GEORGIA PERINATAL QUALITY COLLABORATIVE

Neonatal NAS Initiative Webinar

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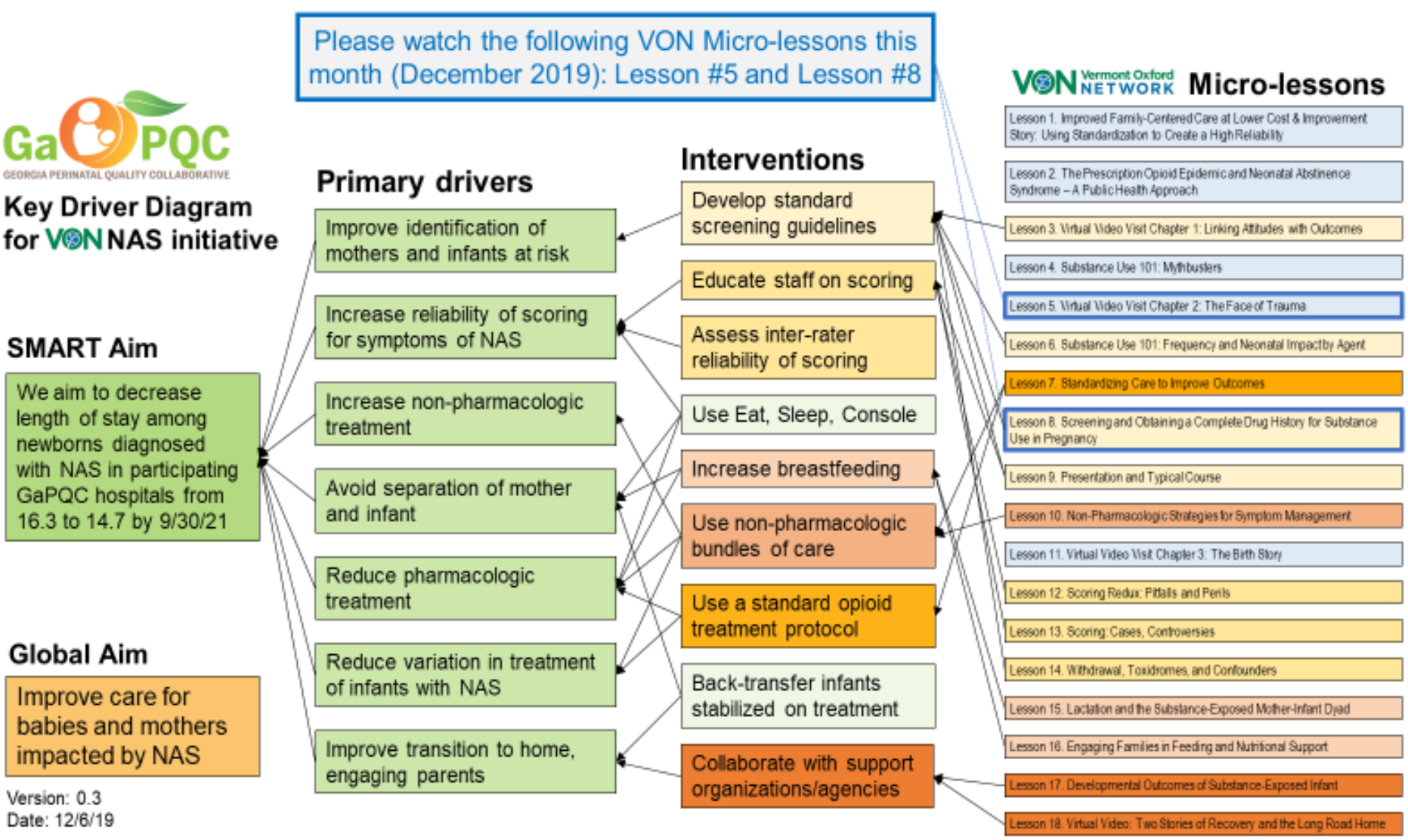
The webinar will begin shortly.

December 10, 2019
2:00-3:00pm

General Housekeeping

- Your line has been placed to mute to reduce background noise.
  - You can press *6 to unmute yourself.
- All collaborative members want to learn from your wins and challenges so please share!


Please watch the following VON Micro-lessons this month (December 2019): Lesson #5 and Lesson #8
GaPQC
GEORGIA PERINATAL QUALITY COLLABORATIVE
Key Driver Diagram for VON NAS initiative
SMART Aim
We aim to decrease length of stay among newborns diagnosed with NAS in participating GaPQC hospitals from 16.3 to 14.7 by 9/30/21
Global Aim
Improve care for babies and mothers impacted by NAS
Version: 0.3
Date: 12/6/19
Primary drivers
Improve identification of mothers and infants at risk
Increase reliability of scoring for symptoms of NAS
Increase non-pharmacologic treatment
Avoid separation of mother and infant
Reduce pharmacologic treatment
Reduce variation in treatment of infants with NAS
Improve transition to home, engaging parents
Interventions
Develop standard screening guidelines
Educate staff on scoring
Assess inter-rater reliability of scoring
Use Eat, Sleep, Console
Increase breastfeeding
Use non-pharmacologic bundles of care
Use a standard opioid treatment protocol
Back-transfer infants stabilized on treatment
Collaborate with support organizations/agencies
VON Vermont Oxford NETWORK Micro-lessons
Lesson 1. Improved Family-Centered Care at Lower Cost & Improvement Story: Using Standardization to Create a High Reliability
Lesson 2. The Prescription Opioid Epidemic and Neonatal Abstinence Syndrome – A Public Health Approach
Lesson 3. Virtual Video Visit Chapter 1: Linking Attitudes with Outcomes
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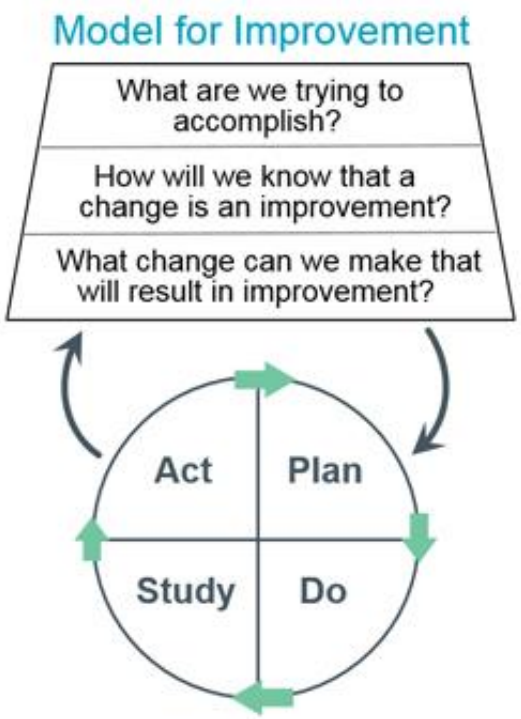
Lesson 14. Withdrawal, Toxidromes, and Confounders
Lesson 15. Lactation and the Substance-Exposed Mother-Infant Dyad
Lesson 16. Engaging Families in Feeding and Nutritional Support
Lesson 17. Developmental Outcomes of Substance-Exposed Infant
Lesson 18. Virtual Video: Two Stories of Recovery and the Long Road Home

