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Cost Savings from Expanding Vermont's Perinatal Psychiatric Consultation Service

Introduction

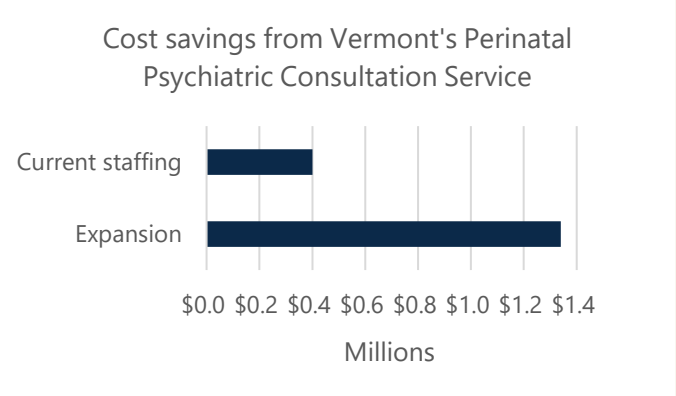
Between 2018 and 2020, one in four pregnant or postpartum Vermonters reported having depression or anxiety during or after pregnancy.[1] Without treatment for mental health conditions, pregnant people are more likely to have worse pregnancy and birth outcomes, including preeclampsia, cesarean section, preterm birth, and reduced productivity at work.[2, 3] Children from these pregnancies face a higher risk of neonatal death, behavioral or developmental disorders, and emergency department visits or hospitalization for injuries.[4–7] We previously estimated that these outcomes cost individuals and Vermont up to $48 million from pregnancy through five years postpartum, specifically due to health expenditures, social service costs, and productivity losses.[1] If untreated, the societal costs for a case of perinatal depression or anxiety add up to $21,000 in the first year.

To improve the health and well-being of pregnant Vermonters, the Vermont Department of Health and University of Vermont Medical Center/Larner College of Medicine partnered to provide the Perinatal Psychiatric Consultation Service. This resource enables obstetricians, midwives, family and internal medicine clinicians, psychiatrists, and other medical providers to seek advice about medication management and mental health treatment planning for patients who expect to become pregnant, are pregnant, or are postpartum. The service also offers education and training to perinatal medical, mental health, and social service providers in the state. Further, the service provides access to perinatal psychiatric expertise in underserved regions of the state, which can improve equity in health care access among perinatal individuals across Vermont.

In 2018, Vermont received a cooperative agreement from the Health Resources and Services Administration to enhance the system of care for Vermont's perinatal population. The program increases the capacity of medical providers, mental health clinicians, and social service partners to provide wellness and prevention resources and to screen, treat, and refer those in need to accessible services. It was designed to complement broader approaches to addressing perinatal, infant, and child health in Vermont, including Vermont's

Figure 1. Treating perinatal mental health conditions can save $1.3 million over two years

As of June 2023, Vermont had a 0.4 full-time equivalent (FTE) psychiatric consultant and no liaison coordinator. With this level of staffing, we projected that Vermont would save about $400,000 over two years by providing diagnostic and therapeutic guidance to providers. Expanding this service to 0.75 FTE staffing for both the consultant and liaison coordinator could increase the cost savings to more than $1.3 million over two years by expanding the capacity to serve more providers and patients across the state.



