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## Integrated substance use and prenatal care delivery in the era of COVID-19

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### ABSTRACT

The COVID-19 pandemic has directly impacted integrated substance use and prenatal care delivery in the United States and has driven a rapid transformation from in-person prenatal care to a hybrid telemedicine care model. Additionally, changes in regulations for take home dosing for methadone treatment for opioid use disorder due to COVID-19 have impacted pregnant and postpartum women. We review the literature on prenatal care models and discuss our experience with integrated substance use and prenatal care delivery during COVID-19 at New England's largest safety net hospital and national leader in substance use care. In our patient-centered medical home for pregnant and postpartum patients with substance use disorder, patients' early responses to these changes have been overwhelmingly positive. Should clinicians continue to use these models, thoughtful planning and further research will be necessary to ensure equitable access to the benefits of telemedicine and take home dosing for all pregnant and postpartum patients with substance use disorder.

Substance use disorder (SUD) during pregnancy is a growing public health concern in the United States. From 2009 to 2014, rates of opioid use disorder documented at the time of delivery rose nationally from 1.5/1000 to 6.5/1000, with rates varying across states (e.g. 0.7/1000 in Washington DC, to 48.6/1000 in Vermont) (Haight et al., 2018). Clinicians should coordinate prenatal and substance use care to optimize pregnancy outcomes.

The traditional U.S. model of prenatal care consists of 12–14 in-person office visits for low-risk patients who deliver at full term (total visit range reflects different delivery dates). We know that prenatal care improves perinatal outcomes (American Academy of Pediatrics, 2017; Conway & Kutinova, 2006; DeMasi et al., 2017; McDuffie et al., 1996; Yan, 2017). For women with SUD, integrated prenatal care has brought SUD care, including medications for opioid use disorder (MOUD) and psychiatric medication management and counseling, into the traditional prenatal visit structures (Saia et al., 2016; Saia et al., 2017). Adequate prenatal care, defined as early initiation and sustained attendance, is associated with improved perinatal outcomes with a dose-response effect (Kotelchuck, 1994; Osterman & Martin, 2018; Laditka et al., 2005; Loftus et al., 2015; Carter et al., 2016; Nam et al., 2019; Cox et al., 2011; Debiec et al., 2010). Yet an in-person, office-based obstetrical model

may present unintended barriers to care access for pregnant women who may not be able to easily obtain transportation or take time off work (Gadson et al., 2017). For women with SUD, additional barriers to consistent participation in in-person prenatal care include stigma, difficulty accessing the health care system, and SUD management needs (e.g., daily dosing at a methadone clinic or participating in a residential treatment program).

The COVID-19 pandemic has increased use of telemedicine (visits done by phone, video, or both). Prior to COVID-19, clinicians had used telemedicine successfully for chronic disease management such as diabetes (Totten et al., 2016; Polinski et al., 2016); yet data in obstetric care were more limited. Studies demonstrated patient and provider satisfaction without changes in maternal or neonatal outcomes when compared to traditional care (Butler Tobah et al., 2019; Dalfrà et al., 2009; Homko et al., 2007; Homko et al., 2012; Kruger et al., 2003; Marko et al., 2019; Peahl et al., 2020; Pérez-Ferre et al., 2010a; Pérez-Ferre et al., 2010b; Pflugeisen & Mou, 2017). However, telemedicine studies primarily included privately insured, well-resourced, majority white populations; we know little about the experiences of low-income pregnant women with SUD. As socioeconomic status, technology access, and varying health literacy may limit patients' ability to access

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telemedicine, telemedicine could exacerbate disparities (Gadson et al., 2017; Onwuzurike et al., 2020; Peahl et al., 2020; Raman, 2020; Zephyrin & Nuzum, 2020). Expansion of telemedicine services did directly impact MOUD accessibility; in mid-March, as the U.S. Department of Health and Human Services lifted restrictions on telemedicine, the Drug Enforcement Administration allowed authorized prescribers to initiate new patients on buprenorphine via telemedicine (Bailey, 2020).

With COVID-19 cases rising in Massachusetts, at Boston Medical Center, the RESPECT clinic (Recovery, Empowerment, Social Services, Prenatal care, Education, Community and Treatment), a patient-centered medical home that integrates SUD and prenatal care on-site, shifted to a hybrid telemedicine/in-person prenatal care model. Pre-COVID-19, the clinic conducted all integrated prenatal-SUD care visits in-person; with the COVID-19 hybrid model, we shifted to using telemedicine for many visits, with in-person visits at critical OB milestones (see Table 1). Our telemedicine visits were conducted using our hospital's approved platforms (Zoom or Doximity for video enabled visits) or telephone alone, with patient preference determining modality of delivery. Clinicians conducting visits were in dedicated clinic rooms or in other private settings using hospital-approved equipment.

Of our 90 current patients, 79% self-identified as white, 12% as African American, 3% as Hispanic, and 5% as multi-racial; the majority have primary opioid use disorder (OUD) treated with medication, with 53%, 34% and 13% utilizing methadone, buprenorphine, and no MOUD, respectively. These patients are receiving 6–8 telemedicine contacts per month (weekly nurse call, and every other week obstetric MD, psychiatry, and social work calls) as well as biweekly to monthly in-person visits. Telemedicine has provided flexibility for many more patient care touch points than our pre-COVID-19 model, as Table 1 shows.