Upcoming QI learning session

- **GaPQC QI Technical Call on 12/19 from 1:00 pm to 2:00 pm**
- **Learning session will focus on PDSA cycles and testing**
- **See calendar invite for login detials**



Preview of New AAP statement on Opioid-exposed newborns

Presented by Dr. Wanda Barfield (CDC) at the Hot Topics 2019 meeting

Areas to consider for testing and implementation

- **Monitoring**
- **Feeding**
- **Discharge**

GaPQC
GEORGIA PERINATAL QUALITY COLLABORATIVE

Key Driver Diagram for VON NAS initiative

SMART Aim

We aim to decrease length of stay among newborns diagnosed with NAS in participating GaPQC hospitals from 11.2 days to 10.1 days by 9/30/2021

Global Aim

Improve care for babies and mothers impacted by NAS

Version: 1.2 Date: 7/11/19

Primary drivers

- Improve identification of mothers and infants at risk
- Increase reliability of scoring for symptoms of NAS
- Increase non-pharmacologic treatment
- Provide family-centered care / avoid mother-infant separation
- Reduce pharmacologic treatment
- Reduce variation in treatment of infants with NAS
- Improve transition to home, engaging parents

Interventions

- Develop standard screening guidelines
- Educate staff on scoring
- Assess inter-rater reliability of scoring
- Use Eat, Sleep, Console
- Increase breastfeeding
- Use non-pharmacologic bundles of care
- Use a standard opioid treatment protocol
- Back-transfer infants stabilized on treatment
- Collaborate with support organizations/agencies
- Provider education to reduce stigma

