Care of Pregnant and Parenting Women and Their Children Affected by Substance Use Disorders: Designing a Care System Around the Family Medical Home

Presentation to Indian Health Services Clinical Rounds

In collaboration with CONACH AAP

And IHS Clinical Support Center

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Conflict of Interest Statement

- IHS Clinical Support Center is accredited sponsor
- No off label drug use recommendations
- No financial interests to disclose
- No actual families are depicted in this presentation

Objectives for Presentation

At the end of this presentation, attendees will be able to:

- Develop a tiered screening strategy for substance use in early pregnancy.
- Plan for integrated care for pregnant women with substance use disorders.
- Collaborate to provide a family medical home model of care with preventive home based early intervention, service coordination for children with in utero drug exposure (IUDE), and primary care for the parents including medication assisted treatment.

A Metaphor

- Three friends (dedicated health care providers) approach a wide, beautiful river. The idyllic scene is shattered by the cries of a small child in the water, flailing his arms while struggling to stay afloat. He's fast approaching the waterfall…

Manchanda, Rishi (2013-06-06). The Upstream Doctors: Medical Innovators Track Sickness to Its Source (Kindle Single) (TED Books) (Kindle Location 29). TED Conferences. Kindle Edition.

Familiar Feeling in Primary Care

Bwca.com

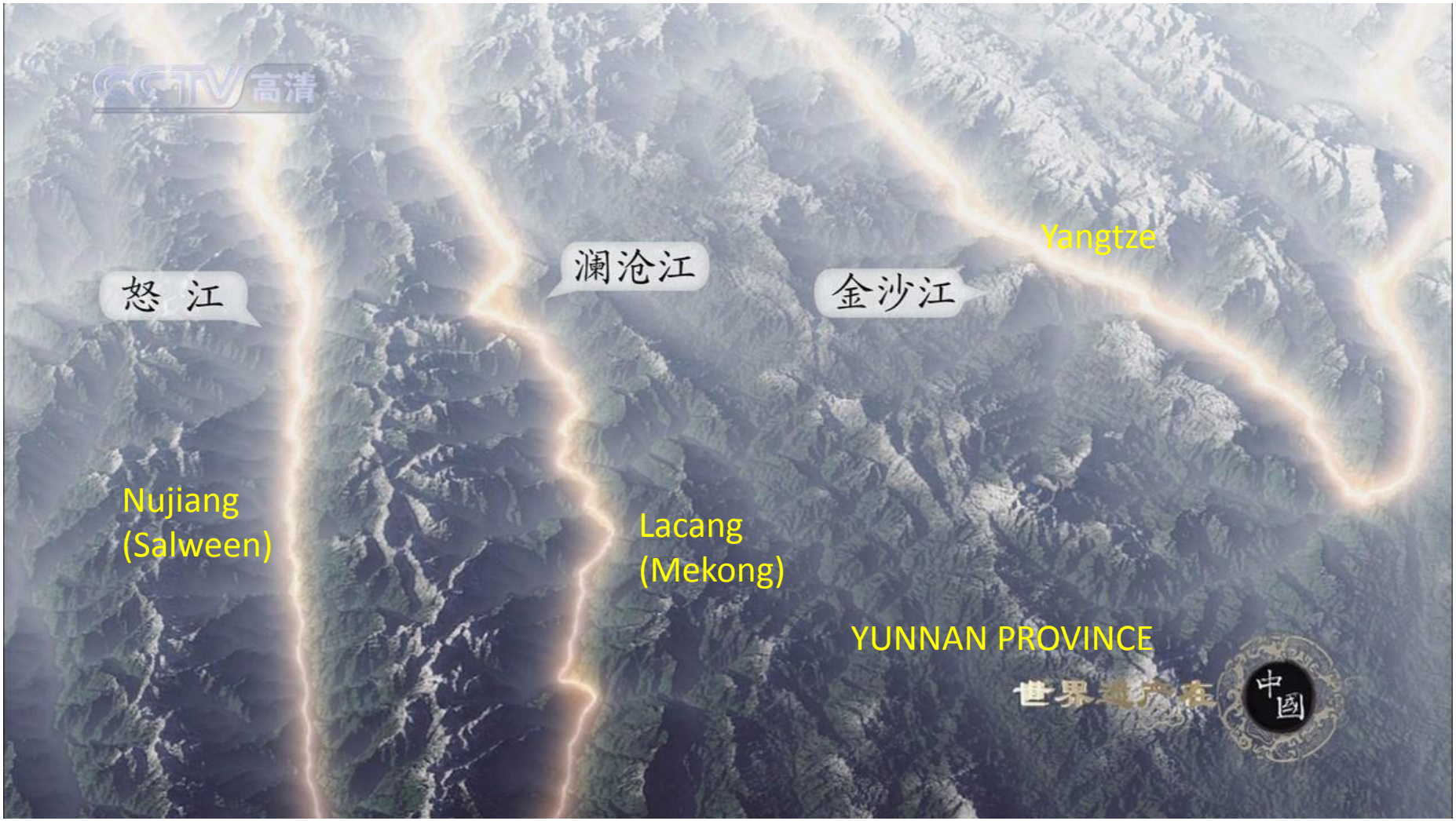
Description of A Family at Start of FOCUS Services 2010, First Stream

- 17 year old Eva sexually assaulted
- 2 year history of methamphetamine use
- Delivered baby LaMarcus at 35 weeks
  - He stayed in hospital 5 weeks
  - Difficulty with staying alert, feeding problems
- Eva living in home of boyfriend
- Boyfriend in prison out of state
- CYFD did investigation, felt home safe
- Discharged LaMarcus home to mom
- So many challenges and risks to life course

Mingyong glacier in Yunnan

Nature.org

The Role of Upstream Primary Care



Issues for Eva and LaMarcus After Discharge from Inpatient Unit

- Eva exploited in the boyfriend's home
- Hard to find teen drug treatment
  - Eva needed help with childcare
  - Boyfriend’s family unkind to infant
  - Infant looked like man who assaulted Eva
  - Eva needed help finding employment
- Eva had depression
- LaMarcus started with adversity
- Would Eva accept her new role?

Definitions: Addiction versus Substance Use Disorders

- Addiction
  - Primary, chronic **disease** of brain reward, motivation, memory and related circuitry creating a thought disorder
  - Involves cycles of relapse and remission
- **Unhealthy alcohol or other drug use**
  - Includes risky use, substance use disorder, and use in between

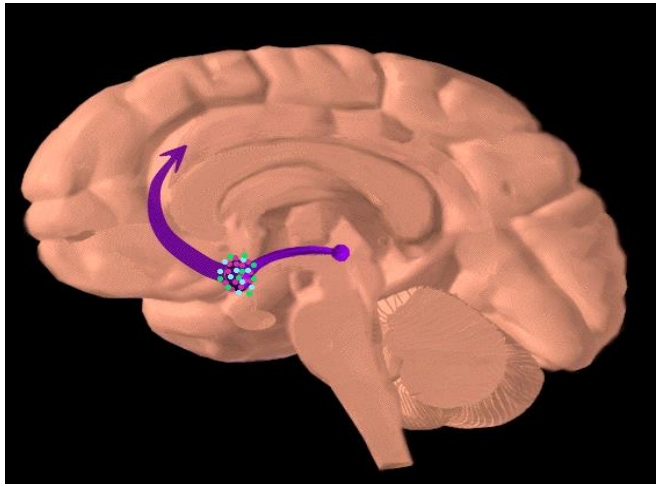


Illustration of pleasure and reward system;
Dopamine pathways from VTA and NA to pre-frontal cortex.

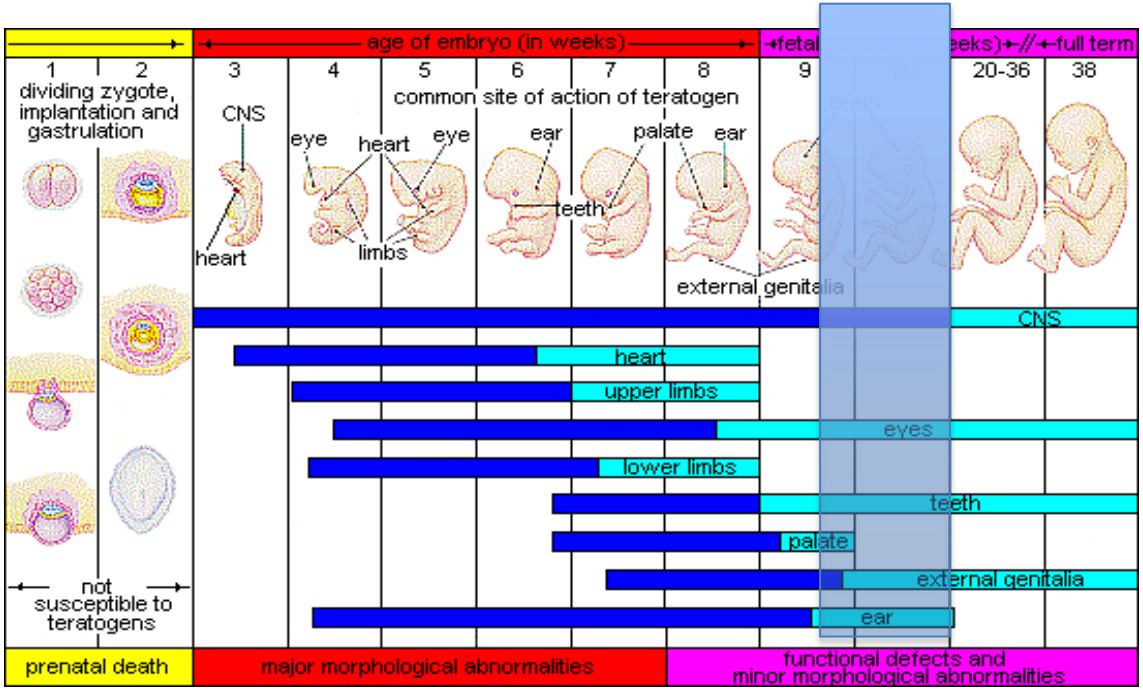
Implications for Pregnant Women and Brain Development of Fetuses

