



How do we improve preventive health care in pregnancy?



Key messages

- Chronic disease risk factors, such as smoking, alcohol consumption and gestational weight gain outside of recommendations during pregnancy increase the risk of complications in pregnancy and birth, and lead to poorer health outcomes for children that can extend into adulthood.¹⁻⁵
- Despite established guidelines,⁶ many pregnant people do not receive recommended antenatal care for chronic disease risks.⁷⁻⁸
- We identified key barriers and facilitators to providing care, which included barriers at the system and individual provider levels such as lack of resources and clinician beliefs about the importance of care.
- A key outcome from the project's co-design approach was building research capacity and partnerships in the maternity services through the midwives recruited to the research team, and investment in site resources such as carbon monoxide monitors to assess smoking.
- The care pathways, co-designed with clinicians and policy makers, provide clear local guidance for antenatal care for smoking cessation, alcohol consumption and gestational weight gain including healthy eating and physical activity in pregnancy.
- The care pathways and implementation strategies developed align with existing care delivery and quality improvement processes at the local, state and national level which means they can be translated rapidly to other jurisdictions.
- This work provides a blueprint for co-designing clinical improvement initiatives to prevent chronic disease.
- The co-design approach formed strong partnerships and active participation, and ensured the work was responsive to policy needs – a point of difference from other research projects.
- Improving the provision of antenatal care for smoking, alcohol consumption and weight gain in pregnancy will help prevent avoidable morbidity – a key focus of health services and policy across Australia.

The project: Engaging maternity services to address smoking, alcohol consumption and weight gain in pregnancy

Project lead: Professor Luke Wolfenden and Dr Melanie Kingsland, University of Newcastle

Project start: January 2020 **Project end:** April 2023

Why is this issue important?

National and international guidelines identify preventable health risks during pregnancy, as one of the most important actions to optimise health outcomes of pregnant people and babies. However, many people do not receive this guideline recommended care to effectively address risk factors such as smoking, alcohol consumption and gestational weight gain outside of recommendations, healthy eating and physical activity.

Research is needed to find an evidence-based way of changing practice, based on the local context, including state and local level policies, guidelines, services and resources, to ensure more people routinely receive the care they need.

What did we do?

The project aimed to understand how best practice care for smoking, alcohol consumption, weight gain, physical activity and nutrition can be made a routine part of antenatal care in public maternity services.

Using a co-design approach, researchers, practitioners and policy makers worked together to generate evidence on how strategy development, using an implementation framework tailored to local contexts, could improve care.

Conducted across three hospital sites in New South Wales, South Australia and Tasmania, the project team:

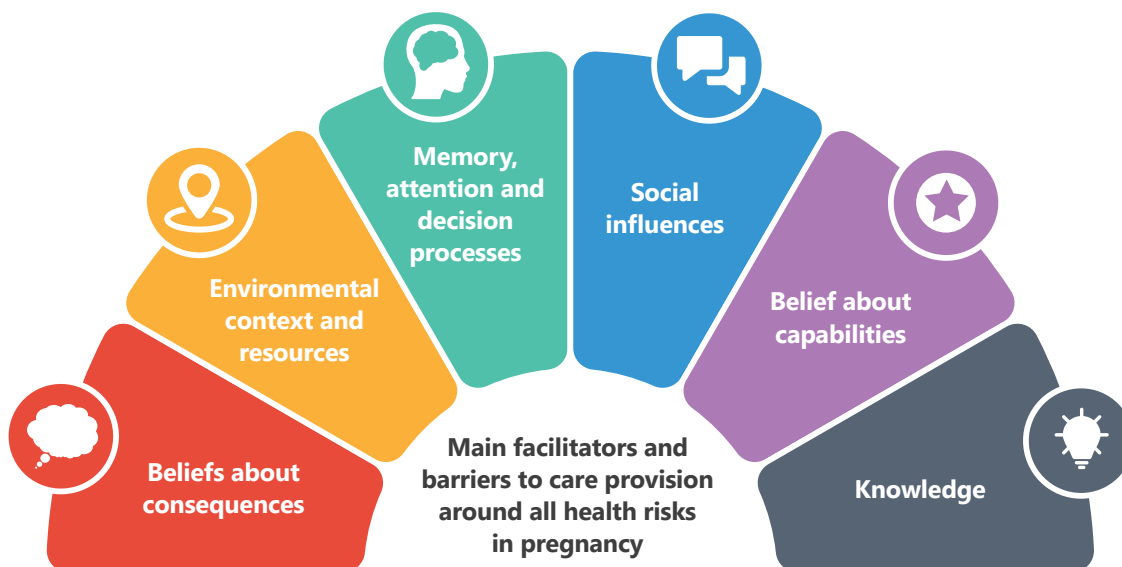
1. Reviewed national, state and local guidelines and policies, to develop localised models of care to implement at the three sites
2. Determined the prevalence of preventive risks in pregnancy, receipt of recommended preventive health care, and acceptability of such care
3. Identified key barriers and facilitators to providing recommended antenatal care which address preventive health risks
4. Co-designed implementation strategies for the local context to support antenatal care providers address preventive risks
5. Tested the effectiveness of implementation strategies in improving preventive care delivery as part of routine antenatal care.