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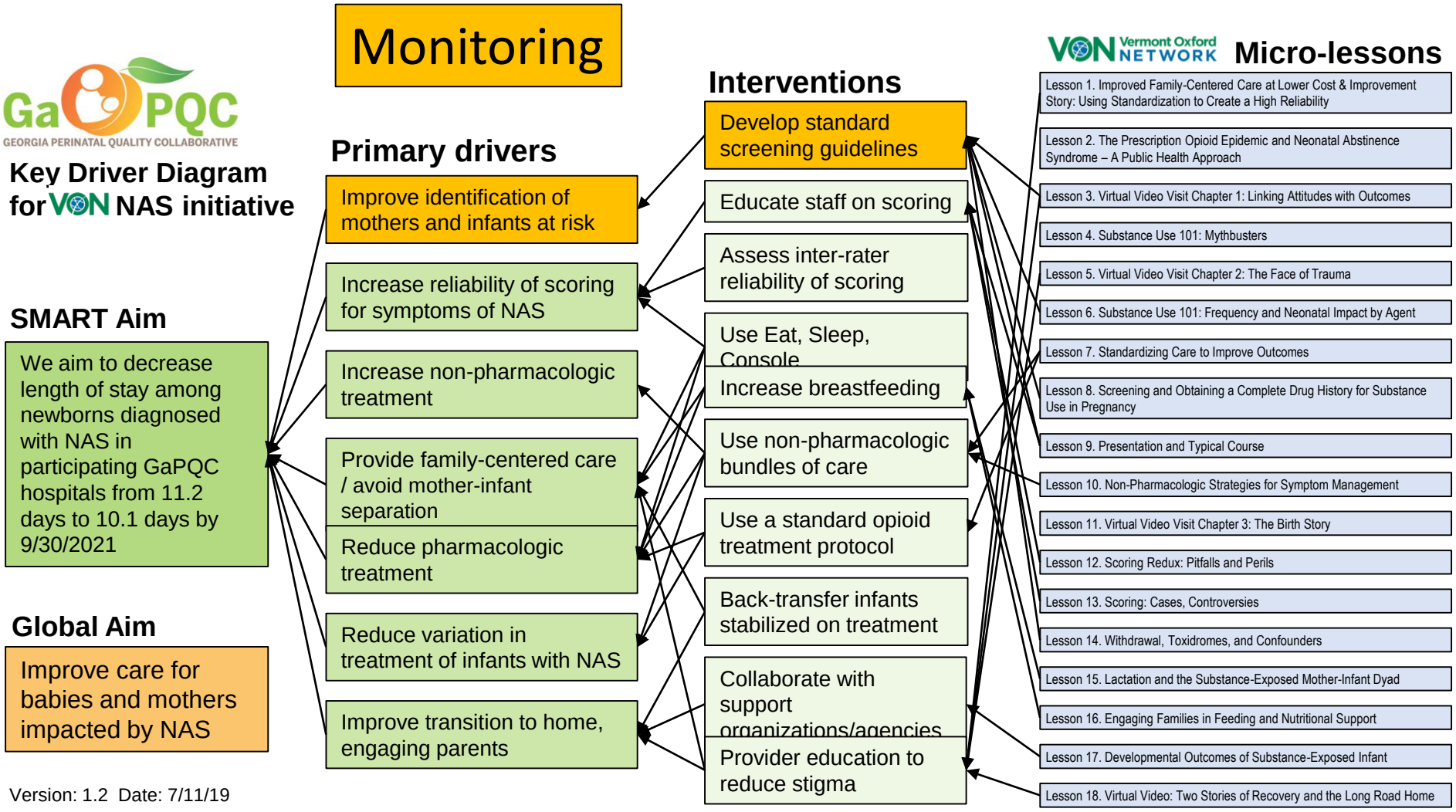
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Version: 1.2 Date: 7/11/19
Monitoring
Primary drivers
Improve identification of mothers and infants at risk
Increase reliability of scoring for symptoms of NAS
Increase non-pharmacologic treatment
Provide family-centered care / avoid mother-infant separation
Reduce pharmacologic treatment
Reduce variation in treatment of infants with NAS
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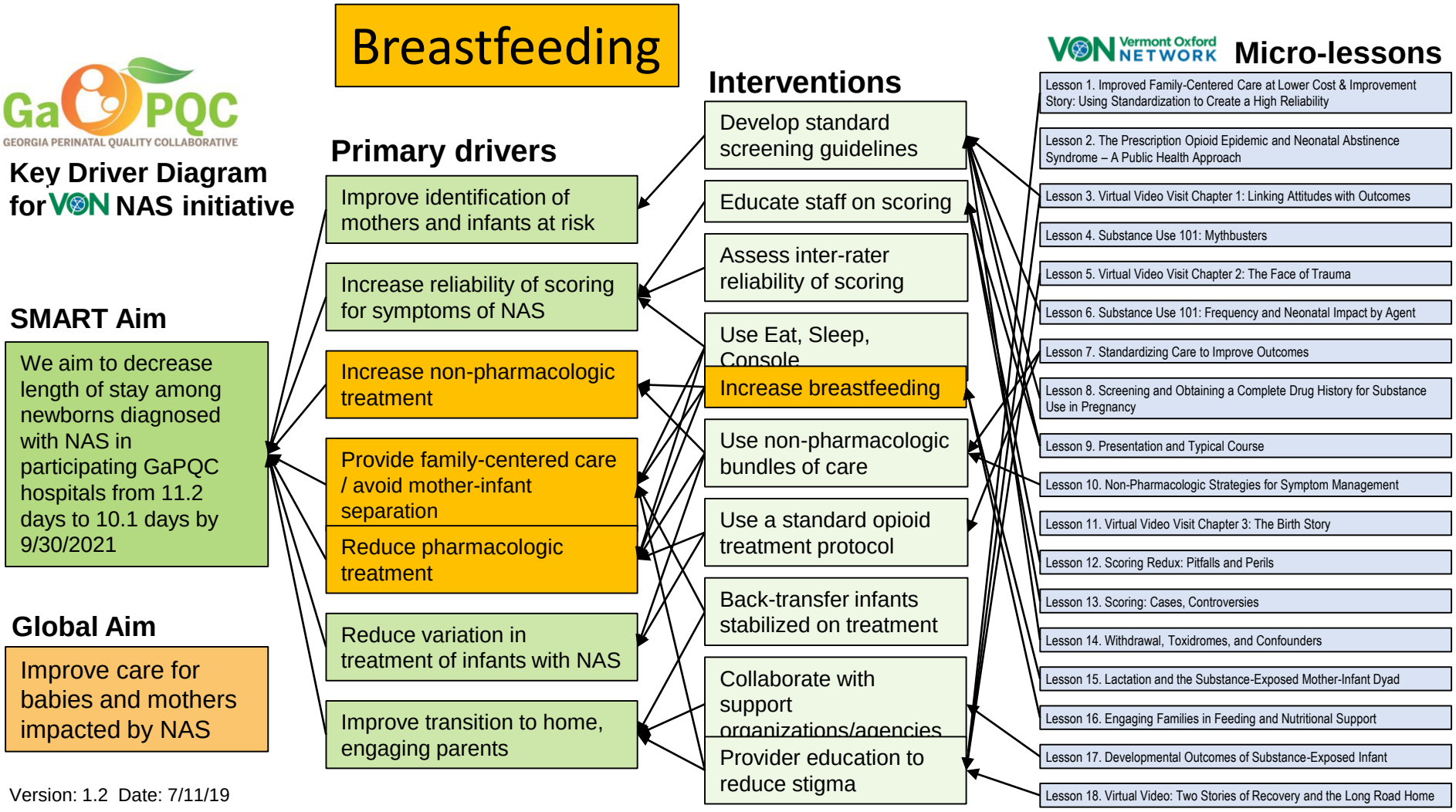
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Primary drivers
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Increase non-pharmacologic treatment
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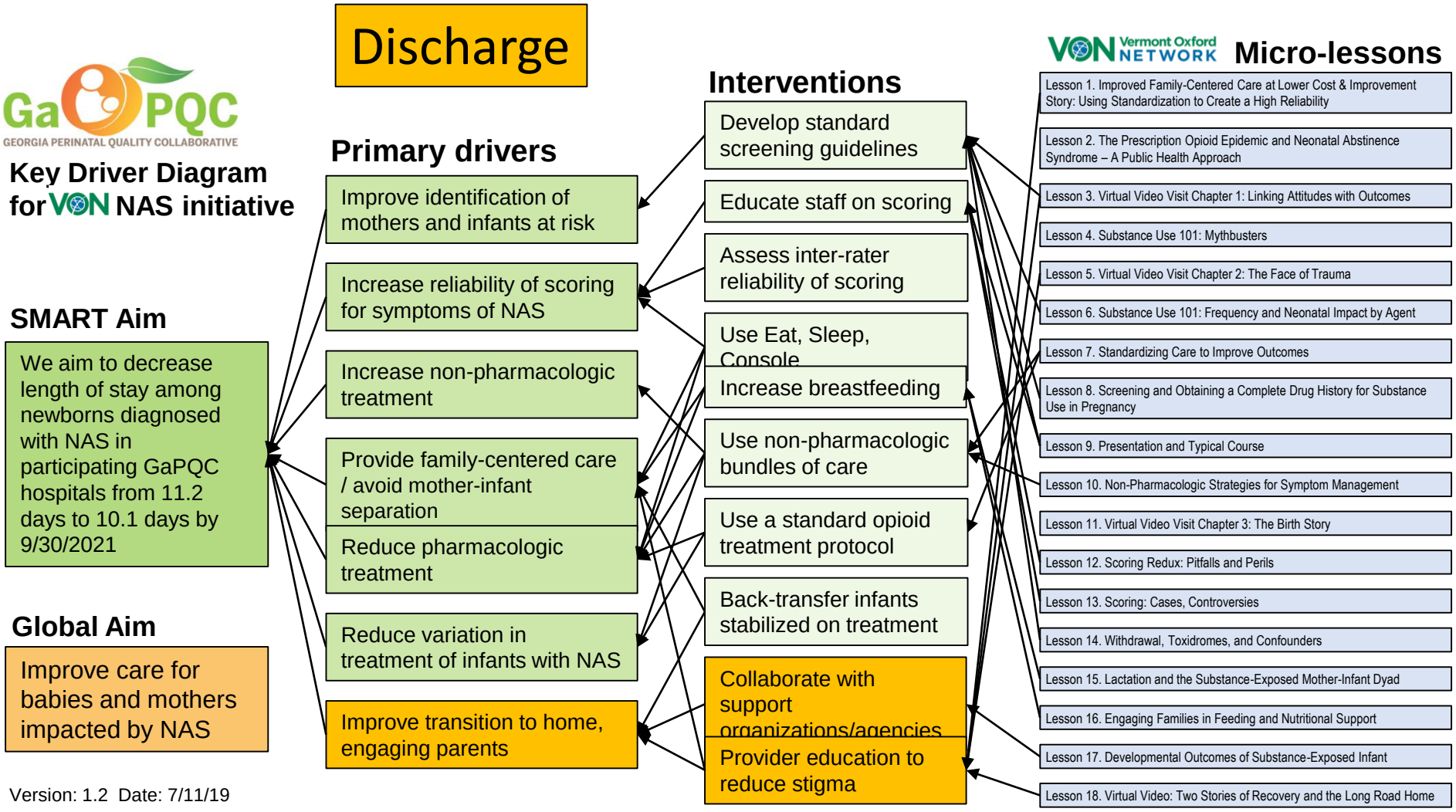
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Monitoring: All chronically opioid-exposed infants should be observed for at least 72 hours to monitor for the development of withdrawal:

1. Infants exposed to immediate-release opioids (e.g. hydrocodone) should be observed for at least 3 days
2. Infants exposed to buprenorphine and sustained-release opiods (e.g. oxycodone) should be observed for 4-7 days
3. Infants exposed to methadone should be observed for 5-7 days

Feeding: Hospitals should have a protocol for breastfeeding a substance-exposed infant

1. For infants of mothers in treatment for OUD with buprenorphine or methadone without relapse for ≥ 90 days, breastfeeding should be supported (if no other contraindications)
2. For infants of mothers with active substance use or relapses within the last 30 days, breastfeeding should be discouraged.
3. For infants of mothers in treatment between 30 and 90 days without relapse, breastfeeding should be considered
4. HIV is a contraindication to breastfeeding. Hepatitis C positive mothers with cracked or bleeding nipples should consider abstaining from breastfeeding

Discharge:

- Discharge of infants to home pharmacotherapy should be avoided and should only occur if there is a structured, close outpatient follow-up plan for the dyad
- A discharge checklist should be completed that insures
  1. No significant clinical signs of withdrawal for 24-28 hours
  2. Parent education about NOWS and routine newborn care, emphasizing safe sleep
  3. Pediatrician or primary-care provide follow-up visit with 48 hours
  4. Hepatitis C / HIV testing follow-up and referred to pediatric ID, when appropriate
  5. Appropriate referrals (Early intervention, nurse home visitation, etc.)
  6. Plan of safe care, coordinate with child welfare

EMORY
UNIVERSITY
SCHOOL OF
MEDICINE

Department of Gynecology
and Obstetrics

OPIOIDS AND PREGNANCY

SEJAL TAMAKUWALA DO

ASSISTANT PROFESSOR

EMORY UNIVERSITY SCHOOL OF MEDICINE

DIAGNOSIS OF OPIOID USE DISORDER IN PREGNANCY

MEDICATION ASSISTED TREATMENT

PRENATAL CARE

MATERNAL INTRAPARTUM & POSTNATAL CARE

INFANT CARE/BREAST FEEDING

- **SBIRT** strategy:
  - Universal **S**creening
  - **B**rief **I**ntervention
  - **R**efer for **T**reatment

Screening for substance abuse should be standard practice at every woman's first prenatal visit, regardless of patient ethnicity or socioeconomic status.

Use a validated screening tool

- Limitations: Relies on patient honesty and seeking prenatal care

SCREENING TOOLS

National Institute on Drug Abuse Quick Screen

•Identifies and determines risk level for patients age 18 years and older in general medical settings
•www.drugabuse.gov/publications/resource-guide-screening-drug-use-in-general-medical-settings/nida-quick-screen

CRAFFT

• For patients ages 12 to 18 years; designed to identify those at high risk for alcohol abuse and other drug use disorders
• https://ceasar.childrenshospital.org/crafft

4 P's Plus

• Identifies pregnant patients at risk for substance abuse
• www.ntiupstream.com/4psabout

4 P'S (PREGNANT PATIENTS)

Parents: Did any of your parents have a problem with alcohol or other drug use?

Partner: Does your partner have a problem with alcohol or drug use?

Past: In the past, have you had difficulties in your life because of alcohol or other drugs, including prescription medications?

Present: In the past month have your drunk any alcohol or used other drugs?

Scoring: Any "yes" should trigger further questions.

CRAFFT (ADOLESCENTS & YOUNG ADULTS)

- **C** Have you ever ridden in a CAR driven by someone (including yourself) who was high or had been using alcohol or drugs?
- **R** Do you ever use alcohol or drugs to RELAX, feel better about yourself, or fit in?
- **A** Do you ever use alcohol or drugs while you are by yourself or ALONE?
- **F** Do you ever FORGET things you did while using alcohol or drugs?
- **F** Do your FAMILY or friends ever tell you that you should cut down on your drinking or drug use?
- **T** Have you ever gotten in TROUBLE while you were using alcohol or drugs?

Scoring: Two or more positive items indicate the need for further assessment.

Genetic Factors

Responsible for 40-60% of vulnerability to addiction

Environmental Factors

Low socioeconomic status

Poor parental support

Within-group peer deviance

Physical/psychological abuse

Unmarried status

Low level of education

Unemployed

Caucasian

Drug availability (that's us!)

Mental Illness

30% of people with psychiatric diagnoses abuse drugs

25% EtOH

40% nicotine

15% other drugs

- Intrauterine growth restriction
- Placental insufficiency
- Preterm rupture of membranes
- Premature delivery
- Postpartum hemorrhage
- Perinatal mortality
- Neonatal Opioid Withdrawal Syndrome

OUD is "a problematic pattern of opioid use leading to clinically significant impairment or distress"

- DSMV (2015): 11 total criteria summarized by four categories:
  - **Impaired Control**: a craving or strong urge to use the substance; desire or failed attempts to cut down or control substance use
  - **Social problems**: substance use causes failure to complete major tasks at work, school, or home; social, work, or leisure activities are given up or cut back because of substance use
  - **Risky use**: use in risky settings; continued use despite known problems
  - **Pharmacologic effects**: tolerance and withdrawal symptoms
- Categorized as mild (2-3 criteria), moderate (4-5), or severe (>=6 criteria)

CPOD VS OUD

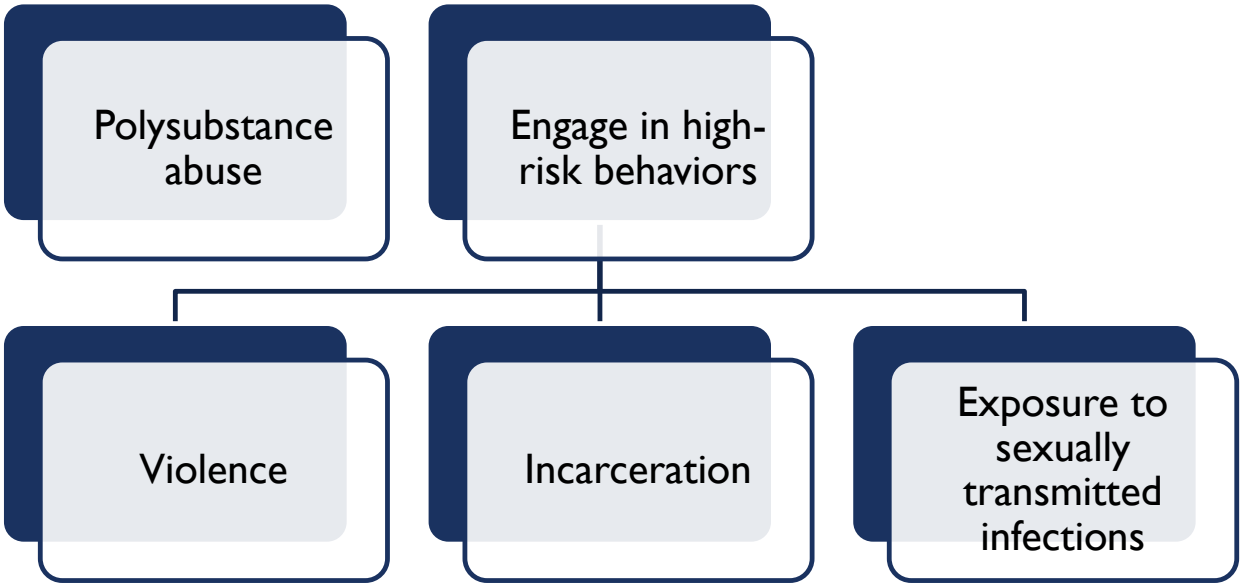
Complex Persistent Opioid Dependence (CPOD) ***Complex*:** Dependence is complicated by desire to continue taking opioid for the treatment of pain. Withdrawal is complicated by anhedonia and hyperalgesia which, unlike classic 'physical' symptoms, may not reverse within days.

***Persistent*:** Tapering is poorly tolerated. Tapering, therefore, may fail, or is highly protracted (takes months or years).