- Use, disorder, addiction all threaten brain development
- Definitions include multiple episodes of use
- Multiple chances for drugs to pass through placenta
  - Passive diffusion of drugs < 500 Daltons
    - Methamphetamine 149 Da
    - Buprenorphine 467 Da
    - Tetrahydrocannibinol 314 Da

  - Ethanol equilibrates across membranes in 20 minutes
- First trimester use threatens brain structure
- Second and third trimester use threatens connections
- Continued disregulation in brain of mother

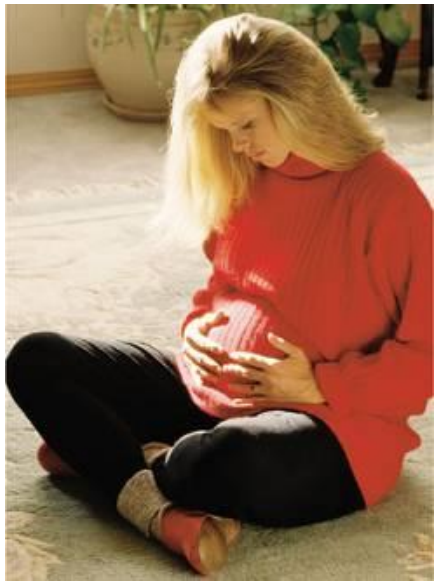
Impact of Use on Fetal Brain

- Impact on fetal brain development depends on
  - Timing of use in fetal development
  - Sensitive windows of neuroreceptor development
    - Expression in 11-16 weeks gestation
    - Impact on enkephalin (Opioid Growth Factor) growth regulation
    - Dopamine transporter affected by methamphetamine
    - Cannibinoid, GABA, Glutamate, serotonin systems altered



Tiered Screening Approaches in Prenatal Care Moving Further Upstream

- 4P's screening form information
  - Predicts who will continue use through pregnancy
  - The most helpful questions were
    - History of use "Have you ever drunk beer, wine, or liquor?"
    - "Did either of your parents ever have a problem with alcohol or drugs?"
    - Wells, McCurties, Chasnoff NTI 2007
- Comprehensive PNC for all women
  - Repeated history taking at visits
    - Confirming past and current substance use
    - Urine drug screening as indicated



DESCRIPTION OF PARTS OF AN INTEGRATED CARE SYSTEM

- Program efforts directed to pregnant women with substance use disorders
- Data from FOCUS/Milagro program efforts in Albuquerque
- Primary care, gender specific behavioral care, and prenatal care for pregnant women with substance use disorders
- Hospital management of delivery and newborn care including withdrawal
- Early intervention and preventive services for infants born with in utero drug exposure

Kaiser Early Start Program; Universal Screening of All at First Prenatal Visit

- Women screened and assessed and/or treated
  - Less chance of premature delivery
  - More mental health care accessed
  - Higher appropriate costs for delivery
  - Fewer low birthweight infants
- Infants born to women in program
  - Fewer needing ventilator care
  - Slightly higher birth costs
  - Slightly higher costs in first year of life
  - Minimal early intervention services used
  - No long term developmental or growth data

Los Pasos (preceded FOCUS) Research Questions; Birth Outcomes

For women using heroin and cocaine compared to women <u>not</u> using heroin and cocaine:

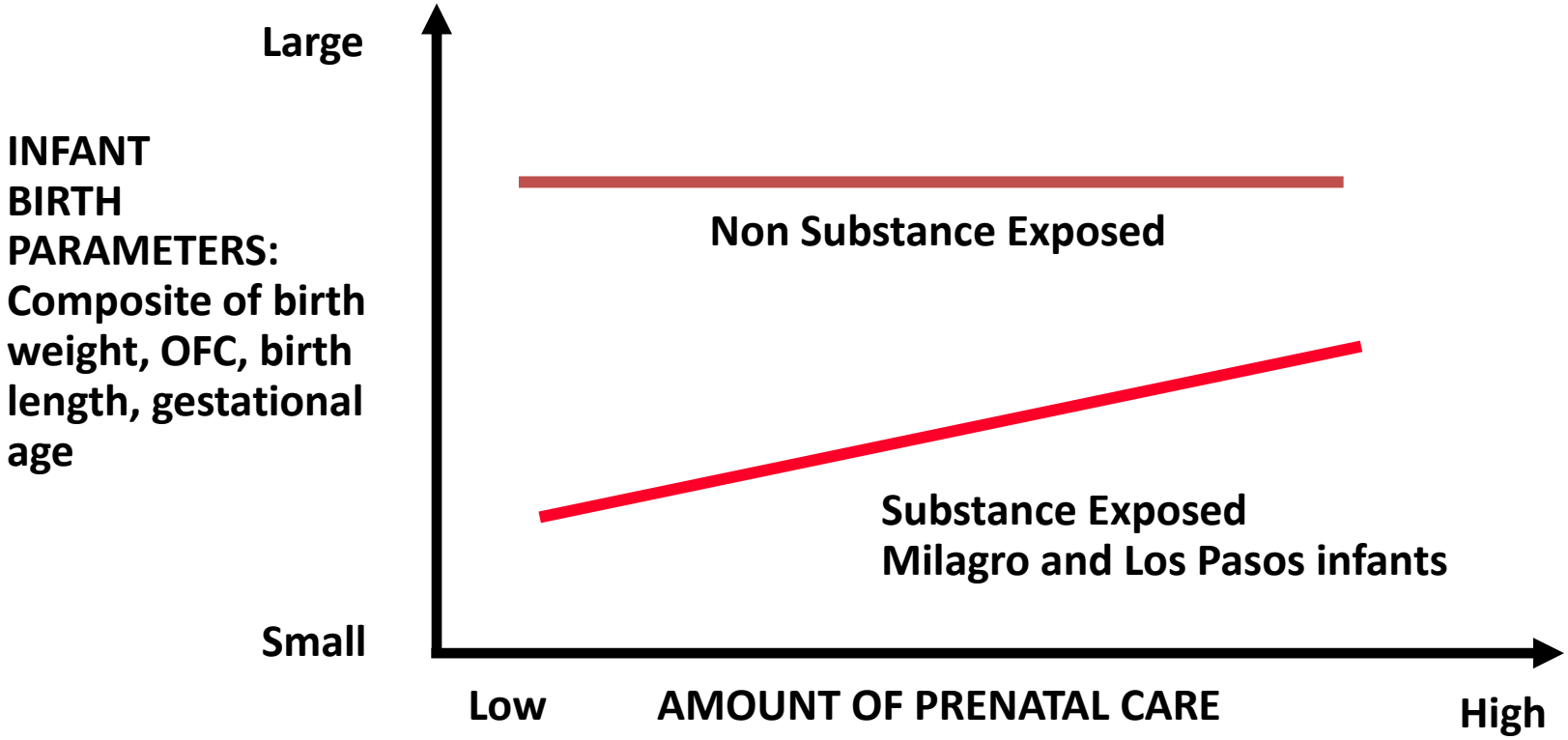
- **Does prenatal care affect the birth parameters of infants born to both groups of women?**
- **Does incorporation of comprehensive drug treatment into a prenatal program improve the birth parameters of infants born to women using heroin and cocaine?**

Comparison group shared low income status

Extracted data on infant weight, length, and head size and constructed composite measure

Effects of Prenatal Care on Birth Outcomes

- 505 Mother - infant pairs in care from 1990-92
  - 127 women participating in Milagro program (OB + drug treatment)
  - 180 women using cocaine, heroin, or methadone receiving standard prenatal care (no documented drug treatment) enrolled in Los Pasos
  - 198 women without history of alcohol, tobacco, or drug use



Conclusions from Los Pasos Evaluation

- Prenatal care improved birth gestation and fetal growth
- Not correlated with specialized OB services; high risk OB
- Full drug treatment not essential to improve outcomes
- Use of heroin and cocaine during pregnancy did not reduce attending extended prenatal care
- Possible biasing factors for high level of care
  - Greater commitment to pregnancy so accessed more care
  - Better transportation
  - Different intensity of cocaine and heroin use
- Drug treatment may set stage for early childhood service

More Discoveries From Evaluation

- 6 of 180 women in Los Pasos accessed drug treatment
- Drug treatment systems created barriers
  - Limited availability of methadone programs in pregnancy
  - Counseling modeled on male treatment approach
  - System struggled to treat dually diagnosed
  - Presenting with psychiatric disorders sent to mental health
  - Women with drug use not treated for mental illness until drug treatment started

- Drug treatment had no facilities for young children
- Counseling did not recognize women's role as parents

Examples of Comprehensive Prenatal Programs, Milagro/FOCUS and Early Start

- Prenatal care at high level Milagro/FOCUS at UNM
  - Obstetricians, Family Medicine increased kept visits
  - Better birth outcomes
  - Not dependent on going to drug treatment
- Early Start Program in Kaiser OB clinics
  - Universal screening for alcohol and drug use
  - Assessment by social worker, mean of 2.5 contacts
  - Better birth outcomes
  - Much less costs compared to women only screened who did not access assessment with social worker

Concepts That Influenced Developing the Service System for Pregnant Women with Substance Use

- In NM study of women presenting for pregnancy testing 1991-95 (+ test ~6 weeks after last period):
  - 38% alcohol use, 20% marijuana use in month before testing
  - 4% cocaine, methamphetamine 2.8%, opioid 1.1%
  - Use of all substances correlated with reported partner use
  - Women intending pregnancy had less use
- Adverse Childhood Experiences in lives of women
  - Psychological abuse, physical abuse
  - Sexual abuse experienced by women
  - Home environment stressors in women's families of origin

