Blazing the Trail in Colorado
Marijuana and Public Health

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Public Health Responsibilities

1. Monitor patterns of use
2. Monitor health outcomes
3. Create a scientific advisory panel to review literature and emerging science
4. Prevention and education
5. Consultative role: Contamination limits and laboratory certification, edibles safety, safe disposal of product and byproducts
Monitoring Patterns of Use

- Who is using?
  - age, gender, ethnicity, county, etc.
- How are they using?
  - Smoking, vaporizing, ingesting, dabbing, etc.
- How often are they using?
- Are they following safe practices when using?
  - Safe storage away from children, not driving while under the influence, etc.

*Collecting this type of info and monitoring trends can help focus prevention efforts to the right target populations*

Marijuana use during pregnancy and breastfeeding
Figure 3. Colorado women who reported using marijuana before, during, and after pregnancy, 2014.

Prevalence (%)

Before Pregnancy: 11.2
During Pregnancy: 5.7
After Delivery plus Breastfeeding: 4.5

*95% confidence intervals do not overlap.
†Black bars indicate margins of error (95% confidence intervals).

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Figure 4. Colorado women who reported using marijuana during pregnancy by intention to become pregnant, 2014.

<table>
<thead>
<tr>
<th>Did Not Use Marijuana</th>
<th>Used Marijuana</th>
</tr>
</thead>
<tbody>
<tr>
<td>96.0</td>
<td>90.9</td>
</tr>
</tbody>
</table>

Prevalence (%)

Intended Pregnancy: 4.0
Unintended Pregnancy: 9.1

*95% confidence intervals do not overlap.
†Black bars indicate margins of error (95% confidence intervals).
Patterns of Use During Pregnancy in Colorado, 2014

Marijuana use before and during pregnancy was highest among women ages 15-24 years (21.1% and 12.8%, respectively).

However, marijuana use during the three months before and during the last three months of pregnancy was lower than alcohol and cigarette use during the same periods.

Figure 1. Colorado women who reported using substances before pregnancy, 2014.

- Drank Alcohol: 66.7%
- Used Tobacco: 16.9%
- Used Marijuana: 11.2%

Produced by: EEDH, CDHDE 2016
*The confidence intervals do not overlap.
**Black bars indicate margins of error (95% Confidence Intervals).
2014 CO PRAMS Data

Overall Marijuana Use

<table>
<thead>
<tr>
<th>Duration</th>
<th>Percent (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>During 3 months <em>before</em> pregnancy</td>
<td>11.2</td>
<td>9.2-13.5</td>
</tr>
<tr>
<td>During <em>first 3 months</em> of pregnancy</td>
<td>4.9</td>
<td>3.7-6.6</td>
</tr>
<tr>
<td>During <em>last 3 months</em> of pregnancy</td>
<td>2.4</td>
<td>1.6-3.5</td>
</tr>
<tr>
<td>At any time during pregnancy</td>
<td>4.8</td>
<td>3.6-6.5</td>
</tr>
<tr>
<td>Since new baby was born</td>
<td>5.3</td>
<td>4.0-7.1</td>
</tr>
</tbody>
</table>

2014 CO PRAMS Data

Substance Use

Substance use among women who had a live birth, Colorado, 2014

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percent (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALC</td>
<td>66.7</td>
<td></td>
</tr>
<tr>
<td>CIG</td>
<td>16.9</td>
<td></td>
</tr>
<tr>
<td>MJ</td>
<td>11.2</td>
<td></td>
</tr>
<tr>
<td>ALC During Last 3 Mos.</td>
<td>12.8</td>
<td></td>
</tr>
<tr>
<td>CIG During Last 3 Mos.</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>MJ During Last 3 Mos.</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>ALC After Delivery</td>
<td>9.1</td>
<td></td>
</tr>
<tr>
<td>CIG After Delivery</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>MJ After Delivery</td>
<td>1.6</td>
<td></td>
</tr>
</tbody>
</table>
Child marijuana exposure

Safe Storage of Marijuana Products

7.4% of parents reported keeping marijuana in or around the home;

Of which 73.8% kept marijuana products in a locked container
Adolescent and adult marijuana use

Adult and Adolescent Use Patterns since Legalization

- Marijuana use, both among adults and among youth, does not appear to be increasing to date.
- No change was observed in past 30-day marijuana use among adults between 2014 (13.6%) and 2015 (13.4%)
- No statistically significant change in 30-day or lifetime marijuana use among high school students between 2013 (lifetime: 36.9%, 30-day: 19.7%) and 2015 (lifetime: 38.0%, 30-day: 21.2%)
- However, youth perception of risk has decreased, with fewer respondents viewing regular marijuana use as risky in 2013 (54.0%) compared to 2015 (48.0%).
Adult and Adolescent Use Patterns since Legalization

- The highest rates of past 30-day marijuana use were seen among young adults ages 18-25 (26.1%) and high school juniors (26.3%) and seniors (27.8%), with a male preponderance among adult users (16.9% versus 10.0%).

