Models of Integrated Maternity Care: A Literature Review

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On behalf of Dr. Sandra Magalhaes in support of the research study Impacts of Early Enrollment in Perinatal Home Visiting Programs on Maternal and Child Health Outcomes in Canada

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OBJECTIVE

To examine models of integrated maternity care and their effectiveness, to help inform changes to the delivery of prenatal and postnatal support to pregnant women in New Brunswick.

METHODS

The eligibility criteria for this literature review were kept narrow to retrieve a limited set of search results. The criteria were as follows:

- **Population:** pregnant people experiencing disadvantage
- **Concept:** maternity care integrated with other healthcare services, with a focus on community-based and public health services
- **Context:** prenatal and postnatal periods

Published literature was sourced using the Ovid MEDLINE database. The eligibility criteria directly informed the database search strategy, which is included in Appendix A. No search filters were applied to limit the results by publication date or study design.

DEFINITION: INTEGRATED MATERNITY CARE

Integrated care is an enabling strategy to improve the organization of healthcare. It can be used to improve access, quality, and continuity of services. There does not appear to be any unified or commonly agreed upon definition of integrated care, however, the following definition of integrated maternity care applies:

> Integrated maternity care: “when the network(s) of multiple professionals and organizations across the maternity care and social care systems provide accessible, comprehensive and coordinated services to women who want to get pregnant, are pregnant and/or are up to 6 weeks after birth’ (1).

While this definition applies to the majority of articles included in this literature review, some programs highlighted below provide postnatal support beyond 6 weeks after birth and in several cases, for extended periods of time post-delivery.

RESULTS

Case Examples of Integrated Maternity Care

Program name & location	Population served	Program aim	Who delivers program(s)	Program funding source(s)	Who evaluated program(s)	Integration Notes	Study
HerWay Home (Victoria, BC) Sheway Pregnancy Outreach Program (Vancouver, BC) Maxxine Wright Community Health Centre (Surrey, BC) H.E.R. Pregnancy Program (Edmonton, AB) Raising Hope (Regina, SK) Mothering Project (Winnipeg, MB) Breaking the Cycle (Toronto, ON) Pictou County Kids First (New Glasgow, NS)	Women who live in vulnerable conditions, and who experience higher rates of having an infant with prenatal substance exposure and/or affected by Fetal Alcohol Spectrum Disorder.	A series of programs that offer an array of wraparound services and supports to facilitate access to 'one-stop' health and social care. All of the programs employ some combination of primary, prenatal, perinatal and mental health care services. Basic needs support and childcare are also provided.	Delivered by program staff Health Authority (n=4) Community-based agency (n=4)	In-kind contributions, contract, or co-located services, or in the community by way of formal or informal partnerships.	Co-Creating Evidence (CCE) Project National Evaluation of Multi-Service Programs Reaching Women at Risk – 3-year evaluation between 2017 and 2020	Blended social and primary care and prenatal care. Programs funded through health authority more likely to include ready access to health services on-site (e.g., public health nursing, physicians, specialists, obstetrics). Non-profits may also have access to primary health care and other services through contracted services and partnerships.	Rutman et al., 2020(2)

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Integrated Prenatal and Opioid Use Disorder Program (Chicago, Illinois)	Pregnant women with opioid use disorder	Increase access and engagement to an integrated prenatal and opioid use disorder program at a community health centre. The specific program components are unclear, but strategies to mitigate barriers to engagement included financial support and transportation coordination for the community partner agencies involved in the program.	Urban community health center	Unclear – seems to be using existing resources and redirecting people to access point	Investigator-driven – small grant funded implementation	Implementation led by obstetrician, registered nurse. A certified addiction registered nurse was first point of contact (intake, assessments). Clinic staff and leaders at center received training. Community partners were engaged via e-mail or phone (COVID constraints).	Anderson et al., 2022(3)
Colorado Alliance for Innovation on Maternal Health Substance Use Disorder quality improvement initiative (Colorado)	Women who have experienced, or are more likely to experience substance use disorder, and/or perinatal mood and	Minimize barriers to care and mitigate maternal mortality by instituting universal screening and timely referral for treatment and community care.	Triad Program: Colorado Alliance for Innovation on Maternal Health Substance Use Disorder (CO AIM: SUD) learning collaborative, Improve Perinatal Access, Coordination and Treatment for Behavioural Health	Centers for Disease Control and Prevention, Colorado Department of Public Health and Environment, Alliance for Innovation on Maternal Health,	Colorado Perinatal Care Quality Collaborative	Triad program implemented to address pervasive maternal health issues, deal with fragmentation of system, respond to stigma and bias of substance use and mental health disorders. The 3-tiered system expanded patient	Johnson et al., 2024(4)