Kaiser and CDC Study of ACEs Among Adults Receiving Preventive Care

1. **Childhood psychological abuse** **11%**
2. **Childhood physical abuse** **11%**
3. **Childhood sexual abuse** **22%**
4. **Family member abused alcohol or drugs** **26%**
5. **Loss of biological parent** **22%**
6. **Family member mentally ill or suicidal** **19%**
7. **Violence directed against the child's mother** **13%**
8. **Family member imprisoned** **4%**

•Parents ever separated or divorced 23%

64% of Insured Middle Class Adults Had At Least 1 Adverse Childhood Experience

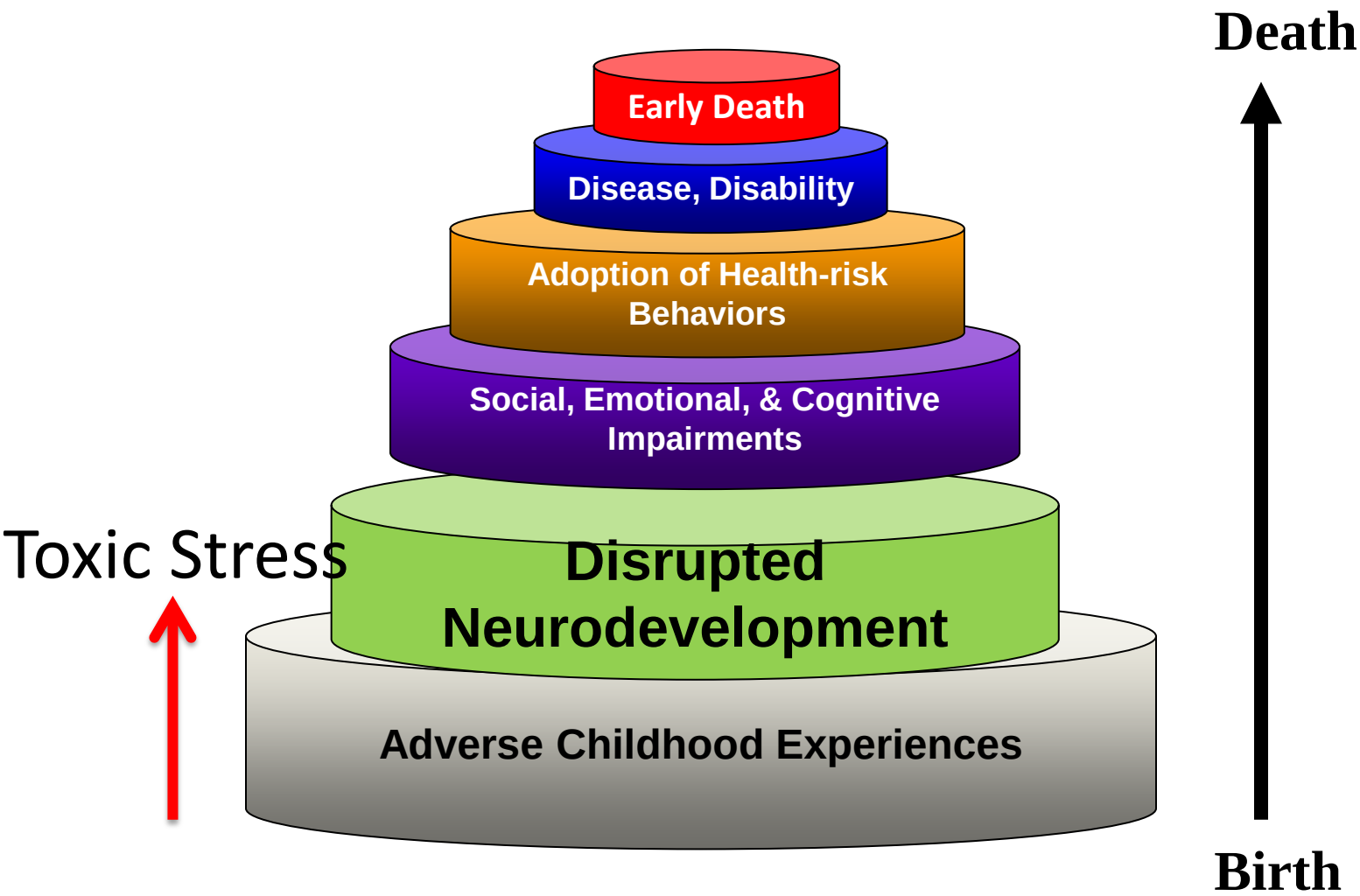
- Adults with 0 36.1%
- Adults with 1 26.0%
- Adults with 2 15.9%
- Adults with 3 9.5%
- Adults with 4 or more **12.5%**

No data on numbers of events or intensity within a single type of adverse experience

ACEs Cause Toxic Stress, Affect Brain Development and Health Risk Behaviors

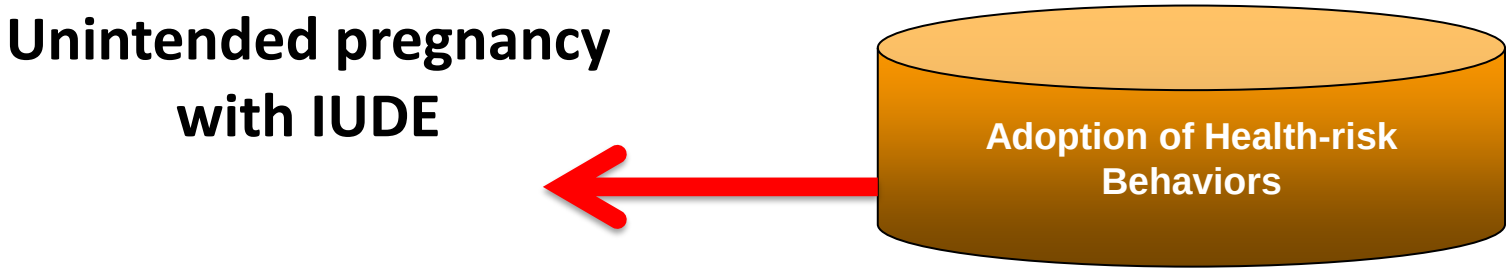
- *Positive stress* causes minor physiological changes
- *Tolerable stress*:
  - Death of a loved one, a natural disaster, family disruptions
  - With support of loved one tolerable stress can be overcome
  - Without support, stress can become toxic to child
- Toxic stress in brain is response to ACEs
- Exceeds children's coping mechanisms
- Stress system activated for prolonged time
  - Leads to permanent changes in developing brain
  - Negative effects can be lessened with support

Influence on Service System Planning
Effects of ACEs on Risks Behaviors and Health



Stream 2; Pregnancy and Opiate Addiction; High Risk Impact on 2nd Generation

- Michelle, 34 year old G4P3, presents to emergency room at 16 weeks gestational age in withdrawal.
- History of IV heroin use from 16 to 30. Had drug treatment on methadone for 3 years, relapsed.
- She wants to know if you can "help her"?
- She wants whatever is safest for baby and that she wants to be able to keep her baby and breastfeed



Michelle's History at Induction for Opioid Substance Use Disorder

Previous children live with father, Richard. She had past history of IV heroin use for 3 previous children.

Started on oxycontin after MVA 2013 and relapsed to IV heroin use. Has acquired Suboxone* from street sources.

Acknowledges daily marijuana use and smokes five cigarettes a day.

UDM positive for opiates, buprenorphine, THC, and methamphetamines

*Suboxone = buprenorphine + naloxone,
taken under tongue no absorption of naloxone

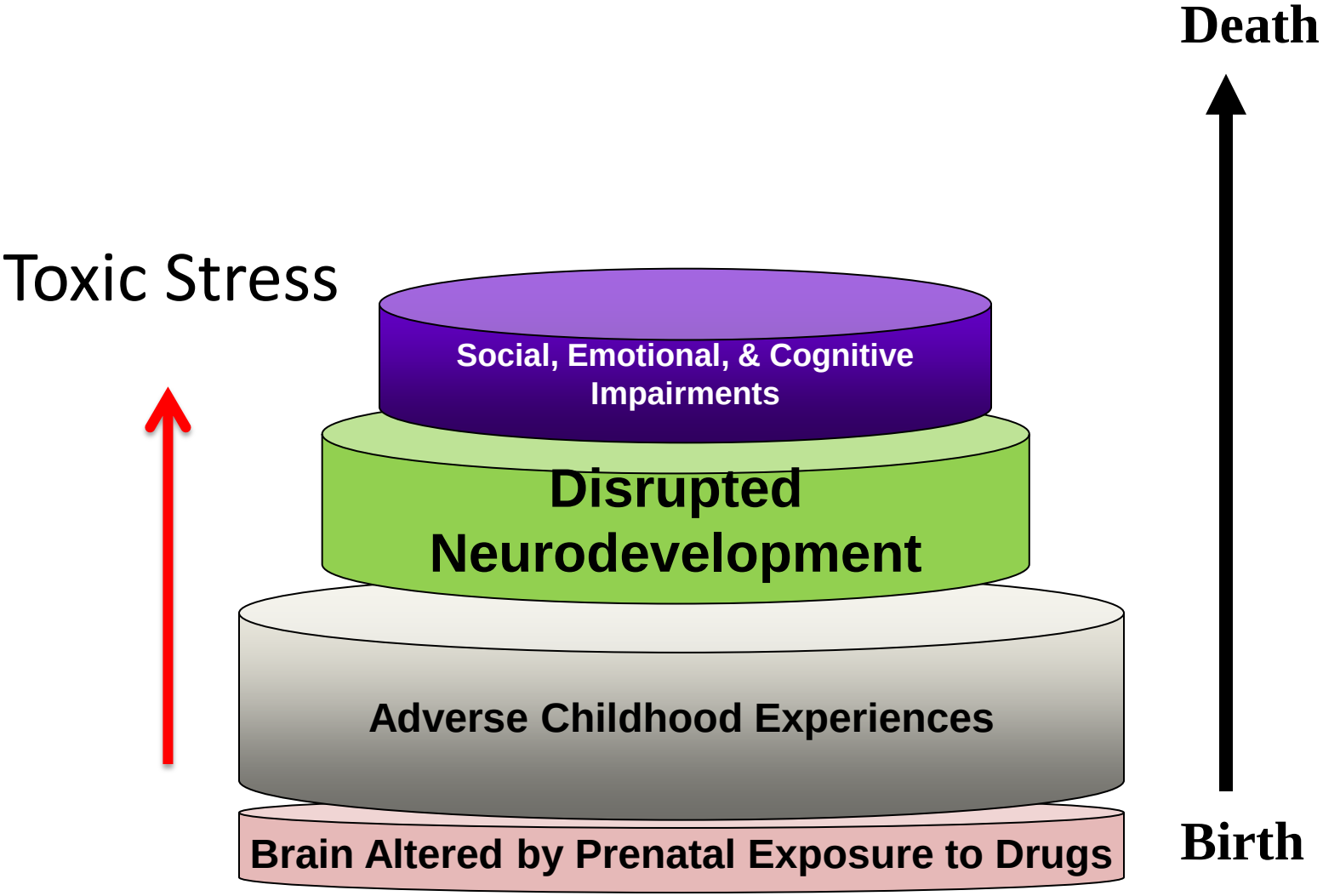
Stream 2; Michelle's First Family; ACEs/Toxic Stress, Early Brain Development, Health Risk Behaviors