What did we find?

State and local level policies, guidelines, services and resources need to be considered alongside national guidelines when developing localised models of care.

There was considerable divergency in the models and receipt of recommended care among participants due to differences in state and local level policies and guidance.

Several predominant barriers and facilitators to the provision of antenatal care regarding preventive health risks need to be addressed if care is to be improved.



The development of implementation strategies to address these and other identified barriers to care should be undertaken using theoretical frameworks and in collaboration with clinicians so that strategy content is appropriately tailored to service context and resources. For example, identified strategies to overcome predominant barriers to providing antenatal care addressing preventive health of 'Beliefs about consequences' and 'Environmental context' included providing:

- Tools, resources and reminders to enhance the antenatal service environment
- Persuasive education about the health consequences of smoking, alcohol use and gestational weight gain in pregnancy
- Training in how to discuss these risks with clients using positive and supportive approaches.

The use of established theoretically informed methods to map local barriers provided a process model that was feasible and replicable across the three sites. The co-designed process ensured that localised implementation plans were tailored and practical for local use while remaining evidence based. For example, implementation strategies were developed and delivered to address barriers to referring clients to the 'Get Healthy in Pregnancy' service at one hospital site. The strategies included changes to the environment, educational meetings and resources, and reminders for clinicians, which resulted in a significant increase in referrals to the service that provided tailored health coaching on physical activity, diet and weight gain.

What did it produce?

Midwife research capability building

At all sites, midwives worked as part of the research team to help recruit survey participants including clients attending antenatal care and staff at the participating maternity services. The midwife at Site 2 was also responsible for implementing the pilot. All midwives recruited to these positions reported positive experiences.

Research higher degree student

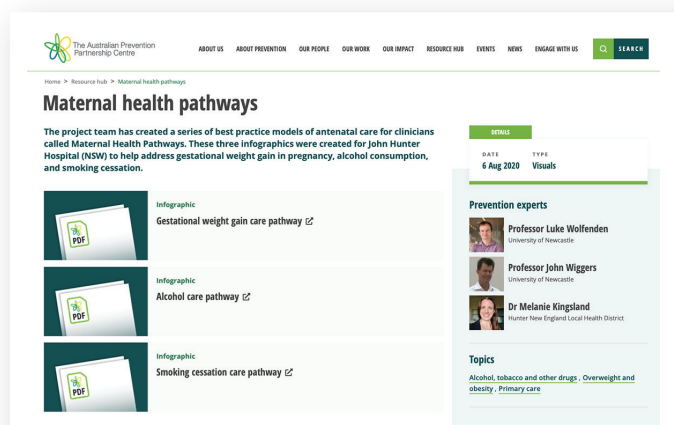
A Master of Studies student at the University of Newcastle was supervised by the project team to conduct the study to identify staff barriers and facilitators.

Site resources

Two sites requested carbon monoxide monitors, and these were provided with training on use. The project team continue to help develop processes to embed the use of carbon monoxide monitors in practice. Carbon monoxide is a colourless and odourless gas created from burning organic matter, for example, from a cigarette. Carbon monoxide is a colourless and odourless gas created from burning organic matter, for example, from a cigarette. A carbon monoxide monitor measures the level of carbon monoxide in a person's exhaled breath. It can be an effective tool to engage, motivate and chart the progress of smokers as part of a smoking cessation intervention.

Maternal health pathways

Maternal health pathways are infographics designed to communicate best practice models of antenatal care for clinicians and to support antenatal care for gestational weight gain in pregnancy, alcohol consumption and smoking cessation are available from: <https://preventioncentre.org.au/resources/maternal-health-pathways/>



Publications

The project has prepared several publications for submission listed below. To obtain a list of the most current publications, visit: <https://preventioncentre.org.au/research-projects/engaging-maternity-services-to-address-smoking-alcohol-consumption-and-weight-gain-in-pregnancy/#project-publications>