- People of any age who identified as gay, lesbian, or bisexual were much more likely than heterosexuals to use recently (36.9% versus 12.4% in adults; 34.9% versus 19.5% in youth).

- No clear difference in usage by race/ethnicity among adults, except lower among Asians. Among youth, multi-racial students had the highest use (28.0% versus 19.5% among White youth).

Methods of Use

- Among adults, smoking was the most common method of use (83.2%), followed by eating (34.4%) and vaping (32.4%).

- And while the majority of users (among both adults and youth) indicated smoking it, about half also reported multiple use methods (vaping, edibles, dabbing, etc.).
Dabbing

- Dabs are concentrated, wax-like doses of cannabis made using a solvent like butane or carbon dioxide
- Popular because they can contain up to 90% THC
- Dabs are sometimes called butane honey oil, budder, shatter or wax. Dabs are usually smoked using a water pipe (bong)
- Dabs are often placed onto a glass surface heated with blowtorch. The resulting smoke is inhaled.

Patterns of Use - Summary

- Data available do not suggest a substantial increase in current marijuana use among Colorado adults and youth
- Higher current use among certain demographics (men, low income, GLBT, lower education levels)
- Methods of use show mostly smoking with co-use of edible products
- Possibility for child exposure through secondhand smoke and edibles
- Concerns about use during pregnancy and breastfeeding
Monitoring Health Outcomes

- Adverse events
  - Emergency Department Visits
  - Hospitalizations
  - Calls to poison center

Summary of hospitalization and ED data

- Increase in hospitalizations with marijuana-related codes by 70% between 2013 and 2015.
- ED visits increased 19% between 2013 and 2014, with a disproportionate increase among tourists, but decreased 27% between 2014 and 2015, to a rate lower than in 2013.
- However, overall hospitalization and ED visits related to marijuana remain quite small in comparison to alcohol (five times as many alcohol-related ED visits and nearly three times as many hospitalizations)
- Multiple limitations of this type of data
Driving Under the Influence (DUI)

State Patrol data for the first 10 months of 2016 show that DUI's where marijuana was noted as an impairing substance were 16% higher than the same period in 2014.

Fatalities where the driver tested positive for cannabinoids increased by 80% between 2013 and 2015.

Changes in testing practices might contribute to these increases. Additionally, fatality data do not indicate whether the driver was impaired or at fault.

Reviewing Scientific Literature
Defined Expertise and Representation

- Drug epidemiology
- Surveillance epidemiology
- Medical toxicology
- Pediatric Medicine
- Rocky Mountain Poison and Drug Center
- Psychiatry/Drug Addiction
- Pharmacology
- Pulmonary Medicine
- Obstetrics and Gynecological Health
- Local public health representative
- Colorado School of Public Health representative

Topics Covered

- Marijuana Use During Pregnancy and Breastfeeding
- Potential Neurological and Mental Health Effects
- Potential Health Effects on Youth and Unintentional Poisonings
- Marijuana Dose and Drug Interactions
- Potential Extrapulmonary Effects and Injuries
- Potential Respiratory Effects and Lung Cancer
CDPHE Goal
Translate Science into Public Health

- Develop consensus statements that convey the quality and quantity of scientific evidence behind a finding
- Translate consensus statements into plain language statements in a standardized way
- Guide the development of evidence-based prevention campaigns

Findings Summary
Effects on exposed offspring of maternal marijuana use during pregnancy and breastfeeding