- Michelle had 3 children, Carl, Curtis, and Cheryl
- Father ordered by CYFD in 2010 to bring Carl for EPSDT
  - 2008, Carl, the oldest kid, at age 12 set their porch on fire
  - CYFD investigated the family; Cheryl, Curtis, Carl
    - Richard not able to control Carl
    - Chronic truancy for all 3 kids in family
  - Carl placed in residential treatment with heavy alcohol use
  - Curtis and Cheryl sent to treatment foster care for 2 years

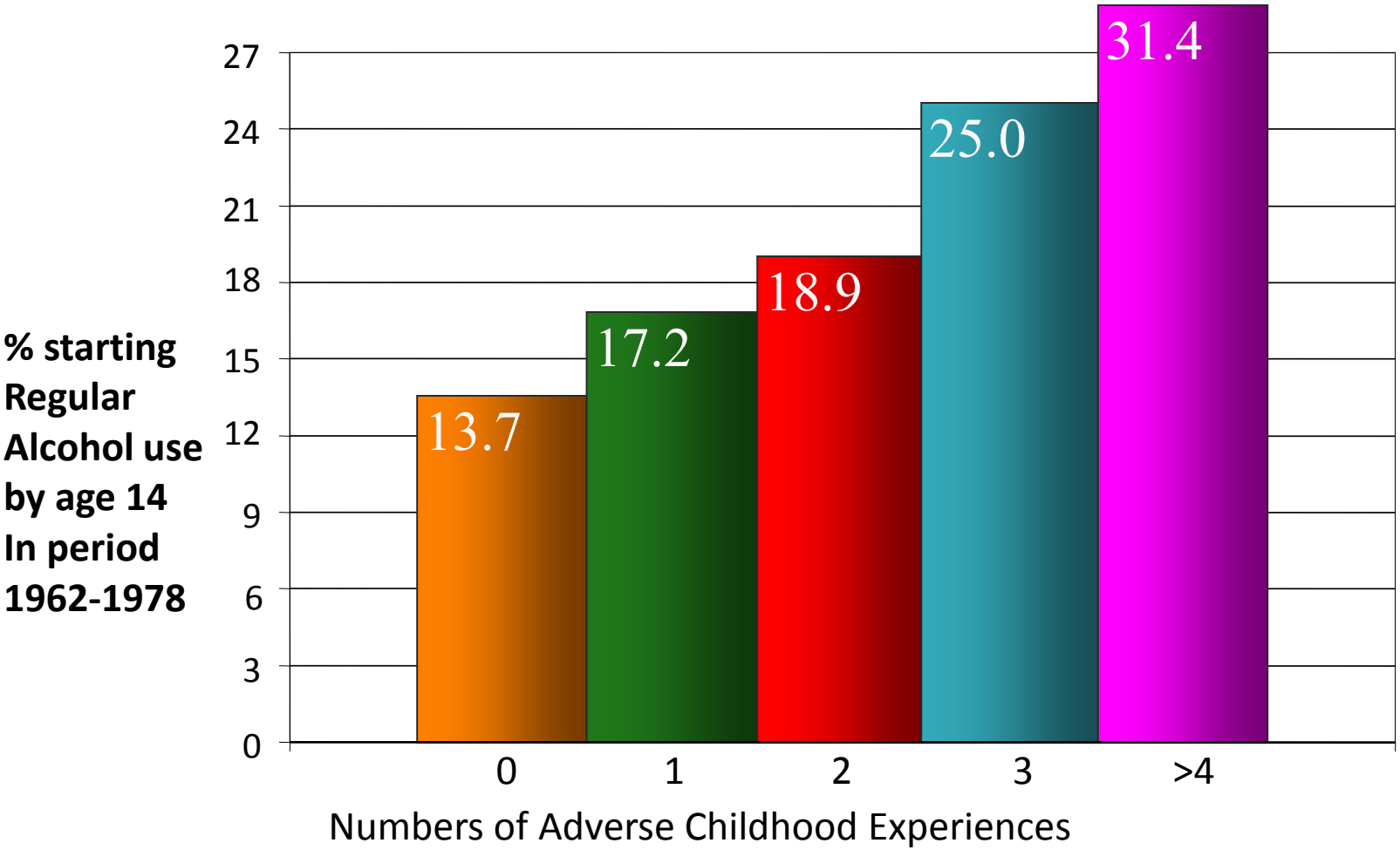
Toxic Stress Caused Distress that Michelle's Older Children Could Not Manage

- Toxic Stress caused brain changes over years
  - Child maltreatment, includes neglect and abuse
  - Carl, Curtis, and Cheryl lived through parents' violence
  - Lived through Michelle's drug use episodes
  - History of violence between Richard & Michelle
- Richard had untreated mental illness as father
- Events exceeded children's coping mechanisms

Relating ACEs to Carl's Brain Development In Michelle and Richard's Home



Individuals with ACEs Find Ways of Dealing with Toxic Stresses; Carl and Risks for Alcohol Use



Relative Risks of Health Behaviors Associated with Risks for Early Death

Richard and Michelle's Effect on Carl

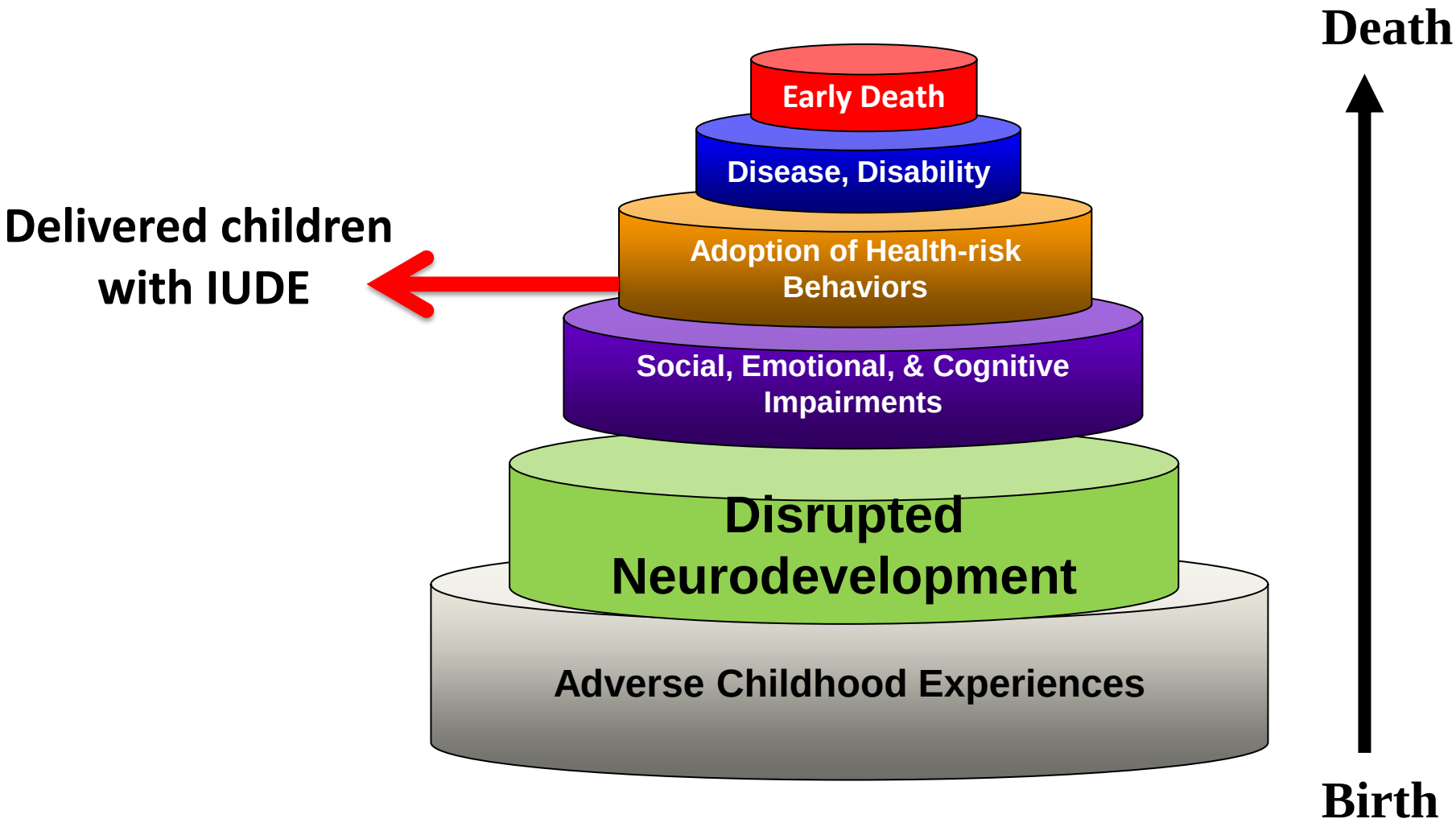
ACE score	Alcoholism	IV Drug Abuse	Attempted Suicide
0	1.0*	1.0*	1.0*
1	1.9	1.0	1.8
2	2.1	2.5	4.0
3	2.7	3.5	4.0
4	4.5	3.8	7.2
≥5	5.1	9.2	16.8