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	anxiety disorders		initiative (IMPACT BH) and the Colorado Maternal Overdose Matters plus program (MOMs+)	Colorado Behavioural Health Administration, ZOMA Foundation		care in birth facilities and community settings. Care navigators link clinical teams with patients and provide support, diagnosis, referral, and treatment for behavioural health needs.	
Improve Perinatal Access, Coordination, and Treatment for Behavioral Health initiative (Colorado)	Pregnant and postpartum women with substance use disorder, perinatal mood and anxiety disorders, or social need	Establish a support network to assist with navigating the perinatal period. Care navigators connect the care team and patients to information and support throughout prenatal, hospital, and postpartum care. Services include financial assistance for mental health treatment, supports to address social needs such as food insecurity and transportation barriers, and	See above	See above	See above	See above	Johnson et al., 2024(4)

Program name & location	Population served	Program aim	Who delivers program(s)	Program funding source(s)	Who evaluated program(s)	Integration Notes	Study
		navigation supports such as home visitation.					
Collaborative Outreach and Adaptable Care at Hallmark Health (Massachusetts)	Pregnant and postpartum women with opioid use disorder, substance use disorder	Coordinate outpatient care using a collaborative care team. The program team consists of a Social Work Supervisor, a nurse practitioner, and a community health worker. Patients are referred by their obstetrician, after which the team works with patients to develop a care plan, connects them to resources, and provides supports during pregnancy and postpartum.	Staff (described under program aim) part of program team	Massachusetts Health Policy Commission, the Community Hospital Acceleration, Revitalization, and Transformation (CHART) investment program	Massachusetts Health Policy Commission	Referral sent from within the health system, the team worked with patients to develop a care plan, connect to resources, provide support.	Hodgins et al., 2019(5)
Moms Do Care (Massachusetts)	Pregnant, postpartum, and parenting women with substance	Provide multidisciplinary support including integrated primary, obstetrical, pediatric, and behavioral health care services.	Eleven co-located medical and behavioural health teams across state	Three-year cooperative agreement from the Substance Abuse Mental Health	Led by Institute for Health and Recovery with co-authors on manuscript	-	Stemberger et al., 2023(6)

Program name & location	Population served	Program aim	Who delivers program(s)	Program funding source(s)	Who evaluated program(s)	Integration Notes	Study
	use disorder	Perinatal peer recovery coaches served as role models to program participants and providers and were an integral part of the program.		Services Administration awarded to the Massachusetts Department of Public Health Bureau of Substance Addiction Services	from Advocates for Human Potential, Inc. Center for Research and Evaluation, Massachusetts General Hospital & Public Health		
Pregnancy Medical Home Program (North Carolina)	Pregnant women who experience higher rates of babies born with low birth weight or preterm birth	Identify high-risk pregnancies and utilize community-based care managers who work with prenatal care teams to link pregnant people with community resources. At their first prenatal visit, patients are screened for psychosocial risk factors and those deemed high risk are linked with a care manager for the remainder of the pregnancy.	Community-based care managers and prenatal care providers	State-based Medicaid-managed – which is a public-private partnership between Community Care of North Carolina, the North Carolina Division of Public Health, and the Division of Health Benefits (Medicaid)	Unclear – authors of paper are physicians and Community of Care North Carolina	-	Mallampati et al., 2022(7)

Program name & location	Population served	Program aim	Who delivers program(s)	Program funding source(s)	Who evaluated program(s)	Integration Notes	Study
CenteringPregnancy® partnership (San Francisco)	Women with high psychosocial risk	Address psychosocial needs through a partnership between a prenatal care program (CenteringPregnancy®), a community-based family resource centre, and an early childhood mental health program. Prenatal care is delivered at the resource centre and is co-facilitated by a midwife and a community health worker. Staff from the mental health program provide consultation to midwives and community health workers.	A partnership was formed between a hospital, nurse-midwives in the hospital, the homeless prenatal program, and the infant parent program. Stepped approach to care – psychosocial risks addressed by non-professionals – starts with Homeless Prenatal – then needs met through CenteringPregnancy®, psychotherapy, and a psychiatrist co-located in the OB/GYN clinic.	The program is a billable medical service. Pubic and private sector funding to augment programmatic efforts. Case management was provided through the homeless prenatal program – moving group prenatal care to the community organization did not require additional funding.	Those affiliated with program implementation (clinicians, staff).	Partnership was formalized through a Memorandum of Understanding fostered by mutual respect. Authors noted that integrating and extending services beyond health facilities requires a paradigm shift and commitment of resources.	Thomas et al., 2017(8)