***What distinguishes CPOD from OUD*:**

No craving	No compulsive use	No harmful use that is not medically directed	Social disruption is attributed to pain and not to OUD

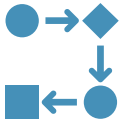
WOMEN WITH OPIOID USE DISORDER ARE AT RISK OF:



- Screen for infectious complications (at prenatal care and in the 3rd trimester if risky behavior continues)
  - HIV
  - Hepatitis C, B
  - Tuberculosis (hx of incarceration or homelessness)
  - Gonorrhea/Chlamydia
  - Syphilis
- Evaluate for cellulitis, Tetanus, Anthrax, Clostridium spp. infections, bacterial endocarditis in IV drug users if symptomatic
- Consider perforation of the nasal septum if opiates are snorted
- Evaluate for mental health disorders (65% of patients with SUD)
- Screen for physical/sexual abuse
  - 72.7% for physical abuse, 71.3% for emotional abuse and 44.5% for sexual abuse.
  - Abuse rates remains high during pregnancy, ranging from 40.9% for emotional abuse to 20.0% for physical abuse to 7.1% for sexual abuse

BARRIERS TO CARE

- Limited financial resources
- Lack of transportation
- Lack of social supports in addition to child care requirements for existing children
- Social stigma
- Fear of losing custody of her children
- Low-levels of self-esteem and education
- Non adherence to treatment



The next step is the brief interventio n.

Engaging the patient in a brief, nonjudgmenta l conversation,

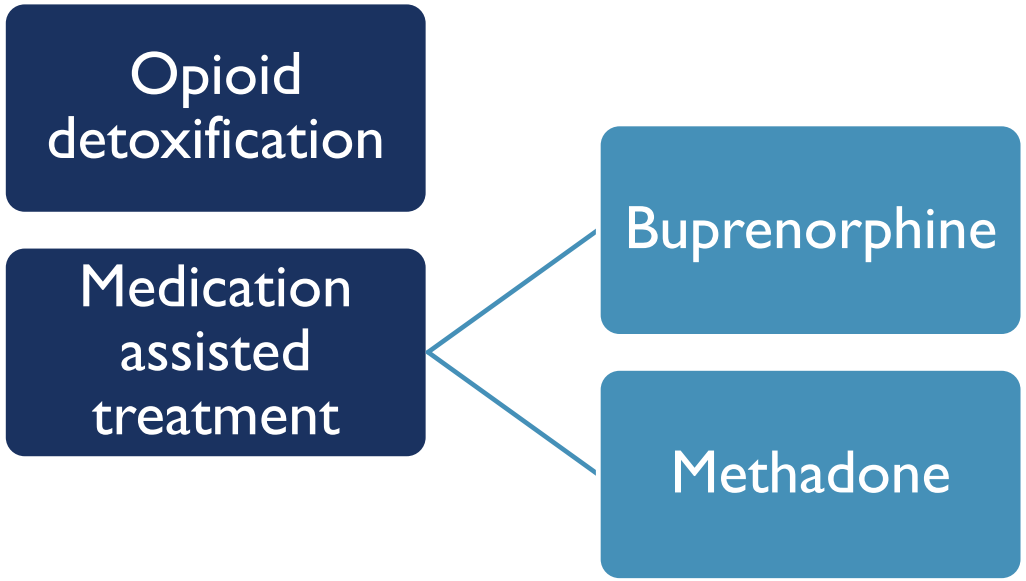
Providing feedback and advice

Explain that use disorder is a chronic disease, not a moral failing!!

Explain that there are permanent alterations in brain chemistry from using substances, and it's worse for some than others (mild vs. moderate vs. severe)

Once in recovery, always in recovery (think twice before prescribing)

For the love of all that is holy, do not **EVER** call a patient a "junkie" or "addict" [and try not to use those pejorative terms yourself]


Opioid detoxification
Medication assisted treatment
Buprenorphine
Methadone

NOT recommended for pregnant women because of the high rates of maternal relapse and potential fetal risks associated with cycles of intoxication and withdrawal.

Patient should be under the supervision of a clinician experienced in peripartum addiction and should also have psychosocial interventions.

Pregnant patients insistent on withdrawing from opioids should demonstrate commitment to treatment and have plenty of support, as it will be an extended process with many challenges

The **safest time** for initiating opioid detoxification in pregnancy is the **second trimester**, and the best results are seen in programs that gradually taper methadone based on maternal symptoms.

MEDICATION ASSISTED TREATMENT

- Methadone
- Buprenorphine

WHY USE MAT?

More likely to be discharged to the care of their mother and to remain in the care of their mother at one year of age.

Risk of PTD, placental abruption, IUFD

Delivery of low birth weight infants and NICU admission

CONCURRENT PSYCHOTHERAPY

- Psychosocial interventions have been shown to improve patient outcomes in substance abuse treatment.
- Enrollment in addiction counseling has been associated with increased retention in treatment when buprenorphine is provided in a primary care setting (Stein, Cioe, & Friedman, 2005).
- The combination of cognitive behavioral therapy and contingency management has been associated with particularly high effect sizes (Dutra et al., 2008).

METHADONE

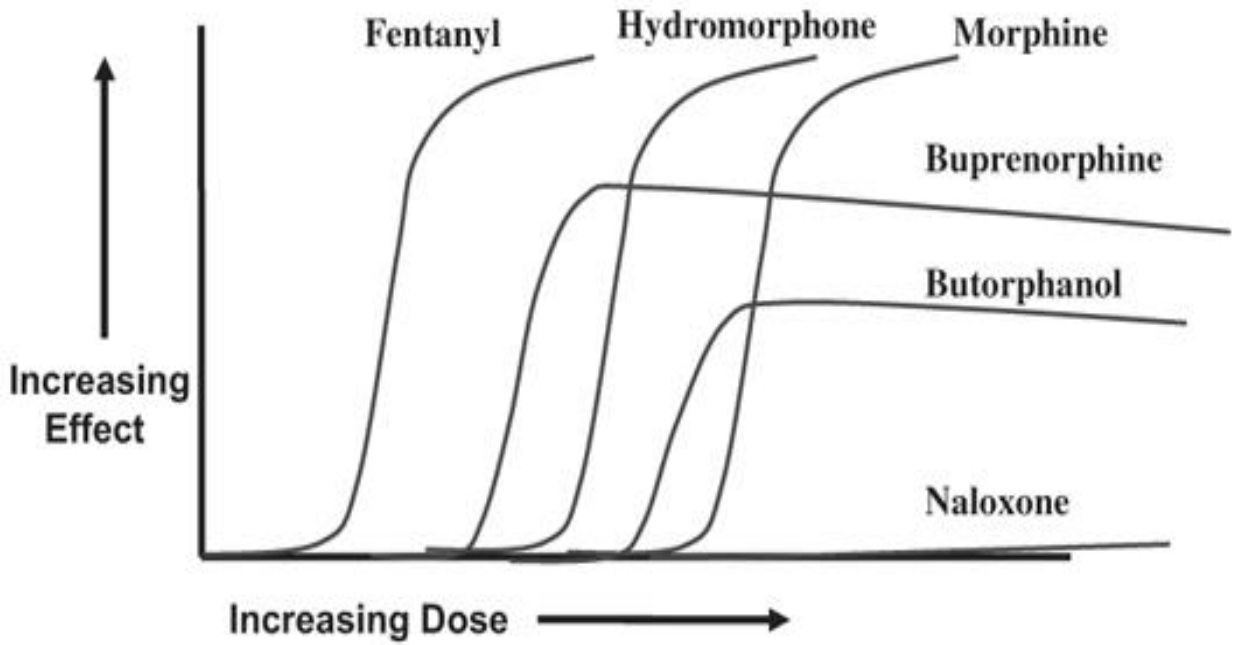
- Long acting opioid agonist
- Dispensed only through federally licensed and regulated clinics.
- Methadone clinics are often unevenly distributed geographically and this can restrict the use and availability of methadone in the treatment of addiction.
- Efavirenz (EFV), nevirapine (NVP), and lopinavir/ritonavir (LPV/r) interaction with methadone. May have to increase methadone by 5-10 mg to prevent withdrawal.