Carl age 12

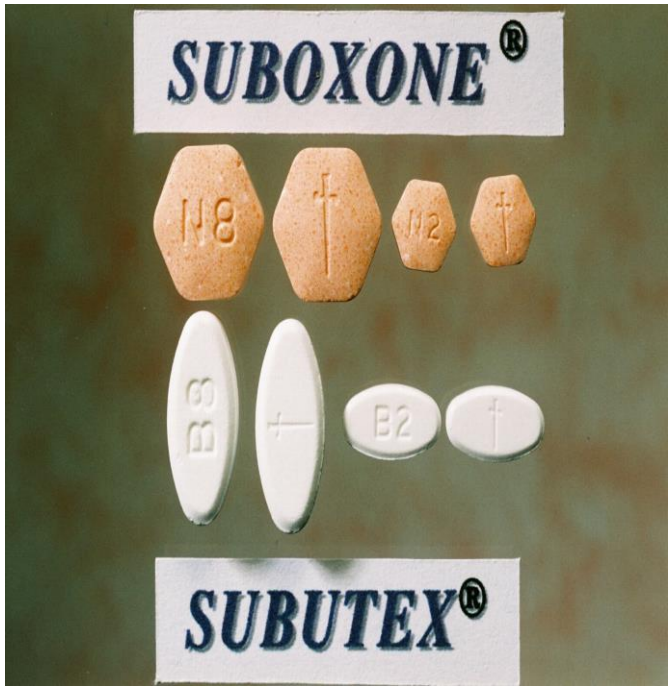
Michelle as adult

* 0 adverse events set as standard risk

Risks Behaviors and Health; Michelle's Possible Outcomes



Buprenorphine and Pregnancy Initiation Process; Upstream Care for Michelle



- Counseling about options for opiate addiction in pregnancy
- Urine drug screening; assess for polysubstance use
- Particular danger of concurrent benzodiazepine use
- US dating, anatomic survey, growth to r/o IUGR
- Assure coverage or resources for outpatient buprenorphine after initiation- Medicaid prior auth

Buprenorphine Treatment in Pregnancy; Changing Stream 2?

- Methadone and buprenorphine (Subutex) now acceptable options for opiate addicted pregnant women

- Acceptable: continue women already on buprenorphine
- Acceptable: initiate treatment ("Induction") in women using heroin or short acting prescription opioids
- Not acceptable: Transferring pregnant women on methadone to buprenorphine is NOT recommended
- Some women will fail primary care Rx of buprenorphine
  - Urine drug screens continue to have opiates + buprenorphine
  - Use of benzodiazepines with buprenorphine
  - Not attending counseling
  - May improve with daily administration of buprenorphine or methadone

Milagro/FOCUS as Medical Home: Entry to the Medical Home

- Intake history completed with Milagro Nurse
- Meets substance abuse counselor in clinic
- Prenatal care initiated
- Meets FOCUS manager
  - Enrolled for planned ongoing well child
  - Home based developmental care and case management until youngest child age 3
- Buprenorphine prescribed in Milagro & FOCUS
- Postpartum contraception

Prenatal Care in Milagro; Buprenorphine Medication Assisted Treatment

- 1-3 week visits prenatal care, buprenorphine refill
- Urine drug screen and urine buprenorphine test at each visit
- Assure outpatient counseling; coordinate with counselor, best if present in clinic setting
- Ultrasound for fetal growth at 32 and 36 week
- Repeat HIV, Hep C at 32-34 weeks if initial tests negative
- Consider repeat STD testing at 32-34 weeks
- Monitor for pregnancy related hypertension
- Same family medicine team involved with delivery

Collaboration for Integrated Care System for Infants with In Utero Drug Exposure

Medical home; prenatal, hospital care, outpatient

Management of Neonatal Abstinence Syndrome

Home based early intervention and service coordination

Data from program efforts in Albuquerque

Addressing 2 generation adverse experiences

Treatment of Infants with NAS: Parlor of the Medical Home

- Anticipating the birth of Michelle's baby, Stream 2
- Opioid exposure; observe for 96 hours
  - 50% morbidity & mortality for infants untreated
  - 90% needing medication symptomatic at 96 hours
- NAS Scoring system used
  - Observed by trained hospital staff
  - Scores < 5 indicate no NAS symptoms
  - Scores 6 to 7 are NAS; need comfort care and observation
  - Scores 8 or higher; or average of 3 scores >8; TREAT
- Medication management until scores < 5 for 48 hrs

UNM Protocols: Morphine or Methadone for NAS

- Morphine used for NAS in MOTHER Trial
- Protocol starts at low dose and titrates up
- Buprenorphine exposed babies with NAS averaged 4 days of treatment
- About 50% only needed observation
- Heroin, opioid, methadone exposed infants
  - 75% exposed require treatment for NAS
  - Treatment with methadone
  - Average length of treatment is 13 days

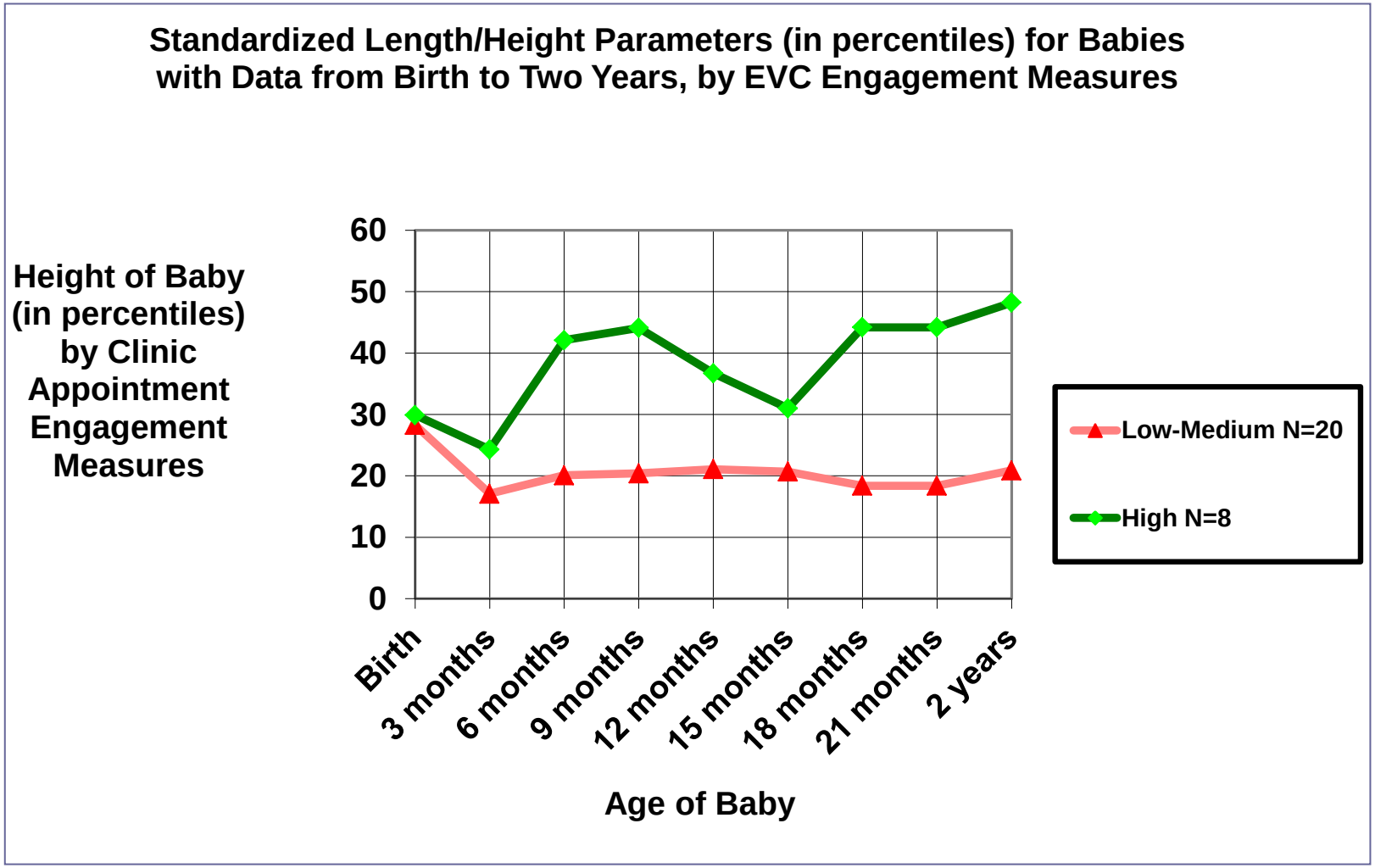
UNM Guidelines for breastfeeding and methadone or buprenorphine