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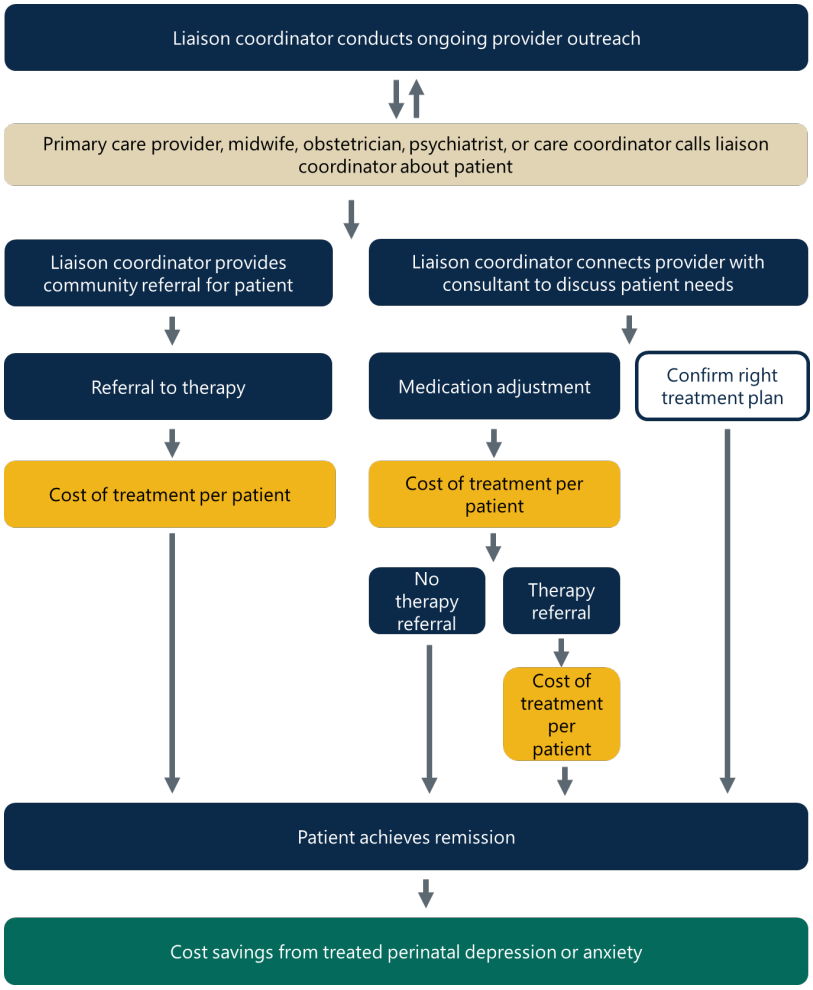
expanding Perinatal Quality Collaborative, which is an essential collaboration between the Vermont Department of Health, the Vermont Child Health Improvement Program at the University of Vermont, and community providers that provides the opportunity to systematize and further sustain the Perinatal Psychiatric Consultation Service.

The Vermont Department of Health intends to scale up the program starting in fall 2023, including increasing the dedicated time of the psychiatrist and adding a liaison coordinator to help with outreach and referrals to therapy and other community resources, such as Help Me Grow Vermont, a community-based, coordinated resource and referral system that connects pregnant people, families, and children to providers and other supports.[a]

Mathematica conducted a study to estimate the effects of increasing the staffing of Vermont's Perinatal Psychiatric Consultation Service over two years—between September 2023 and September 2025—on averting poor outcomes associated with perinatal depression and anxiety and the related changes in costs. Estimating two-year effects gives the program time to scale up through increased outreach and educational opportunities for providers, which provides a better representation of the steady state of the service over a longer term.

Figure 2. Structure and pathways of Vermont's Perinatal Psychiatric Consultation Service



Note: This figure describes the pathways by which perinatal individuals can achieve remission and incur cost savings, which are quantified in our cost model. We excluded the "confirm right treatment plan" pathway from our main analysis and instead included it in a sensitivity analysis.

[a] Vermont began the service in 2015, funding a 0.4 FTE psychiatric nurse practitioner as the consultant and switching to a psychiatrist in 2022.

The consultation service saves $3 for every $1 spent on the program

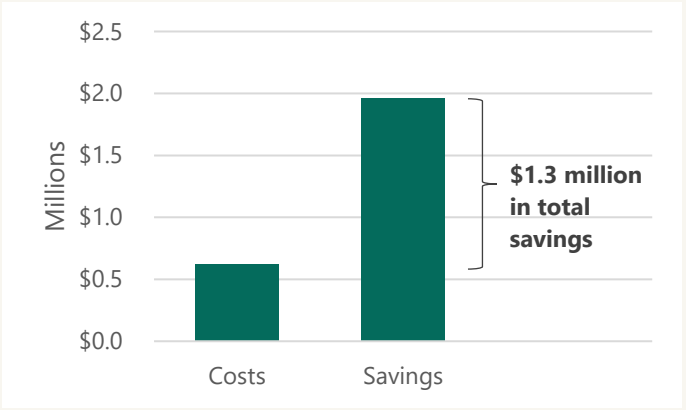
Expanding Vermont's Perinatal Psychiatric Consultation Service from a 0.4 FTE to 0.75 FTE psychiatric consultant, and adding a 0.75 FTE liaison coordinator, would cost about $620,000 while saving $1.96 million in the first two years. The cost savings would be a result of increased societal productivity and reduced medical costs from treated perinatal mental health conditions. Subtracting the costs of the consultation service from the cost savings of treated perinatal mental health conditions yields a total savings of $1.3 million over two years of the model's expansion, or about $3 in savings for every $1 spent on the program.

Over two years, we projected that providers would call the service 268 times with questions about treatment for their patients, based on historical data from Vermont's Perinatal Psychiatric Consultation Service and the estimated increase from outreach over time. Some providers would receive referrals from the liaison to send their patients to a therapist or to Help Me Grow Vermont. The remaining providers would be connected to the psychiatric consultant to discuss diagnostic and treatment questions.