Program name & location	Population served	Program aim	Who delivers program(s)	Program funding source(s)	Who evaluated program(s)	Integration Notes	Study
Women's Issues Consultation Team (San Francisco)	Women with high psychosocial risk	Optimize delivery outcomes through an interdisciplinary team that includes nurses, social workers, psychologists, and prenatal care providers. Women are referred by a variety of community-based prenatal providers to receive in-depth assessment and evidence-based treatment. The team develops individual labor and delivery plans for each woman.	Treatment from collaborative team, including embedded psychiatrist, psychologist and psychology trainees, within prenatal clinic.	No funding source described – located within prenatal care setting.	Clinical team members.	Referral from community-based prenatal providers. Obstetrics/Gynecology and Psychiatry departments jointly developed protocols and procedures to optimize delivery outcomes. Interdisciplinary, collegial, interdependent relationships evolved amongst nurses, social workers, psychologists and prenatal care providers.	Thomas et al., 2017(8)
Substance Use in Pregnancy and Parenting Services (Sydney, Australia)	Pregnant women and mothers (up to 17 years post-delivery)	Provide free continuity of care to optimize mother and child outcomes; address women's substance use needs; reduce assumptions of children into care; enhance mother-child relationships; and	Two nurse-social worker teams, hospital, clinic, and community-based services including child protection and non-governmental organizations.	Program through an integrated care initiative – "Healthy Homes and Neighbourhoods" to support	Clinical team members.	Complex web of organizations involved – see referral pathways on pg. 3 of publication. Integrated care, harm reduction and person-centeredness at	Coupland et al., 2021(9)

Program name & location	Population served	Program aim	Who delivers program(s)	Program funding source(s)	Who evaluated program(s)	Integration Notes	Study
		support development of effective parenting skills. Nurse-social worker teams collaborate with an extensive network of hospital, clinic, and community-based services, including child protection and non-government organizations.		women and their families. Research through local Health District through integrated care program.		centre of model. Important for coordinating provision of long-term multidisciplinary care across different contexts.	
Continuous mental health care (Suzaka City, Japan)	Women & their children	Provide continuous mental health care to mothers and their children throughout pregnancy and childbirth. Pregnant women are screened for psychosocial risk by a public health nurse and receive follow-up home visits from a public health nurse throughout the prenatal and postnatal periods, if necessary (in addition to routine home visits from a public health	Public health nurses completed initial screening, followed by multidisciplinary clinical network based on stepped-care framework. Included consultation and advice from maternity, mental health and community services.	Research grants provided by the Ministry of Health, Labour and Welfare and a grant by an Agency for Medical Research and Development.	Clinical team members.	The team held monthly interdisciplinary meetings (developed based on a hierarchical model) at the hospital – attended by public health nurses, obstetricians, midwives, nurses, social workers, pediatricians, and psychiatrists.	Tachibana et al., 2019(10)

Program name & location	Population served	Program aim	Who delivers program(s)	Program funding source(s)	Who evaluated program(s)	Integration Notes	Study
		nurse within 4 months postpartum).					

Facilitators & Barriers to Integration: What can we learn from these examples?

The Rainbow model of integrated care (11) is a conceptual framework that was developed to illustrate the concept of integrated care from a primary care perspective. Within the model, the dimensions of integrated care are structured around the levels at which integration takes place: the macro, meso, and micro levels, which represent the system, organizational, and clinical levels, respectively, in this context. This conceptualization reflects the view that "integration has to be pursued at different levels within a system to facilitate the continuous, comprehensive, and coordinated delivery of services to individuals and populations". To align with the Rainbow model, the facilitators and barriers to integration identified in the included articles are categorized by integration level.