- Must be HIV negative
- No active poly-substance use
- Hepatitis C not a risk if no bleeding from nipples, provide strong support
- Mother in MAT program
- Prenatal breastfeeding consult at Milagro/FOCUS clinic
- Guidelines consistent with those of Academy of Breastfeeding Medicine
- Plan to monitor infant if rapid wean occurs or is necessary

Issues for Eva and LaMarcus in the First Year of Life; Stream 1

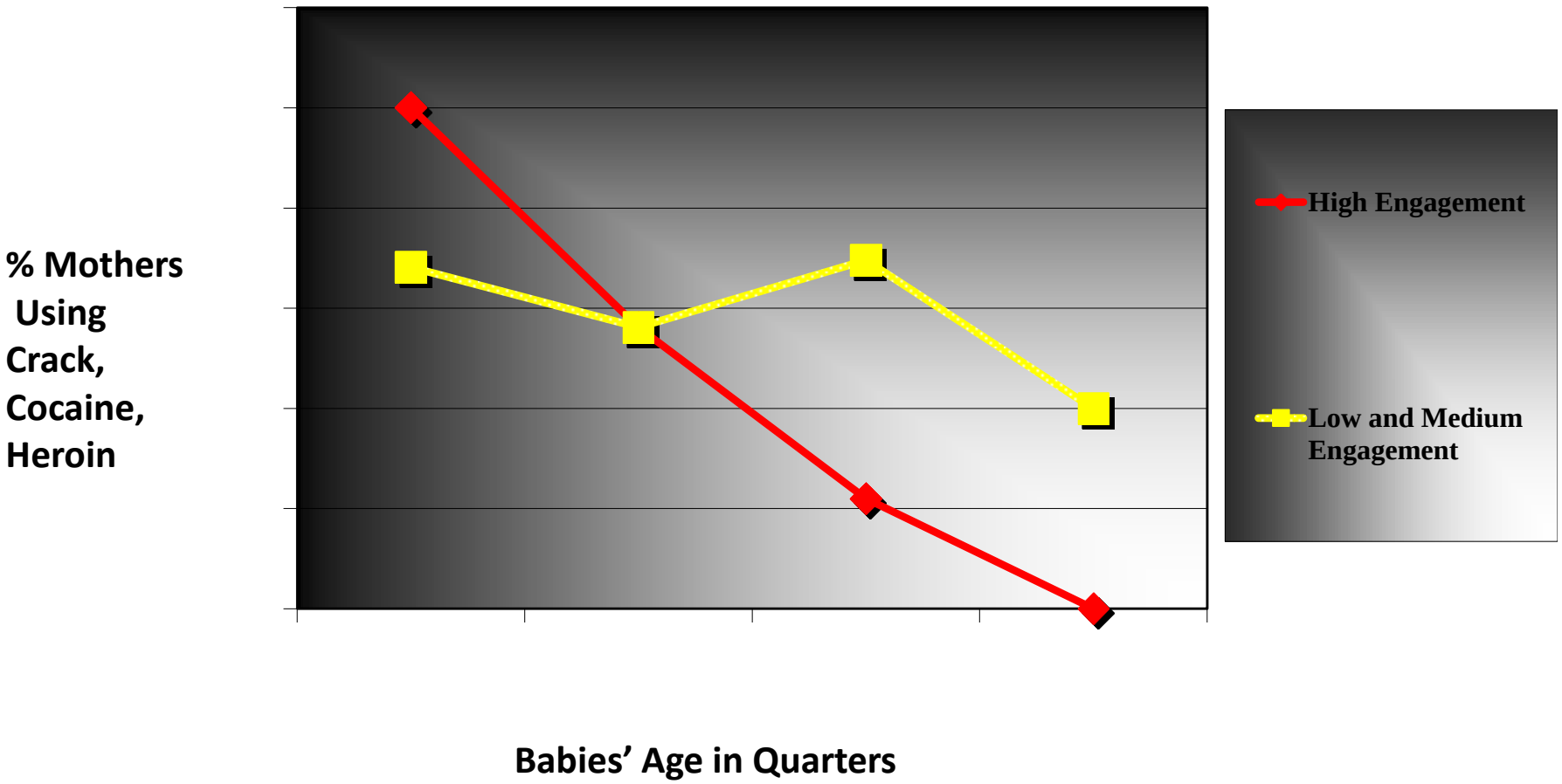
- Enrolling in the medical home kitchen
- LaMarcus had GERD, feeding problems
- Eva kept all FOCUS appointments
  - Used bus to come to FOCUS clinic
  - Allowed developmental specialist in home
  - Had parenting validated, felt supported
- Had a lot of phone contact with FOCUS
- Boyfriend released from prison
- Would he accept LaMarcus as his child?

Engagement and Height Change

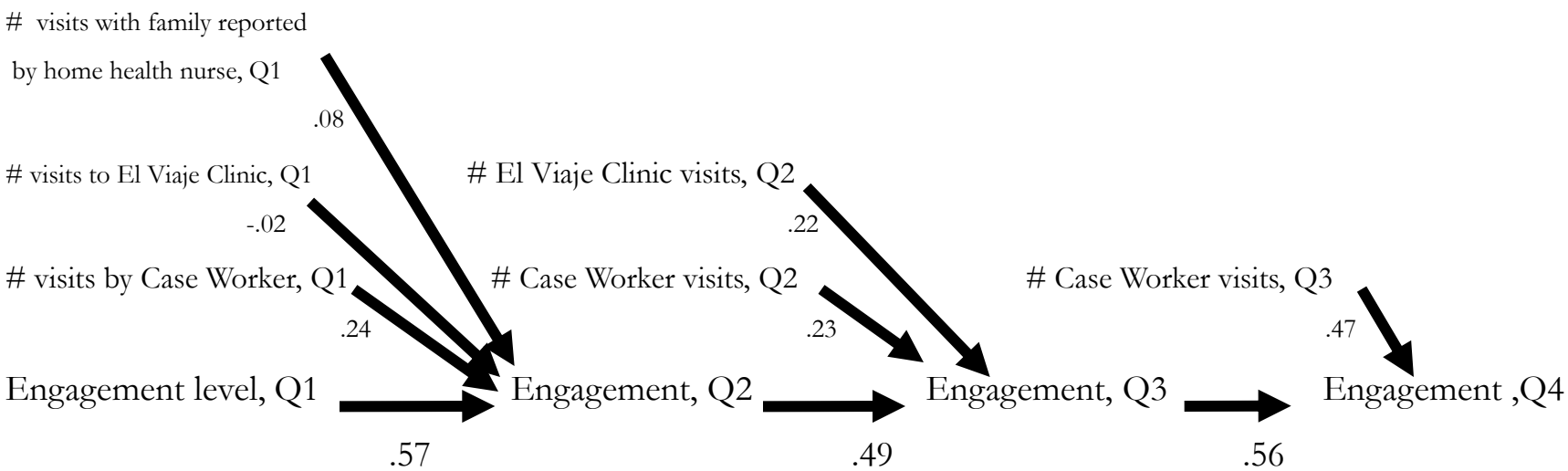


SDP = Service Delivery Plan, family determined goals for early intervention

Use of Cocaine, Crack, or Heroin by Engagement Level, Quarters 1-4



Program Activities from Preceding Quarter and Effects on Engagement



November 9, 1998
Los Pasos, University of New Mexico Hospital
Andrew Hsi, M.D.
statistics prepared by Richard P. Boyle, Ph.D, The Institute of Social Research, UNM

Factors Leading to Mothers' Success or Lack of Success

- Most successful
  - Program engagement
  - Personal motivation
  - Substance abstinence or reduction
  - Social support
  - Stable home
  - Employed or financial resources
- Least successful
  - Lack of engagement
  - Lack of motivation
  - Continued or increased substance use
  - **Psychiatric illness not treated**
  - Lack of social support
  - **Chaotic home**
  - **Unemployed or receipt of public assistance**
  - **Child custody problems**
  - **Legal Problems**

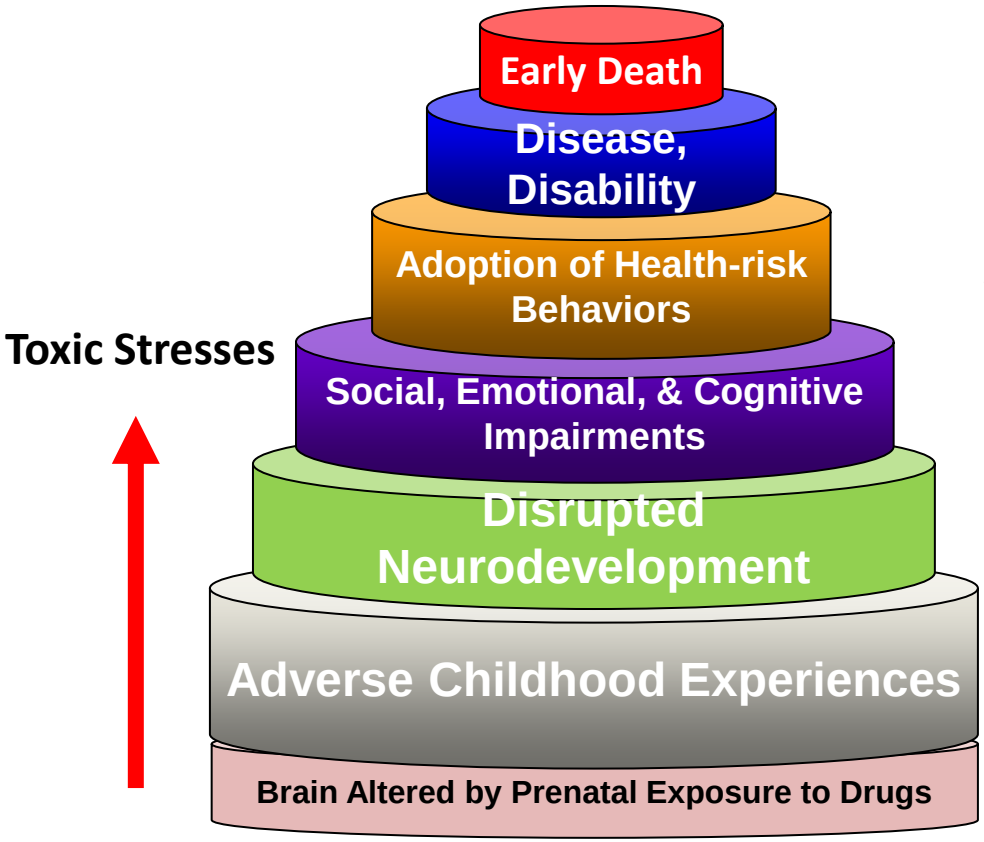
Building on Lessons

- Mothers (fathers) changed for their babies
  - Demonstrated capacity for good cue reading
  - Provided basic needs most of the time
  - Kept most medical appointments
- Engagement with program very important
  - Team respected parents, kept commitments
  - Supported access to basic needs
- Helped parents meet developmental milestones
- Met parents' needs by creating medical home