Although the consultation service does not track patients to see if they recover after receiving treatment, we expected 47 percent of treated individuals to achieve remission, based on average remission rates, resulting in a savings of $1.96 million.[1,8] With a new postpartum depression treatment available, remission rates may be higher, resulting in even greater savings. The cost savings for individuals and the state would largely derive from a reduced risk of preterm birth and reduced obstetric health expenditures, whereas businesses would see a cost savings from increased productivity.

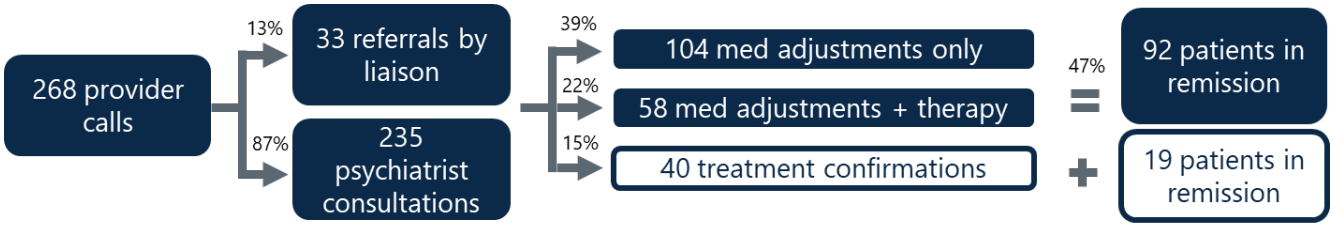
A key feature of the consultation service is confirming whether a patient's treatment plan is safe and effective during pregnancy and the postpartum period. Without confirmation from the consultant, a provider might recommend that a patient discontinue their medication, risking relapse of symptoms. Based on an estimate from Vermont's current psychiatric consultant, we assumed that 15 percent of consultations result in confirmation that the patient is receiving the recommended treatment, which could increase cost savings by $400,000 over two years. However, we excluded this from our main model because we did not have monitoring data to support the estimate.

Figure 3. Costs and cost savings of Vermont's Perinatal Psychiatric Consultation Service



This figure shows the total costs and societal cost savings of a 0.75 FTE psychiatric consultant and a 0.75 FTE liaison coordinator over two years. Subtracting the costs of medication treatment ($59,000), psychotherapy ($70,000), and two-year salaries ($354,000 for the consultant and $135,000 for the liaison coordinator) from the savings of treated perinatal mental health conditions yields a total savings of $1.3 million.

Figure 4. Projected outcomes of the consultation service



Note: The methodology section provides more details on data sources for each estimate.

Increased capacity of the consultant and inclusion of a liaison coordinator result in cost savings

We estimated the cost savings with different staffing levels for the psychiatric consultant and liaison coordinator. These savings ranged from just over $500,000 with a 0.5 FTE consultant, without a liaison coordinator, up to almost $1.4 million with a 0.75 FTE consultant and a full-time liaison coordinator. Based on our model, boosting the capacity of the consultant and giving the liaison coordinator time to conduct outreach to perinatal health providers would substantially increase cost savings associated with treating perinatal depression and anxiety.

Figure 5. Cost savings at different staffing levels

Psychiatric consultant	Liaison coordinator	Cost savings
Without a liaison coordinator		
0.5 FTE	None	$501,000
0.75 FTE	None	$752,000
With a liaison coordinator		
0.5 FTE	0.5 FTE	$825,000
0.5 FTE	0.75 FTE	$848,000
0.5 FTE	1 FTE	$872,000
0.75 FTE	0.5 FTE	$1,282,000
0.75 FTE	0.75 FTE	$1,340,000
0.75 FTE	1 FTE	$1,398,000

Note: Cost savings are rounded to the nearest thousand.

FTE = full-time equivalent.

Increased capacity of the consultant. Increasing the capacity of the psychiatric consultant is the primary driver of the cost savings. In our model, the number of provider consultations each year directly relates to the staffing level of the psychiatrist. With more time devoted to consultations, the psychiatrist can answer diagnostic and therapeutic questions for more providers, and more perinatal individuals can receive treatment, reducing adverse outcomes.

Inclusion of a liaison coordinator. A liaison coordinator reaches out to providers in Vermont, connects providers to the psychiatrist (if needed), and provides direct referrals. In our model, the inclusion of any liaison coordinator scales up the number of consultations over two years, but without the coordinator to increase outreach, consultations would remain at 2022 levels. Triaging provider calls also increases the availability of the service by allowing more dedicated time for the psychiatrist to answer medication-related questions. A staffing level of 0.75 FTEs provides enough time for the liaison coordinator to conduct outreach, triage provider calls, and offer referrals to community resources. Other variations in the liaison coordinator's staffing did not substantially change the total cost savings.