<table>
<thead>
<tr>
<th>Moderate Evidence</th>
<th>Limited Evidence</th>
<th>Insufficient Evidence</th>
<th>Mixed Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreased growth</td>
<td>Stillbirth</td>
<td>Psychosis symptoms</td>
<td>Preterm delivery</td>
</tr>
<tr>
<td>Decreased IQ scores in young children</td>
<td>SIDS (evidence of no association)</td>
<td>Breastfeeding and SIDS</td>
<td>Low birth weight</td>
</tr>
<tr>
<td>Decreased cognitive function</td>
<td>Increased depression symptoms</td>
<td>Initiation of future marijuana use</td>
<td>Small for gestational age</td>
</tr>
<tr>
<td>Attention problems</td>
<td>Delinquent behavior</td>
<td></td>
<td>Decreased birth weight</td>
</tr>
<tr>
<td></td>
<td>Isolated simple ventricular septal defects</td>
<td></td>
<td>Newborn behavior issues</td>
</tr>
<tr>
<td></td>
<td>Decreased academic ability</td>
<td></td>
<td>Breastfeeding and infant motor development</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Birth defects, including neural tube effect, gastroschisis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Frequency of use during adolescence</td>
</tr>
</tbody>
</table>
### Weighing & Creating Statements

<table>
<thead>
<tr>
<th>Evidence Statements</th>
<th>Public Health Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scientific/Clinical Language</strong></td>
<td><strong>10th Grade Language Level</strong></td>
</tr>
<tr>
<td>Substantial</td>
<td>“is strongly associated with…”</td>
</tr>
<tr>
<td>Moderate</td>
<td>“is associated with…”</td>
</tr>
<tr>
<td>Limited</td>
<td>“may be associated with…”</td>
</tr>
<tr>
<td>Mixed</td>
<td>“there is conflicting research for whether or not…”</td>
</tr>
<tr>
<td>Insufficient</td>
<td>(No Statements Made)</td>
</tr>
</tbody>
</table>

There is no known safe amount of marijuana use during pregnancy. THC can pass from mother to the unborn child through the placenta. The unborn child is exposed to THC used by the mother. Maternal use of marijuana during pregnancy is associated with negative effects on exposed offspring, including decreased academic ability, cognitive function, and attention. Effects may not appear until adolescence. THC can be passed from the mother’s breast milk, potentially affecting the baby.
Research Gaps

- Cannabidiol (CBD) and other cannabinoids
- Other methods of use
- Miscarriage
- Potency
- Why pregnant/breastfeeding women use
- Breastfeeding
  - Effects on infants
  - Length of time THC remains in breast milk
  - Replication of presence of THC in breast milk, including comparison of amount of THC in breast milk to maternal blood THC levels
  - Studies to correlate urine THC levels with presence of THC in breast milk

Jan 2017: New Evidence Review from National Academy of Sciences (formerly IOM)

CONCLUSIONS FOR PRENATAL, PERINATAL, AND NEONATAL EXPOSURE

There is substantial evidence of a statistical association between maternal cannabis smoking and:
- Lower birth weight of the offspring

There is limited evidence of a statistical association between maternal cannabis smoking and:
- Pregnancy complications for the mother
- Admission of the infant to the neonatal intensive care unit (NICU)

There is insufficient evidence to support or refute a statistical association between maternal cannabis smoking and:
- Later outcomes in the offspring (e.g., sudden infant death syndrome, cognition/academic achievement, and later substance use)

The committee did not identify enough quality literature to comment on associations between breastfeeding and cannabis use
Guideline Development

1. Group of 8-10 medical professionals with expertise in the area
2. Draft guidance based on public health statements
3. Internal and key stakeholder review
4. Refine draft
5. Focus groups with 20-40 related health care providers
6. Last draft of guidelines
7. Pilot test in clinical settings
8. Final version released

Clinical Guidance Documents

Marijuana Pregnancy and Breastfeeding Guidance
   For Colorado Health Care Providers
Pediatric Exposure Prevention Clinical Guidance
   For Colorado Health Care Providers For Discussions with Children / Adolescents Ages 9-20
Pediatric Exposure Prevention Clinical Guidance
   For Colorado Health Care Providers For Discussions with Parents or Guardians of Children / Adolescents Ages 0-20
CME Credit Available

One hour of Clinical Medical Education credit available through

www.CO.Train.org

Healthcare providers and the internet are the most trusted sources for information about marijuana use during pregnancy or while breastfeeding.

Women trust YOUR knowledge
What Women Want to Know

Women are most interested in learning about:

1) Side effects as far as development and growth.
2) Long-term health effects for their babies
3) How THC is passed/stored in their baby's body.

Recommendations

• Screen for marijuana use at all well women visits, prenatal visits, delivery and postpartum visits

• Talk about marijuana use and encourage cessation before pregnancy or early in pregnancy
  - Educate patients on potential risks

• Discuss plans for breastfeeding early in pregnancy
Motivational Interviewing

• Can you tell me about why you are using marijuana? How does it help you?
• Do you want to stop using marijuana?
• How difficult do you think it will be to stop using marijuana?
• Do you think you can stop?