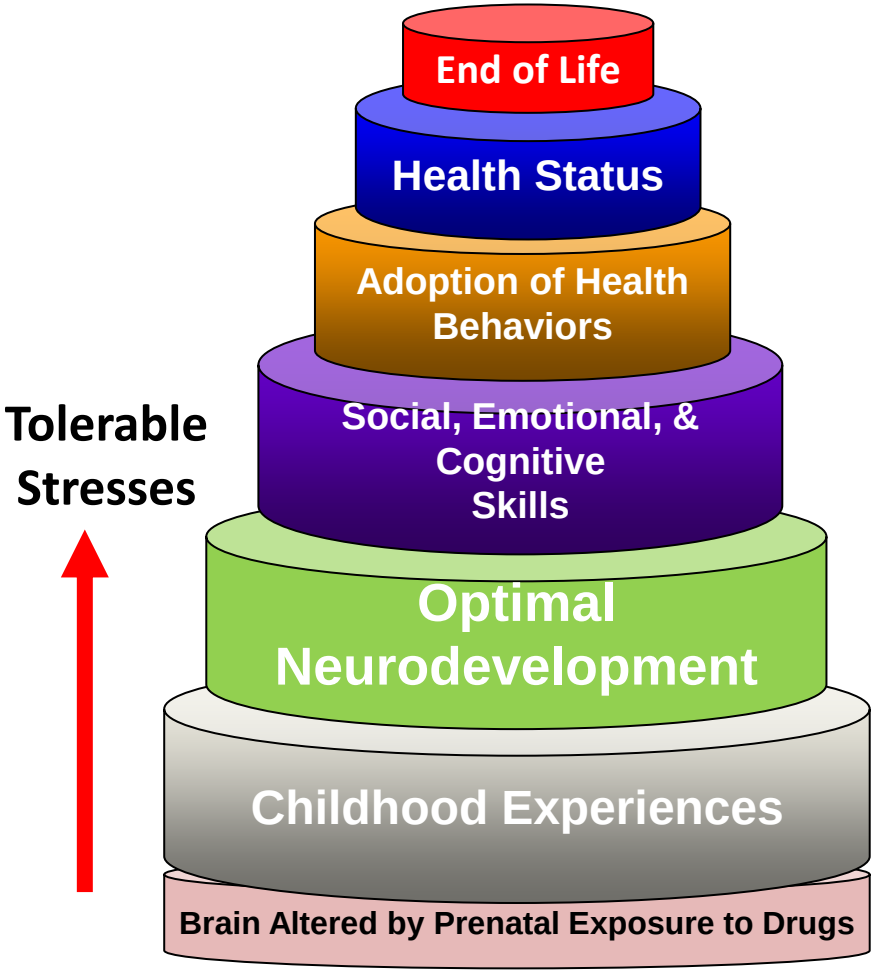
In the Kitchen of the Family Medical Home: Work to Reduce Adverse Childhood Events

- Address safety for mom and kids
- Anticipatory guidance to prevent neglect
- Support for isolated parents, parenting
  - Home based model for services
  - FOCUS Team available in clinic
- Review of current alcohol and drug use
  - Support of sobriety, harm reduction efforts
  - Suboxone MAT management
- Treatment for depression
- Primary health (large view) care
- Refer to UNM Clinical Law Program

Connecting the Concepts; ACEs, Stresses, and Life Course



Child like Carl in Stream 2



Child like LaMarcus in Stream 1

How Did Eva Make Changes in Her Life? Engagement with Medical Home Helped

- Completed drug treatment
- Completed GED
- Has stable relationship
- Employed at various jobs
- Eva married boyfriend, Victor
- Both active in church
- Both volunteer at church

Positive Attributes that Reduce Effects of ACEs

- Study of resiliency factors reassuring
  - Childhood support systems related to better outcomes
  - Attitudes and personal strengths helped resilience
  - Adult support systems supported individual
- More ACEs reduced resilience factors
- Kauai longitudinal study, 10% had ACEs
  - 1/3 did well over 50+ years
  - One adult who loved child unconditionally
  - Ability to attract positive attention, great talent
  - Adult gatekeeper in child's life
- The role of primary care may be a gatekeeper

Evaluation Findings for SELECTT Program (now FOCUS) 1997-2001

- Families enrolled; intensive vs standard services
- Randomized to service, all with prenatal drug use
- Large amount of service in intensive group
  - Case management for parents over 18 months
    - Treatment families had mean of 27.3 hours
    - Treatment families had mean of 10.75 hours home visits
  - Telephone calls frequent to treatment families
- Reduced depression in treatment families
- No significant differences with other SESS instruments (instruments for national study)

Families Receiving Intensive SELECTT Services and Success

- 13 successful at 18 mos.
  - 12 of 46 treatment
  - 1 of 51 control
- Some successes for 22 more in treatment group
- Prevention of child abuse
  - No kids in treatment referred to CYFD
  - 5 kids in control referred

FOCUS Team Approaches That Affect Engagement

- Interdisciplinary team developed
  - Models of care adapted based on evaluation and experience
  - Support of breastfeeding
  - Child development specialists by NM Part C definitions
  - Family medicine & pediatrics in primary clinics 3 days/week
  - EI therapists provide therapy in family homes
  - Legal services in collaboration with UNM Law School
  - Infant Mental Health practice
- Family progress discussed every 90 days
- Interdisciplinary clinics attended by developmental specialists, therapists, and law students

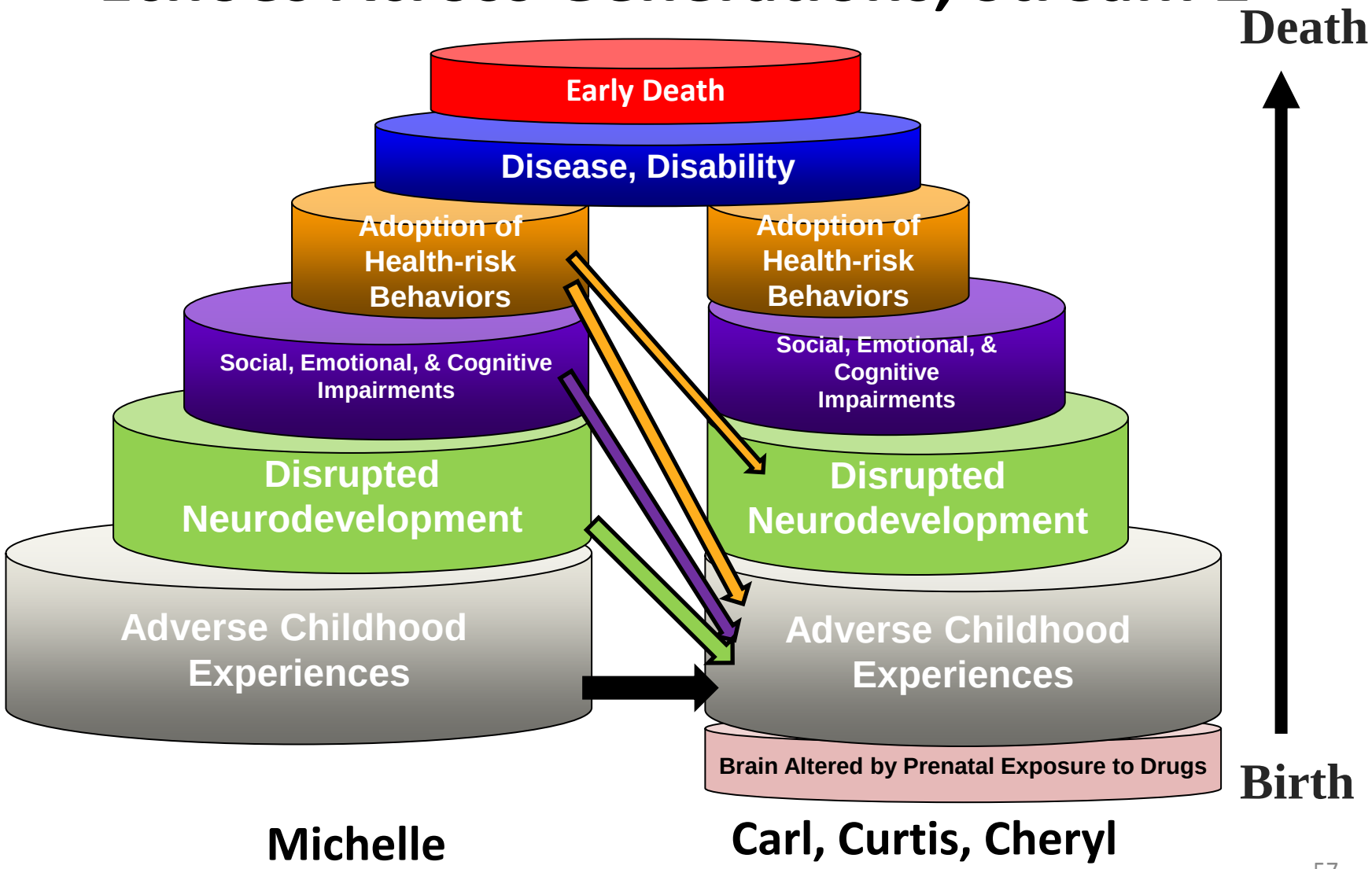
Visit to FOCUS Family Medical Home Outpatient Clinics Summer 2014