Vermont is among the states leading psychiatry access programs for birthing people

Vermont's Perinatal Psychiatric Consultation Service is one of 19 recognized psychiatry access programs across the country.[9]

- The Massachusetts Child Psychiatry Access Program for Moms, one of the original perinatal models, began in 2014 and has served as a guide for the development of similar models in other states.[10]
- The Periscope Project in Wisconsin, funded by state and foundation grants, began in 2017 and had almost 500 provider encounters in the first 18 months.[11]
- The Florida Behavioral Health Impact program, funded by a grant from the Health Resources and Services Administration, began in 2019 and focuses on training mental health care providers along with obstetric providers.[12]
- Michigan Clinical Consultation & Care began in 2012. Besides provider consultations, the service offers same-day direct virtual counseling, case management, and care coordination for patients.[13]

With additional funding from federal and state governments, these programs could increase their capacity and capabilities, improving the health of perinatal individuals who would not otherwise have access to perinatal psychiatric expertise. ◢

Treating perinatal mental health conditions reduces societal costs

Vermont's Perinatal Psychiatric Consultation Service enables primary care providers, obstetricians, and midwives, as well as the care coordinators and social workers in their offices, to receive guidance on appropriate psychiatric treatments. Supporting these

providers can reduce the number of people with untreated perinatal mood and anxiety disorders and prevent a relapse of symptoms among pregnant or postpartum people who stop taking prescribed medication. Scaling up the service could improve the health of Vermonters – including those in rural, underserved regions – while saving more than $1.3 million over two years. Cost savings are even greater when considering the longer-term effects of untreated perinatal mental health conditions on children.[1]

Untreated perinatal mental health conditions can increase health care costs and the use of other social services, affecting employers with reduced participation in the labor force, and lead to out-of-pocket health care costs and reduced income for patients.[8, 14–16] With appropriate therapeutic guidance, people with perinatal mood and anxiety disorders can effectively manage their conditions, prevent symptoms, realize cost savings, and ultimately improve their well-being.

Methodology

We developed a model in Microsoft Excel using monitoring data from Vermont's perinatal and pediatric psychiatric consultation services, estimates from the literature, and data from state and federal government sources. Although Vermont's Child Psychiatry Access Program serves a different patient population, the program has more resources and provided a guide for how the perinatal program could operate when scaled up. The model calculated the expected number of patients who would achieve remission when their providers used the consultation service, applied the incremental cost savings from treating perinatal depression and anxiety, and subtracted the costs of staffing and treatment. The resulting estimate is the net cost savings of the consultation service.

Liaison coordinator outreach and triage

The liaison coordinator reaches out to providers across the state and makes them aware of the Perinatal Psychiatric Consultation Service, which the model estimated would increase demand from providers. Based on data from similar programs, we expect a 50 percent increase in demand by the second year of expansion of the service.[10, 12] We applied a 25 percent increase to the first year, when the state expects outreach to begin.

The model begins with the expected number of consultations over two years, based on historical data from Vermont's Perinatal Psychiatric Consultation Service plus increased demand from liaison coordinator outreach. We estimated that a liaison coordinator at 0.75 FTEs would refer patients from about 13 percent of provider encounters to community resources (we scaled this percentage by the liaison coordinator FTE).[11, 17] In those cases, providers would not need to speak with the psychiatrist. We assumed that all liaison coordinator referrals result in therapy, although some patients might already have therapists, and others might not be able to schedule a timely appointment due to a lack of available therapists. We multiplied the number of patients with referrals by the cost of eight sessions of therapy, as recommended by the U.S. Preventive Services Task Force.[18, 19]

Psychiatric consultations

The remaining 87 percent of providers who speak with the psychiatric consultant discuss options such as the safety of patients continuing treatment during pregnancy or in the postpartum period, potential medication dosage adjustments or discontinuations, and new treatment plans. We anticipated that 38 percent of discussions with the psychiatrist would result in medication adjustments for patients and 22 percent would result in both medication adjustments and a therapist referral.[11, 17, 20] We multiplied the number of patients who receive medication adjustments by the average cost of one year of depression or anxiety medication, and we multiplied the number of patients referred to therapy by the expected cost of therapy, as described above.[18, 19, 21, 22]

For a sensitivity analysis, we anticipated that another 15 percent of provider encounters would result in confirmation that a patient's treatment plan is safe and effective during pregnancy and the postpartum period, which is based on an estimate from Vermont's current psychiatric consultant.

Calculating cost savings

On average, 47 percent of pregnant or postpartum individuals with perinatal mental health conditions who receive treatment will achieve remission.[8] We multiplied the one-year cost savings we previously calculated by each person whom we expect would achieve remission—47 percent of patients who receive medication adjustments or therapy referrals.[1] We subtracted the costs of medication treatment, psychotherapy, and two-year salaries from the savings of treated perinatal mental health conditions to calculate the net cost savings of each staffing level.

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