Talking with Patients: Effects

• No known safe amount of use during pregnancy
• Associated with negative effects on exposed children:
  - Decreased cognitive function
  - Decreased attention
  - These effects may not appear until adolescence
• Language for patients:
  - Using marijuana while pregnant may harm your baby. It may make it hard for your child to pay attention and learn, and make it harder for them to do well in school.
Talking with Patients: Medical Marijuana

The decision to continue medical marijuana use during pregnancy and/or breastfeeding is based on whether the benefits outweigh the potential risks to the baby.

- If using marijuana to treat a medical issue:
  - Talk to your patients about safer treatments

- If patient is using marijuana for nausea, anxiety or sleep:
  - Talk to your patients about safer ways to deal with these issues

Testing

Marijuana is legal for adults over 21—but this doesn’t mean it is safe for pregnant moms or babies

- Some hospitals test babies after birth for drugs. If your baby tests positive for THC at birth, Colorado law says child protective services must be notified
- If you are concerned about a patient’s substance use, you can recommend testing of a mother during prenatal care and/or at delivery

  Testing Information:
  - Meconium testing generally identifies maternal marijuana use after 24 weeks gestation
  - Urine testing generally identifies maternal marijuana use after 32 weeks gestation
  - Umbilical cord testing generally identifies maternal marijuana use after 24 weeks gestation
Mandatory Reporting

Some hospitals test babies after birth for drugs. If a baby tests positive for THC at birth, Colorado law says child protective services must be notified. If you as a health care provider have a suspicion of abuse or neglect, it is your duty as a mandatory reporter to report child abuse or neglect.

Mandatory reporter training:
coloradocwts.com/community training
Colorado Child Abuse and Neglect Hotline
1-844-CO-4-KIDS

SUBSTANCE ABUSE TREATMENT

No Wait, No Judgment, Just The Help Your Patient’s Need -

• If your patient is pregnant or a mother with young children, she is a priority for drug and alcohol treatment. Treatment is available, and her children are welcome, too.

• All treatment is confidential and nonjudgmental.

• These treatment options accept Medicaid or offer a sliding scale.

• Resources available on health dept site, such as Special Connections, a program for pregnant women on Colorado’s Medicaid Program who have alcohol and/or drug abuse problems.
Campaign Objectives

1. Provide educational information about the health effects and risks associated with using retail marijuana during pregnancy and breastfeeding to empower women to make informed decisions.

2. Help encourage conversations between women and their healthcare providers and provide resources to support a positive, open and honest conversation.

Research
Spectrum of Risk

- Salty foods
- Going in a hot tub
- Caffeine
- Lifting heavy items
- Sugar
- Impact sports
- No sleep
- Stress
- Minimal prenatal care
- Poor diet
- Heat
- Marijuana
- Domestic violence
- Tobacco
- Hard drugs
- Alcohol

Low Risk

High Risk

Campaign Materials
Fact sheets for patients, clients

Fact sheets available in multiple languages
Download at Colorado.gov/marijuana

- Spanish
- Korean
- Vietnamese
- Chinese
- Somali
- Arabic
Patient FAQs on Website

goodtoknowcolorado.com/health-effects/pregnant-and-breastfeeding-mothers

- **It's natural, so doesn't that mean it's safe?** Not all natural substances or plants are safe. Lead, tobacco and poisonous berries are great examples. Marijuana contains THC, which may harm a baby.

- **What about using it for medical reasons?** A doctor can recommend marijuana in special cases, so a doctor can decide whether the benefits are greater than the risks. It is unsafe to use any medicines while pregnant or breastfeeding that are not recommended by a doctor. Talk to your doctor about safer choices that do not risk harming your baby.

- **Don't cannabinoids occur naturally in your body?** Some cannabinoids, called endocannabinoids, occur naturally in the body and in breast milk. These endocannabinoids help your nerve cells communicate better. However, THC from marijuana is much stronger than your natural endocannabinoids. THC can upset the natural endocannabinoid system in your body. Pregnant and breastfeeding mothers should not use marijuana to avoid any risks of THC.

- **Is it still harmful if I vape or eat it instead of smoke it?** If you consume marijuana, you are consuming THC, which is passed to your baby and can cause harm.

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**Questions?**

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