- Doherty E, Dilworth S, Wiggers J, Wolfenden L, Wilson A, Leane C, Schranz N, Parish J, Reardon M, Foster M, Tully B, Daly J, Hollis J, Kingsland M. Prevalence of preventive health risks in pregnancy: cross-section study of pregnant people attending public maternity services in three Australian states. [In preparation for submission to the Australian and New Zealand Journal of Public Health.
- Dilworth, S Doherty, E Wynne O, Hollis J, Tully B, Wolfenden L, Wiggers J, Kingsland M. Health professionals reported barriers and facilitators to addressing smoking, alcohol consumption, gestational weight gain, nutrition and physical activity in pregnancy as part of antenatal care: A mixed methods systematic review. [Under development]. Prospero registration number: CRD42022353084; 22 October 2022.
- Dilworth S, Doherty E, Wiggers J, Wolfenden L, Wilson A, Leane C, Schranz N, Muyambi Y, Parish J, Reardon M, Tully B, Daly J, Hollis J, Kingsland M. Staff identification of barriers and enablers to the provision of recommended preventive care practices for smoking, alcohol consumption and weight gain in pregnancy within maternity services in two Australian states. [In preparation for submission].
- Dilworth S, Doherty E, Wiggers J, Wolfenden L, Wilson A, Leane C, Schranz N, Muyambi Y, Tully B, Daly J, Hollis J, Kingsland M. Feasibility pilot of implementation strategies to support referral to a telephone coaching service for support with weight gain, healthy eating and physical activity in pregnancy: A brief report. [In preparation for submission].

Additional publications co-funded through the project:

- Reynolds R, Kingsland M, Daly J, Licata M, Tully B, Doherty E, Farragher E, Desmet C, Lecathelinais C, McKie J, Williams M, Wiggers J, Hollis J. Breastfeeding practices and associations with pregnancy, maternal and infant characteristics in Australia: a cross-sectional study. *Int Breastfeed J.* 2023 Jan 19;18(1):8. doi: 10.1186/s13006-023-00545-5
- Kingsland M, Hollis J, Daly J, Elliott E. Smoking, alcohol and weight: primary care in the preconception, pregnancy and postnatal periods. *Medicine Today.* 2022 Dec; 23:12.
- Doherty E, Kingsland M, Wiggers J, Wolfenden L, Hall A, McCrabb S, Tremain D, Hollis J, Licata M, Wynne O, Dilworth S, Daly JB, Tully B, Dray J, Bailey KA, Elliott EJ, Hodder RK. The effectiveness of implementation strategies in improving preconception and antenatal preventive care: a systematic review. *Implement Sci Commun.* 2022 Nov 22;3(1):121. doi: 10.1186/s43058-022-00368-1
- Doherty E, Wiggers J, Nathan N, Hall A, Wolfenden L, Tully B, Elliott EJ, Attia J, Dunlop AJ, Symonds I, Tsang TW, Reeves P, McFadyen T, Wynne O, Kingsland M. Iterative delivery of an implementation support package to increase and sustain the routine provision of antenatal care addressing alcohol consumption during pregnancy: study protocol for a stepped-wedge cluster trial. *BMJ Open.* 2022 Jul 26;12(7):e063486. doi: 10.1136/bmjopen-2022-063486

Why does it matter?

Improving provision of antenatal care for smoking, alcohol consumption and weight gain in pregnancy will help to prevent avoidable morbidity – a key focus of health services and policy makers across Australia. This work provides a blueprint for co-designing clinical improvement initiatives to prevent chronic disease. The models of care and implementation strategies developed align with existing care delivery and quality improvement processes at the local, state and national level which means our findings can be rapidly translated across jurisdictions.

The active engagement of research, policy and practice stakeholders across all components of the project highlighted the benefits of co-design as a successful health research model.

Next steps

At a policy level, more collaboration is needed across states to better align state and local policy with national guidelines to support best practice evidence-based care.

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2. da Silva SG, Ricardo LI, Evenson KR, Hallal PC. Leisure-Time Physical Activity in Pregnancy and Maternal-Child Health: A Systematic Review and Meta-Analysis of Randomized Controlled Trials and Cohort Studies. *Sports Medicine*. 2017; 47:295-317.
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8. Waller A, Bryant J, Cameron E, Galal M, Quay J, Sanson-Fisher R. Women's perceptions of antenatal care: are we following guideline recommended care? *BMC Pregnancy and Childbirth*. 2016; 16:191.

Our project partners

- Women's and Children's Hospital, Adelaide, South Australia
- Wellbeing SA, South Australia
- Launceston General Hospital, Tasmania
- Public Health Services, Department of Health, Tasmania
- John Hunter Hospital, Newcastle, NSW
- Population Health, Hunter New England Local Health District, NSW



The Australian Prevention Partnership Centre

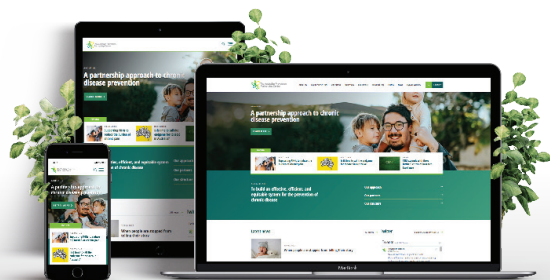
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For more resources and publications related to this project, visit our website, preventioncentre.org.au

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