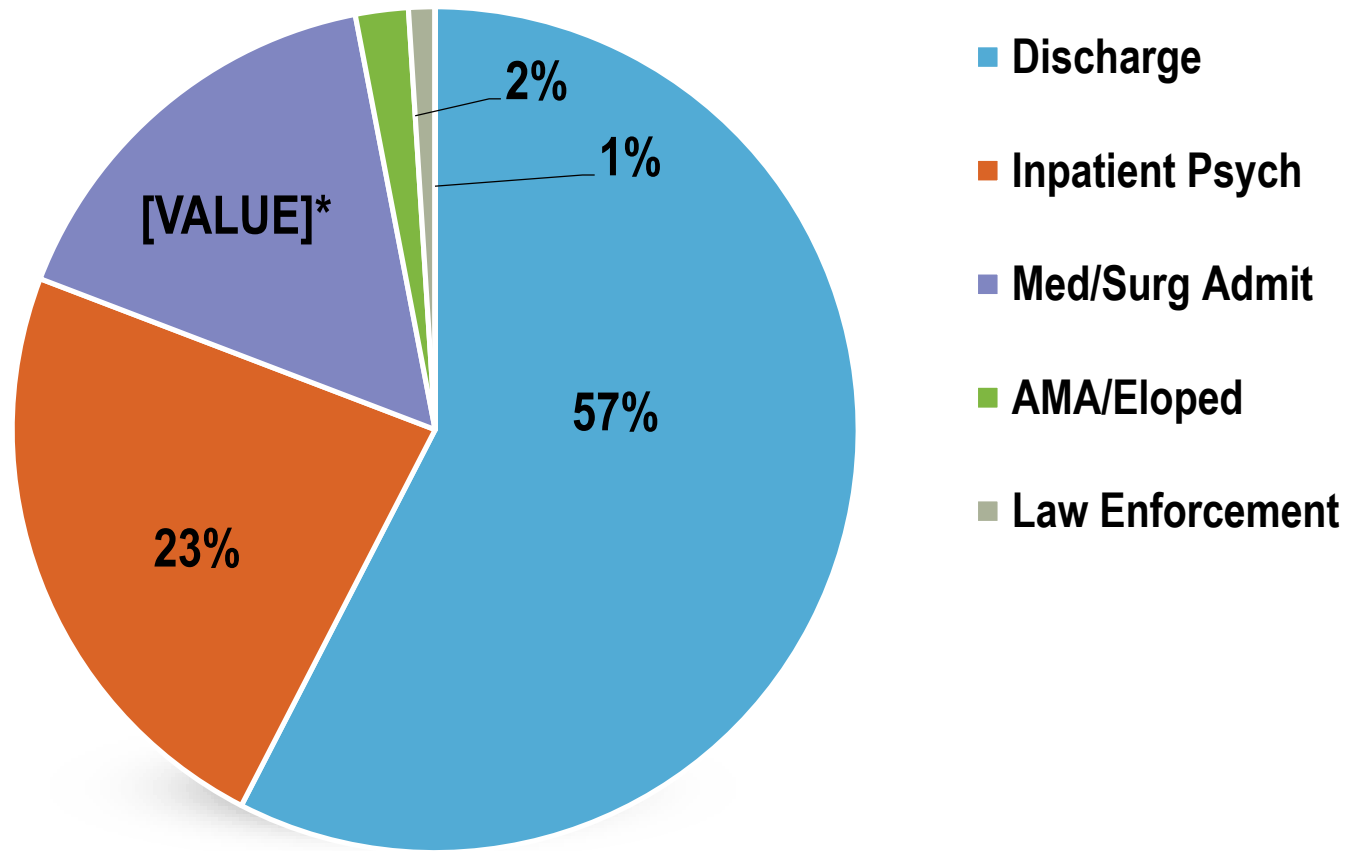
# Disposition

Patients seen by Crisis Team only