Our evaluation of this hybrid telemedicine model is ongoing but surprising early positive trends are emerging despite initial trepidation among providers. Most relevant for our clinic, no-show rates for the COVID-19 hybrid model are lower than for the pre-COVID-19 in-person model, when we examine trends over the past year. Comparing October 2019–February 2020 (pre-COVID-19) to March 2020–August 2020 (during COVID-19), no-show rates fell from 34% of visits to 10% of visits, respectively. We are currently developing a mixed-method evaluation of patient and provider experiences with our hybrid model to understand this notably higher visit attendance during the COVID-19 period. In conversation with our clinicians, patients have noted a variety of individualized preferences, including the convenience of not needing transport to or childcare for telemedicine appointments; avoiding a clinical setting or city neighborhood linked to prior substance use; and the effects of social isolation that COVID-19 imposed, which make all visits, telemedicine and in-person, an attractive means of purposeful connection for some patients.

COVID-19 has not only impacted our integrated prenatal-SUD care delivery model, it has also, in our state, impacted MOUD with methadone, the MOUD modality that the majority of our patients use. Our inpatient initiation and titration of methadone for pregnant patients was unaffected by COVID-19 (we still had the ability to admit patients), but we did note a downward trend of patients seeking this titration, from an average of 6 unique patient admissions per month pre-COVID-19 to 1–2 per month during the peak of the COVID-19 pandemic. We hope to understand this trend better through our planned mixed-method study; informally, some patients expressed a desire to avoid coming to the ED (the route by which these patients get admitted) during the pandemic peak, which may have been a contributing factor to the decrease. For our pregnant patients with OUD treated with methadone, the expansion of take-home dosing protocols (in our state ranging from 14 to 28 day dosing) has limited long dosing lines, which were common at busy periods in many of our city clinics, and which some of our patients reported were substance use triggers as well, consistent with prior literature examining relapse triggers (Calvert, 2020a; Kennedy et al., 2013; Preston & Epstein, 2011). Pre-COVID-19, clinicians reserved take-home status for persons who met strict methadone maintenance criteria;

**Table 1**

Comparison of pre- and post-COVID-19 models of integrated prenatal and SUD care (IP = in-person; T = telemed; FHT = fetal heart tones; BP = blood pressure; GC/Chl = Gonorrhea & Chlamydia; GBS = group B Strep).

	Pre-COVID19 RESPECT clinic schedule – through February 2020 <i>All visits in person (IP)</i> <i>All visits FHT, BP, weight</i>		COVID-19 RESPECT clinic schedule –March 2020-present <i>Hybrid model – combination telemed (T) and in person visits (IP)</i>	
	Prenatal care	SUD care	Prenatal care	SUD care
First trimester	Initial prenatal new patient – labs, exam 12 week – dating ultrasound, genetic screening	Weekly (x 4) recovery check-in, relapse prevention, MOUD efficacy check, support, referrals to individualize recovery care (meetings, counseling, peer mentor) Urine drug test q visit *phone follow-ups for resource utilization/RN and LICSW recovery support PRN	Initial prenatal new patient history (T) 12 week – dating US, genetic screening, prenatal labs, exam (IP), FHT/BP/weight	Weekly SUD RN call Biweekly social work call Biweekly psychiatry call Biweekly OB MD call Urine drug test at in-person visits only
Second trimester	16 week – genetic screening if not done previously 20 week – anatomy survey ultrasound and visit 24 weeks – glucose tolerance testing 28 weeks – CBC, Tdap vaccine Rhogam if indicated, visit	Q 2 week relapse prevention check-in prevention, MOUD efficacy check, support, referrals to individualize recovery care (meetings, counseling, peer mentor) Urine drug test q visit *phone follow-ups for resource utilization/RN and LICSW recovery support PRN	16 week (T) 20 week (IP) anatomy survey, visit, FHT/BP/weight 24 week (T) 28 week (IP) – glucose tolerance testing, Tdap vaccine, CBC, Rhogam if indicated, FHT/BP/weight	Weekly SUD RN call Biweekly social work call Biweekly psychiatry call Biweekly OB MD call Urine drug test at in-person visits
Third trimester	30 weeks – visit; contraceptive counseling; sterilization consent if desired 32 weeks – visit 34 weeks – visit 36 weeks – GBS, CBC, HIV, RPR, repeat GC/Chl, visit 37 weeks and onward – weekly in person visit until delivery	Q 1 to 2 week relapse prevention, MOUD efficacy check, recovery support, referrals to individualize recovery care (meetings, counseling, peer mentor) Urine drug test q visit *phone follow-ups for resource utilization/RN and LICSW	32 week (IP) FHT/BP/weight, contraceptive counseling 34 week (T) 36 week (IP) GBS, CBC, HIV, RPR, repeat GC/Chl, FHT/BP/weight 37 week (T) 38 week (IP) FHT/BP/weight 39 week (T) 40+ week (IP) FHT/BP/weight, delivery	Weekly SUD RN call Biweekly social work call Biweekly psychiatry call Biweekly OB MD call Urine drug test at in-person visits