System integration	
Facilitators	**Barriers**
• Embedding service delivery at leadership level (9)	• Fragmentation or siloing of the service network; a shared governance structure is suggested (9) • Lack of workforce sustainability (9)

Organizational integration	
Facilitators	**Barriers**
• Integrated care (e.g., hospital-based multidisciplinary team providing longer term parenting support for clients post-discharge from hospital through a community pediatric clinic and a playgroup that met weekly at the hospital) (9) • Cross-disciplinary communication to enable referrals across hospital and community (4,8) • Ensuring continuity of care (9) • Establishing relationships with relevant community organizations and provider groups (3,6) • Promoting cross-system relationship building through professional development activities, to help with integrating different care delivery systems (6) • Formalizing collaborations to solidify involvement and roles (e.g., with an MOU) (8)	• Lack of interagency collaboration (e.g., across hospital and community) (9)

Clinical integration	
Facilitators	**Barriers**
• Using a harm-reduction approach (9) • Providing person-centered care (e.g., blended health and social care) (9) and including patients in decision-making (2,9)	• Lack of understanding among staff about role/scope of practice, which can limit information sharing and cause role conflict (9) • Lack of knowledge among maternity care providers about how to screen and intervene for substance

• Addressing the social determinants of health through services (e.g., flexible appointment scheduling to accommodate patients) (8,9) • Offering a wide range of services such as food programming, transportation, and childcare (2) • Building relationships with patients and advocating for them (9) • Programs that are flexible and evolve as patient needs change (2) • Delivering programs in the community (e.g., at the patient's home or coffee shops) (5) or at community-based organizations with health workers already in place (8)	use disorders, which can impede referrals from within the health system (3)

In addition to the facilitators and barriers, Suter et al. (12) identified 10 key principles of successfully integrated healthcare systems (see Appendix B for the key principles). Although the authors emphasize that there is no one-size-fits-all approach to successful integration, the key principles may serve to guide integration efforts.

LIMITATIONS

This literature review is not comprehensive, and there may be descriptions of integrated maternity care models that were not retrieved by the search. Integrated maternity care is a difficult topic to search for, primarily because there is no single definition of integrated care, and the term is used in many different healthcare contexts. Further related to scope, the search was limited to programs developed for pregnant women experiencing disadvantage, and there may be relevant integrated care models that do not target this subpopulation of woman. There may also be useful care models that have not been described in a formal publication, or that are not described as integrated. Finally, all of the programs identified are very different, and in many of the included studies there is a lack of reported detail about the services provided and how they are integrated. As a result, the facilitators and barriers to integration are broad.

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APPENDIX A: OVID MEDLINE SEARCH

#	Searches	Results
1	(integrat* adj3 (care or health* or service?)).ti,ab,kf,hw.	57905
2	(prenatal or antenatal or perinatal or postnatal or postpartum or maternal or maternity or pregnant or pregnanc*).ti,ab,kf,hw.	1422818
3	(public health or communit* or home).ti,ab,kf,hw.	1520847
4	(vulnerable or disadvantaged or high* risk or at risk or low* income or mental health or addiction?).ti,ab,kf,hw.	1244279
5	(substance adj1 (use* or abuse*)).ti,ab,kf,hw.	108814
6	4 or 5	1314655
7	1 and 2 and 3 and 6	451 [final set]

APPENDIX B: 10 KEY PRINCIPLES FOR INTEGRATION

I. Comprehensive services across the care continuum

- Cooperation between health and social care organizations
- Access to care continuum with multiple points of access
- Emphasis on wellness, health promotion and primary care

II. Patient focus

- Patient-centred philosophy; focusing on patients' needs
- Patient engagement and participation
- Population-based needs assessment; focus on defined population

III. Geographic coverage and rostering

- Maximize patient accessibility and minimize duplication of services
- Roster: responsibility for identified population; right of patient to choose and exit

IV. Standardized care delivery through interprofessional teams

- Interprofessional teams across the continuum of care
- Provider-developed, evidence-based care guidelines and protocols to enforce one standard of care regardless of where patients are treated

V. Performance management

- Committed to quality of services, evaluation and continuous care improvement
- Diagnosis, treatment and care interventions linked to clinical outcomes

VI. Information systems

- State of the art information systems to collect, track and report activities
- Efficient information systems that enhance communication and information flow across the continuum of care

VII. Organizational culture and leadership

- Organizational support with demonstration of commitment
- Leaders with vision who are able to instil a strong, cohesive culture

VIII. Physician integration

- Physicians are the gateway to integrated healthcare delivery systems
- Pivotal in the creation and maintenance of the single-point-of-entry or universal electronic patient record
- Engage physicians in leading role, participation on Board to promote buy-in

IX. Governance structure

- Strong, focused, diverse governance represented by a comprehensive membership from all stakeholder groups
- Organizational structure that promotes coordination across settings and levels of care

X. Financial management

- Aligning service funding to ensure equitable funding distribution for different services or levels of services
- Funding mechanisms must promote interprofessional teamwork and health promotion
- Sufficient funding to ensure adequate resources for sustainable change