BUPRENORPHINE

- Buprenorphine is a partial-agonist at the mu opioid receptor.
- Sublingual administration for OUD
- Maximum concentration in the plasma occurs 40 minutes to 3.5 hours after administration (Elkader & Sproule, 2005).
- Highly lipid soluble and is metabolized via the CYP3A4 pathway into its primary metabolite, norbuprenorphine (Elkader & Sproule, 2005).
- Important drug-drug interactions can exist especially with protease inhibitors used in the treatment of HIV infection as well as azole antifungals (Elkader & Sproule, 2005).
- Informed consent indicating that she is aware that methadone is the standard of care during pregnancy and Buprenorphine is NOT FDA approved for use during pregnancy.

BUPRENORPHINE

- Partial mu agonist with ceiling effect
- Binds to mu receptor with very high affinity, preventing binding of other mu agonists
- Safe and efficacious in reducing opioid use and craving with significant improvements in psychosocial function
- Safer, more "friendly" side effect profile than typical mu agonists
- Also useful for treatment-resistant depression



BUPRENORPHINE FORMULATION

- **Subutex** (buprenorphine) sublingual tablet
- Probuphine (buprenorphine) implant for subdermal administration
- Sublocade (buprenorphine extended-release) injection for subcutaneous use
- **Suboxone** (buprenorphine and naloxone) sublingual film for sublingual or buccal use, or sublingual tablet.
- Bunavail (buprenorphine and naloxone) buccal film
- Cassipa (buprenorphine and naloxone) sublingual film
- Zubsolv (buprenorphine and naloxone) sublingual tablets

METHADONE VS BUPRENORPHINE

- It is an individualized choice that is best made in collaboration with the patient.
- While methadone continues to be the standard of care during pregnancy, a growing body of evidence suggests that buprenorphine is a safe alternative and many now believe it should be a first line therapy (Alto & O'Connor, 2011; Jones et al, 2010).
- Buprenorphine is associated with:
  - fewer maternal medical complications (e.g., preterm labor and overdoses) and a shorter duration of infant hospitalization
  - similar or lower frequency and/or severity of neonatal abstinence syndrome (NAS) and are less likely to experience respiratory distress at delivery
  - Buprenorphine exposed fetuses had stronger indications of fetal well-being including heart rate variability and accelerations and better coupling between fetal movements and heart rate.
  - Less suppression in both the fetal heart rate and biophysical profile score after medication dosing.
- However, the long term data about the potential effects of buprenorphine on the fetus are limited and appropriate consent is required.

WHO CAN PRESCRIBE BUPRENORPHINE?

- You can, in theory (Drug Addiction Treatment Act of 2000 waiver, 8 hour course)
- SAMHSA website to search for providers (https://www.samhsa.gov/medication-assisted-treatment/physician-program-data/treatment-physician-locator)
- Addiction psychiatrists (psychiatrists with fellowship training)
- Addiction medicine providers (by 2022, fellowship training needed for board certification)

PRENATAL CARE FOR PATIENTS ON MAT

- Multidisciplinary approach (Obstetrics, Pediatrics, Addiction Medicine, Social Services)
- Frequent visits
- Growth US Q4 weeks due to increased risk of IUGR
- NST/BPP surveillance for usual indications
- Address smoking cessation (80-95% OUD pts also smoke cigarettes)
- Avoid benzodiazepines in patients with concurrent anxiety
  - Consider Diphenhydramine or Hydroxyzine
- Social factors such as homelessness, violence, poor nutrition and co-morbid psychiatric conditions
- Contraception
- UDS at every visit while on MAT

WHAT ABOUT URINE DRUG SCREEN?

ACOG and ASAM Recommendations:

While not the standard of care for screening for substance use during pregnancy, ACOG recommends that urine drug testing can be performed as an adjunct to either detect or confirm substance use.

- Obtain patient's consent prior to ordering a screening UDS.
- If unexpected positive, order gas chromatography mass spectrometry (GCMS) to confirm.

KNOW YOUR STATE LAWS

- Think about legal implications.
- In Georgia, do you need to notify the state about positive UDS in pregnancy?
  - NO ☺

- https://www.guttmacher.org/state-policy/explore/substance-use-during-pregnancy

PREPARE FOR DELIVERY

- Reinforce doctor-patient confidentiality
- Discuss pain management during labor
- Discuss neonatal abstinence syndrome
- Address partner involvement and if he/she needs substance abuse treatment
- Assess home safety

ITS SHOW TIME!! LABOR AND DELIVERY

- DO NOT discontinue buprenorphine/methadone in labor
- Consider split dosing of buprenorphine (Q6 h)
- Epidural analgesia is preferred
- If need to administer IV medications, pt's will need more opioids (30-50%) to achieve pain control
- DO NOT administer Nubain (nalbuphine) or Stadol (butarphanol) for pain

DURING CESAREAN DELIVERY

- DO NOT discontinue buprenorphine/methadone
- Epidural or spinal analgesia is preferred
- Use usual intraoperative pain protocols
- Coach patients to understand normal pressure pain felt during cesarean delivery

POSTPARTUM PAIN MANAGEMENT

- Regardless of mode of delivery, continue buprenorphine/methadone
- Vaginal delivery:
  - NSAIDs, acetaminophen, Ice packs, and other non-opioid strategies.
  - If pain is severe enough to require opioids, consider acetaminophen/hydrocodone before starting acetaminophen/oxycodone or oxycodone.
- Cesarean delivery:
  - Continue epidural analgesia for 24 hours postpartum
  - NSAIDs, acetaminophen, Ice packs, and other non-opioid strategies.
  - If pain is severe enough to require opioids, consider acetaminophen/hydrocodone before starting acetaminophen/oxycodone or oxycodone.
- AVOID CODEINE and TRAMADOL
- Bottom line: Start slow and titrate up

BREASTFEEDING

- Buprenorphine package insert advises against breastfeeding.

BUT

- ACOG and ASAM (2012) agree that "patient stabilization with opioid-assisted therapy [including buprenorphine] is compatible with breastfeeding."