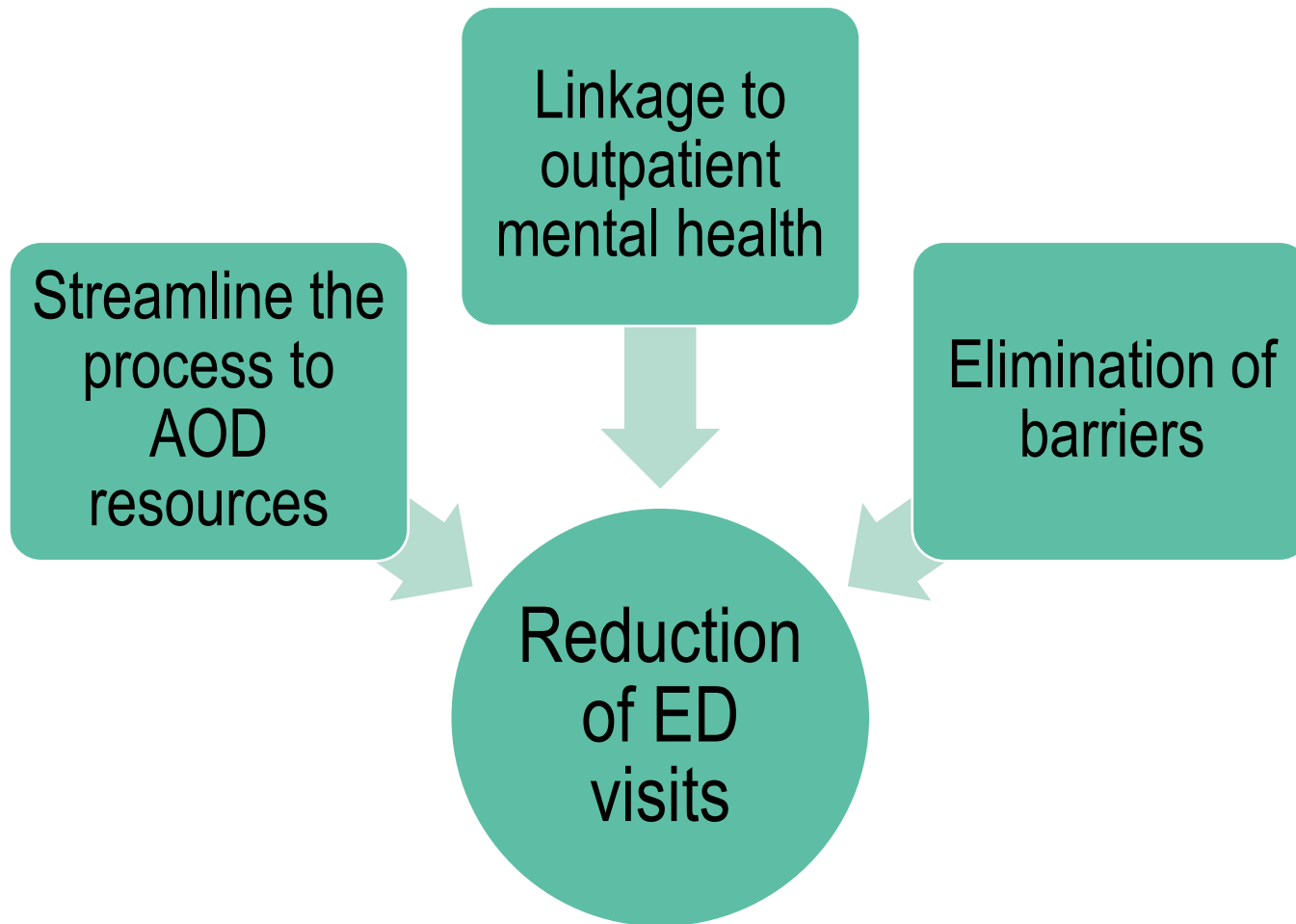


# Disposition

## Overall



# Collaborative Care



**THANK YOU!**