- Active FOCUS families 220+ over 4 weeks
- 222 appointments, 140 seen = 63%
  - 57% pediatric (52% kept appointments)
  - 43% parents (81% kept appointments)
  - Pediatric 95% well child, 3% weight, 2% overwt
  - Award from immunization coalition for 97% on time
  - Adult 97% Suboxone, rest contraception, mental health
- Suboxone visits include contraceptive care, mental health care (depression, anxiety)

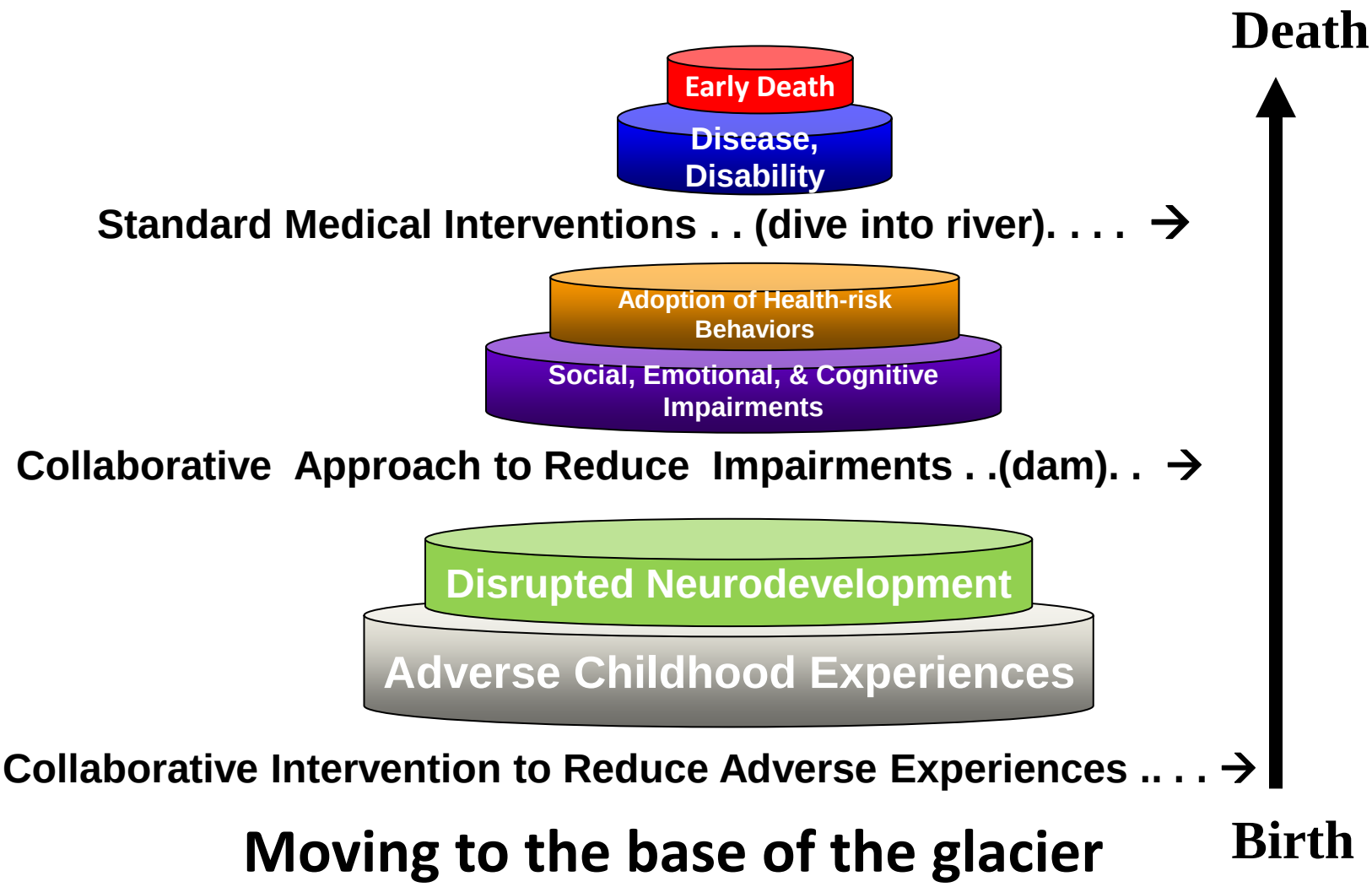
Eva and LaMarcus Clinic Visit of October 2014

- 21 year old Eva, 4 year old LaMarcus
- LaMarcus healthy for past year
- Attended church preschool for entire year
- Development progressing
- Family situation
  - Father, Victor, recovering, lay minister
  - Eva completed GED, now in nursing program
- Victor and Eva purchased a trailer
- Eva had a 2nd child, no exposure to drugs, alcohol

After Birth, Adverse Childhood Experiences Echoes Across Generations, Stream 2

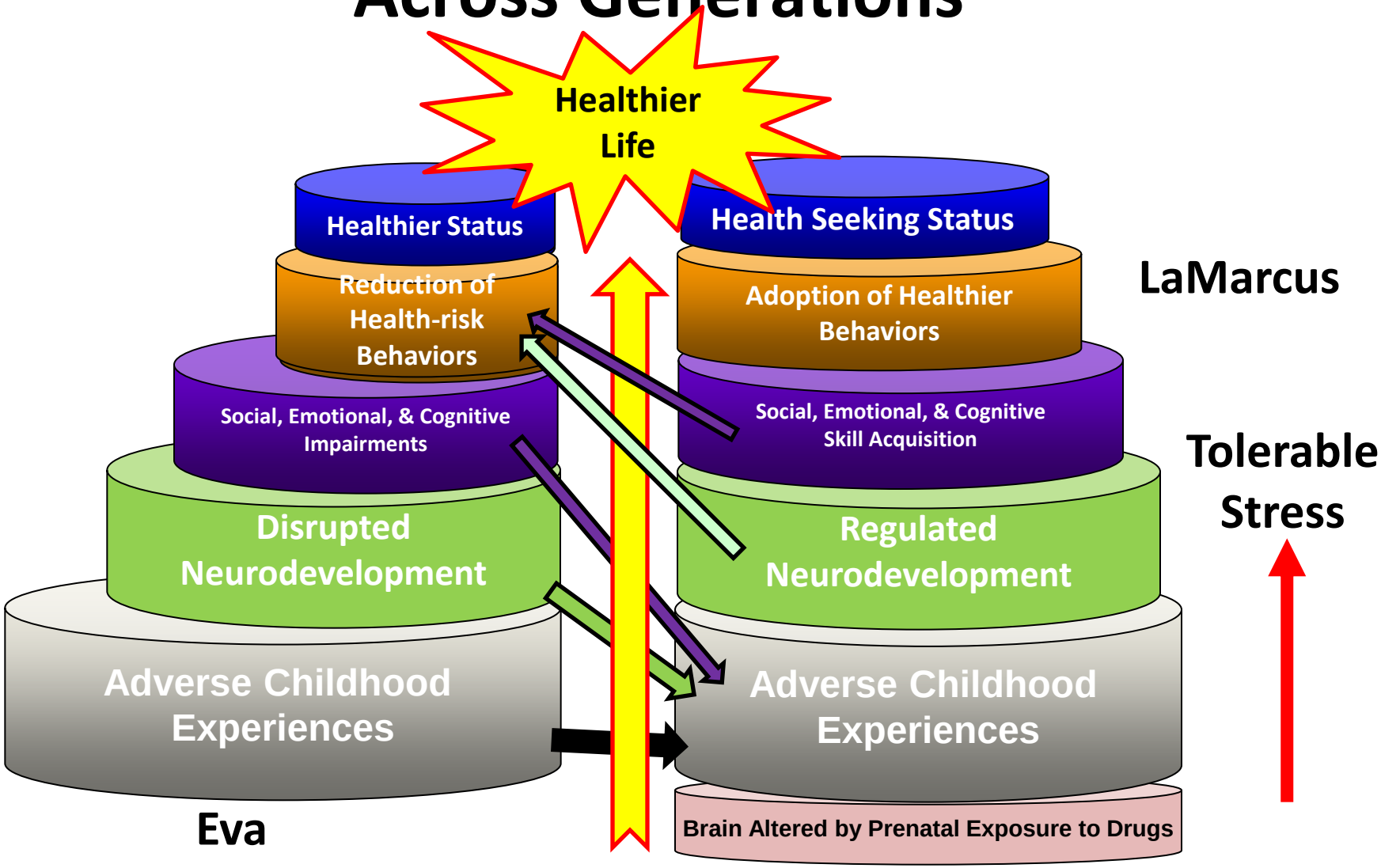


Upstream Opportunities for Intervention by Health and Service Systems



Moving to the base of the glacier

Connecting the Intervention Concepts Across Generations



Collaborative Intervention to Reduce Generational Impact of Adverse Childhood Experiences

Thank you for your dedication

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FOCUS Programs at the Center for Development and Disability, UNM