THE ACADEMY OF BREASTFEEDING MEDICINE PROTOCOL COMMITTEE (ABMPC) (2009)

- Careful evaluation of the benefits and risks of breastfeeding in women with opioid use disorders.
- **Breastfeeding recommended**
  - Women who have been abstinent from illicit drug use in the 90 days prior to delivery in an outpatient setting, and if she has received consistent prenatal care.
- **Breastfeeding NOT recommended**
  - Women who have not received prenatal care, have relapsed to illicit substances in the 30 days prior to delivery and who are not planning to engage in substance abuse treatment postpartum.
- **Case by case decision making is recommended**
  - Women who have achieved sobriety in the 30 days prior to delivery but who have relapsed in the 90 day period

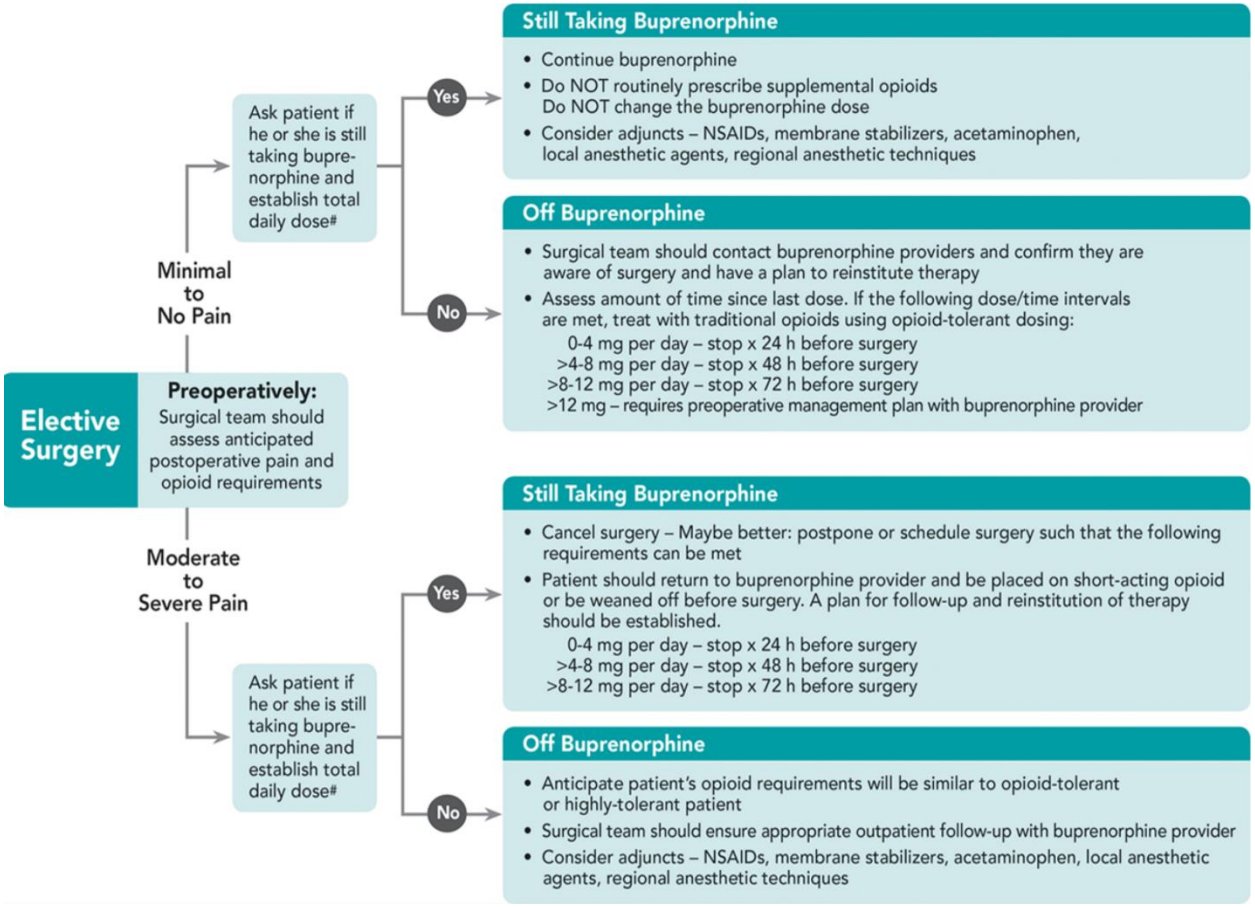
BREASTFEEDING

- The relative ingestion per kilogram of infant bodyweight is less than 1% of the dose per bodyweight of the mother (buprenorphine)
- Breastfed infants have less severe NAS
- Hepatitis C is not a contraindication, unless nipples are cracked/bleeding
- HIV is a contraindication in the US

DISCHARGE PLANNING

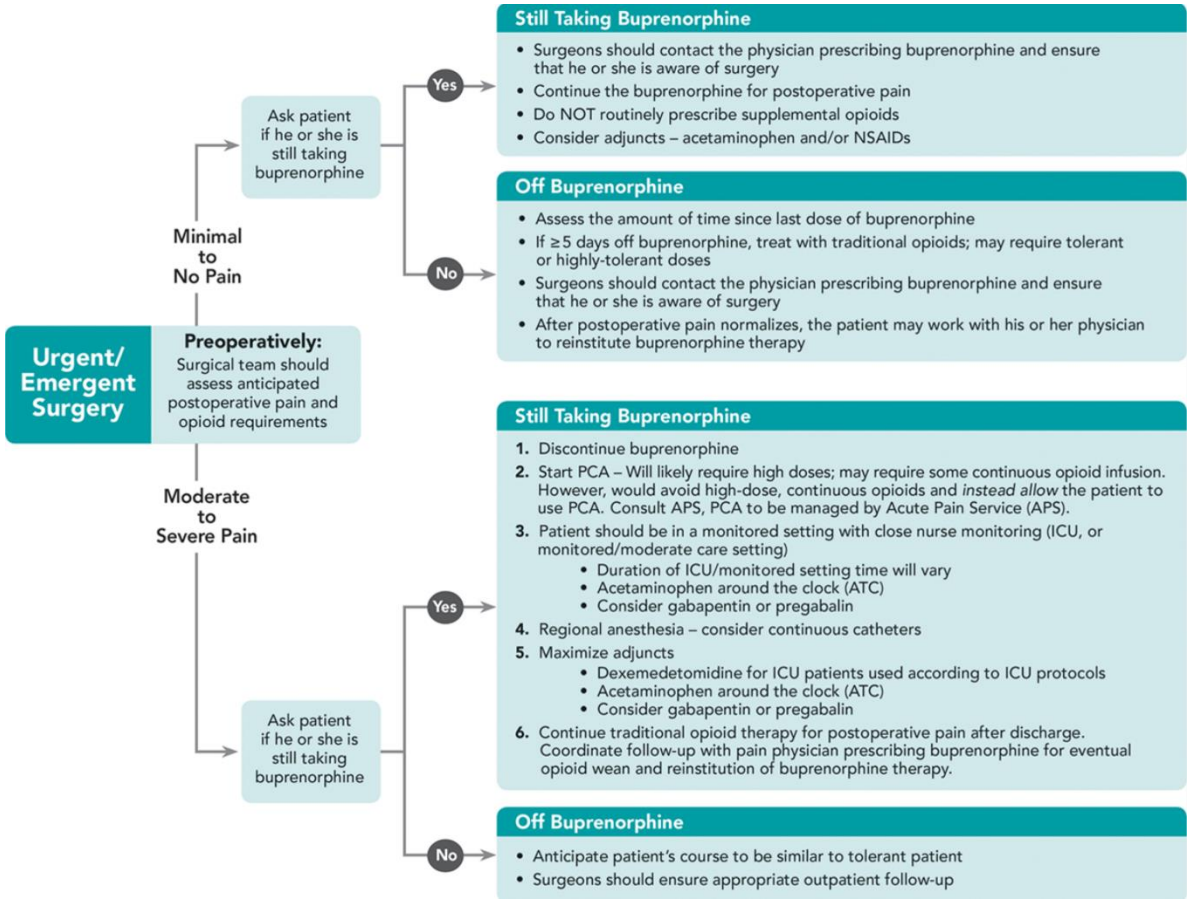
- Refer the patients back to their Addiction specialist after delivery. Contact the patient's prenatal buprenorphine provider to confirm the plan for ongoing buprenorphine prescribing after discharge.
- Continue buprenorphine/methadone at the same dose
- If there will be a delay in re-establishing care with her buprenorphine prescriber, a provider with a DEA waiver, either on the hospital team or on her outpatient team, must write a prescription for enough buprenorphine to last until the follow up appointment
- Close follow up needed
- Increased risk of relapse after delivery if patient stops MAT