(continued on next page)

Table 1 (continued)

	Pre-COVID19 RESPECT clinic schedule – through February 2020 <i>All visits in person (IP)</i> <i>All visits FHT, BP, weight</i>	COVID-19 RESPECT clinic schedule –March 2020-present <i>Hybrid model – combination telemed (T) and in person visits (IP)</i>		
	Prenatal care	SUD care	Prenatal care	SUD care
Postpartum	1 weeks PP – incision, mood check 3 week PP check 5 week PP check exam, labs, mood check, contraception (eg IUD, implant)	recovery support PRN 1,3,5 week PP visits include relapse prevention, MOUD efficacy check, recovery support, referrals to individualize recovery care (meetings, counseling, peer mentor)	planning if undelivered 2 week – T 6 week – IP OR T pending pt. pref/needs	Weekly SUD RN call Biweekly social work call Biweekly psychiatry call Biweekly OB MD call
Total visits by type (in person (IP), telemed (T))	14–16 IP visits for prenatal care depending on delivery date; at the majority of these in person visits, patients also had face to face contact with social work, RN, and psych tailored to their individual needs, with additional phone contacts as needed		8–9 IP prenatal visits depending on delivery date 8 T visits for prenatal care plus additional ~6 phone contacts per month by interdisciplinary staff	

including duration of consecutive dosing days, appropriate drug testing results, and engagement in counseling. Our state issued guidance that permitted clinicians to initiate prescriptions via telemedicine rather than by in-person evaluation, enabling buprenorphine prescriptions to be easily incorporated into our hybrid prenatal care model for our pregnant patients on buprenorphine (Calvert, 2020b). The combination of national and state regulatory changes has meant that in our state, COVID-19 has provided many of our patients with more medication initiation, continuation, and dosing options than they had pre-COVID (Haley & Saitz, 2020). A COVID-19 silver lining may be this increased flexibility that balances patient safety, patient-centered services, and necessary regulatory measures. Further research should look at the impact of these changes on pregnant and postpartum patients' recovery trajectories and maternal fetal outcomes.

Can COVID-19-era take home protocols become the new normal? Pregnant persons may be the perfect cohort to maintain take-home status indefinitely, as pregnancy often fuels a heightened motivation for recovery treatment and compliance with traditional take-home criteria. Pregnant persons, regardless of COVID-19 adaptations, may be a subset of methadone clients who should regularly qualify for barrier-free take-home status, especially postpartum. Analysis of the COVID-19-era take-home experiment may provide ample data to support loosening restrictions on methadone treatment for all, but especially for pregnant and postpartum patients. Likewise, analysis of patients' experiences with telemedicine-initiated buprenorphine as part of an integrated hybrid prenatal model may provide an evidence base for continuing telemedicine MOUD initiation and treatment, even after the pandemic subsides.

Telemedicine prenatal care and take-home dosing for women with SUD has emerged rapidly as a necessary response to reducing potential patient and clinician exposure to COVID-19. We anticipated that telemedicine prenatal care would pose significant difficulties for our patients with SUD, and for some—especially those with active substance use, concomitant unstable housing, and lack of consistent phone access—it does. Yet for a majority of our pregnant patients with SUD, telemedicine has had many benefits. In addition to the significant reduction in visit “no shows” described here, providers recognize that

telemedicine video visits offer rich insights into their patients' lives, including their home environment and their key support people. And telemedicine visits may provide a more focused visit format for clinician and patient, in contrast to the clinic where clinicians juggle multiple patients between exam rooms.

Given concerns about recurrent COVID-19 infection waves, teleprenatal care is likely here to stay. Even if COVID-19 disappeared tomorrow, key aspects of integrated tele-prenatal care and SUD care will and should remain. Tele-prenatal care allows patients with complex competing demands due to their SUD and their pregnancy to engage in care for both of these health needs more easily, without transportation, childcare, or other logistical concerns.

We are aware of potential downsides of our model. One downside is the technical difficulty of connecting virtually with pregnant patients who may not have stable access to video-enabled phones, the Internet, reliable phone access, or private locations for video or personal telephone calls. Second, our RESPECT clinic functions on a multidisciplinary model that benefits from continuously sharing treatment suggestions tailored to the needs of individual patients; this is often critical when effectively engaging patients with high socioemotional needs (e.g., IPV, relapse, homelessness, interaction with the department of children and family services system). Such teamwork among providers is difficult to ensure virtually. Moreover, the predominance of virtual visits may be isolating for providers who are accustomed to in-person exchanges of clinical ideas; such mutual support among providers, if interrupted, could contribute to an increase in burnout within care teams.

Creative solutions to provider care team burnout, including using similar telephone and video technology for group debriefs and care, and planning for individual clients with unique challenges, will be essential to ensure that tele-prenatal SUD care does not diminish skilled obstetric and SUD care. Both patients and clinicians must benefit from the hybrid model for such models to stand the test of time.

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