BUPRENORPHINE IN THE ACUTE SETTING



To Stop or Not, That Is the Question: Acute Pain Management for the Patient on Chronic Buprenorphine. T. Anthony Anderson, Ph.D., M.D., Aurora N. A. Quaye, M.D., E. Nalan Ward, M.D., Timothy E. Wilens, M.D., Paul E. Hilliard, M.D., Chad M. Brummett, M.D. Anesthesiology 2017; 126:1180–6

BUPRENORPHINE IN THE ACUTE SETTING



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CLINICAL OPIATE WITHDRAWAL SCALE

Resting Pulse Rate: _____beats/minute *Measured after patient is sitting or lying for one minute* 0 pulse rate 80 or below 1 pulse rate 81-100 2 pulse rate 101-120 4 pulse rate greater than 120	**GI Upset**: *over last 1/2 hour* 0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 multiple episodes of diarrhea or vomiting
Sweating: *over past 1/2 hour not accounted for by room temperature or patient activity.* 0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face	**Tremor** *observation of outstretched hands* 0 no tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching
Restlessness *Observation during assessment* 0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 unable to sit still for more than a few seconds	**Yawning** *Observation during assessment* 0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute
Pupil size 0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible	**Anxiety or Irritability** 0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable or anxious 4 patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches *If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored* 0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort	**Gooseflesh skin** 0 skin is smooth 3 piloerrection of skin can be felt or hairs standing up on arms 5 prominent piloerrection
Runny nose or tearing *Not accounted for by cold symptoms or allergies* 0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks	Total Score _____ The total score is the sum of all 11 items Initials of person completing assessment: _____

Score: 5-12 = mild; 13-24 = moderate; 25-36 = moderately severe; more than 36 = severe withdrawal

This version may be copied and used clinically.

SUMMARY

- **Use disorder is a chronic disease, not a moral failing!!**
- **Most post-detox patients will relapse without treatment (>90%!!)**
- **Treatment for opioid use disorder works. Get these patients into it.**

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QUESTIONS?

Average Length of Stay Calculations

GaPQC / Elise Barnes / December 10, 2019

Example of Facility-Specific LOS

EXAMPLE HOSPITAL										
	Q1		**Q2**		**Q3**		**Q4**		**Overall**	
	Exposed	Prim_Case	Exposed	Prim_Case	Exposed	Prim_Case	Exposed	Prim_Case	Exposed	Prim_Case
2017	9.4 (0.0, 22.2) (n = 9)	9.5 (3.1, 15.9) (n = 2)	5.8 (1.2, 10.3) (n = 8)	22 (N/A) (n = 1)	3.6 (1.2, 6.0) (n = 8)	2 (N/A) (n = 1)	7.5 (0.0, 23.0) (n = 4)	4 (N/A) (n = 1)	6.6 (2.7, 10.4) (n = 29)	9.4 (0.0, 19.1) (n = 5)
2018	3.3 (1.2, 5.3) (n = 4)	10.2 (8.4, 12.0) (n = 5)	1.7 (1.0, 2.4) (n = 7)	12 (5.7, 18.3) (n = 5)	3.3 (0.5, 6.0) (n = 7)	8.7 (0.0, 19.0) (n = 3)	10 (0.0, 86.2) (n = 2)	7 (N/A) (n = 1)	3.4 (1.7, 5.1) (n = 20)	10.3 (8.1, 12.4) (n = 14)
2019	5 (N/A) (n = 1)	N/A (N/A) (n = 0)	2 (N/A) (n = 2)	N/A (N/A) (n = 0)	-	-	-	-	3.0 (1.0, 4.0) (n = 3)	N/A (N/A) (n = 0)

2017 NAS Annual Surveillance Report

Table 2A. **Length of Stay among Nursery Infants by NAS Status,** Georgia 2017

Length of Stay (DAYS)	NAS Infants[4] Mean (95% CI)	Non-NAS Infants Mean (95% CI)
NURSERY	4.47 (4.06, 4.87)	2.55 (2.54, 2.57)

Table 2B. **Length of Stay among Nursery Infants with NAS by ICD-10-CM Code,** Georgia 2017[1]

Length of Stay (DAYS)	Infants Experiencing Withdrawal[2] Mean (95% CI)	Infants Exposed[3] Mean (95% CI)
NURSERY	11.17 (9.30, 13.04)	3.03 (2.86, 3.21)

https://dph.georgia.gov/sites/dph.georgia.gov/files/MCH/NAS/NAS_Brochure_2017_FINAL_Digital.pdf

Length of Stay (days) among NAS Infants by Primary Case, HDD 2017 - Q2 2019, Georgia			
	Exposed	Prim_Case	Overall
	Mean (95% CI) (n)	Mean (95% CI) (n)	Mean (95% CI) (n)
2017	6.3 (5.6, 6.9) (n = 1121)	16.6 (15.1, 18.1) (n = 456)	9.3 (8.6, 9.9) (n = 1577)
2018	6.5 (5.8, 7.2) (n = 1024)	16.7 (15.3, 18.2) (n = 431)	9.6 (8.9, 10.3) (n = 1455)
2019 Q1 - Q2	6.6 (5.0, 8.2) (n = 132)	19.6 (14.6, 24.6) (n = 82)	11.6 (9.3, 13.9) (n = 214)

Length of Stay (days) among NAS Infants from **GaPQC Facilities Only** by Primary Case, HDD 2017 - Q2 2019, Georgia			
	Exposed	Prim_Case	Overall
	Mean (95% CI) (n)	Mean (95% CI) (n)	Mean (95% CI) (n)
2017	6.9 (6.0, 7.7) (n = 771)	17.8 (15.9, 19.7) (n = 318)	10.1 (9.2, 10.9) (n = 1089)
2018	7.5 (6.5, 8.4) (n = 746)	16.3 (14.7, 17.8) (n = 331)	10.2 (9.3, 11.0) (n = 1077)
2019 Q1 - Q2	7.6 (5.5, 9.8) (n = 88)	22.9 (16.4, 29.5) (n = 59)	13.8 (10.6, 16.9) (n = 147)

Reminders

- QI Technical Assistance call on December 19th from 1-2pm.
- Next call is January 14th from 2-3pm. The topic is Eat, Sleep, Console.