

Placental Growth Factor (PlGF)-Based Biomarker Testing to Help Diagnose Pre-eclampsia in People With Suspected Pre-eclampsia: Recommendation

Final Recommendation

Ontario Health, based on guidance from the Ontario Health Technology Advisory Committee, recommends publicly funding placental growth factor (PlGF)-based biomarker testing as an adjunct to standard clinical assessment to help diagnose pre-eclampsia in pregnant people between 20 weeks and 36 weeks plus 6 days' gestation with suspected pre-eclampsia.

Rationale for the Recommendation

The Ontario Health Technology Advisory Committee has reviewed the findings of the health technology assessment.¹ The committee made the above recommendation after considering the clinical, economic, and patient preference and values evidence. The clinical evidence shows that PlGF-based biomarker testing used as an adjunct to standard clinical assessment likely improves the accuracy of predicting pre-eclampsia in pregnant people between 20 weeks and 36 weeks plus 6 days' gestation with suspected pre-eclampsia. The clinical utility evidence indicates that PlGF-based biomarker testing may shorten the time to diagnosing pre-eclampsia; reduce the chance of severe adverse outcomes for the pregnant person, such as death; and decrease the baby's stay in the neonatal intensive care unit, although there is uncertainty about this evidence. PlGF-based biomarker testing may result in little to no difference in other clinical outcomes such as maternal admission to hospital and perinatal adverse outcomes.

The cost-effectiveness of PlGF-based biomarker testing could not be assessed, as existing studies were not directly relevant to this funding recommendation and due to uncertainty in the clinical utility

¹ We recognize that gender identities are individual and that many people who give birth are not women, despite being assigned female sex at birth. Therefore, we use gender-inclusive pronouns and terms as much as possible. In this document, however, we have used the term "maternal" for consistency with studies cited in the health technology assessment and in the absence of a gender-neutral term that appropriately refers to the person giving birth when used in this context.

evidence necessary to inform a primary economic evaluation. The budget impact of publicly funding PlGF-based biomarker testing is estimated to be between \$0.27 million to \$0.46 million per year, for a total of \$1.83 million over 5 years.

The Ontario Health Technology Advisory Committee members considered the lived experiences of people impacted by pre-eclampsia during their pregnancy as well as their family members as caregivers, who described the emotional, physical, and work–life impacts of the condition. People interviewed expressed a preference for PlGF-based biomarker testing, perceiving testing to be minimally invasive and in alignment with their values for preventive care. They also expressed a preference for having a quantitative test result in addition to the continued assessment of their symptoms to guide the diagnosis of pre-eclampsia.

The committee decided that the moderate accuracy of PlGF-based biomarker testing benefited people with suspected pre-eclampsia by improving the diagnosis of pre-eclampsia and that the budget impact for this benefit was reasonable. Additionally, improvement in diagnosis may support the provision of care in the right place by preventing unnecessary hospitalization of pregnant people who likely do not have pre-eclampsia and ensuring appropriate hospital-based care for those who likely do. Care in the right place is important, especially so in rural, remote, and Northern Ontario regions where hospitalization may require travelling long distances from home. Preventing unnecessary hospitalizations can help reduce the disruption of travel and related anxiety.

Decision Determinants for Placental Growth Factor (PlGF)–Based Biomarker Testing to Help Diagnose Pre-eclampsia in People With Suspected Pre-eclampsia

Overall Clinical Benefit

Effectiveness

How effective is the health technology/intervention likely to be (taking into account any variability)?

In people with suspected pre-eclampsia, placental growth factor (PlGF)–based biomarker testing used as an adjunct to standard clinical assessment between 20 weeks and 36 weeks plus 6 days' gestation:

- Likely improves accuracy of predicting pre-eclampsia (GRADE: Moderate)
- May reduce:
 - Time to pre-eclampsia diagnosis (GRADE: Low)
 - Severe adverse maternal outcomes (measured as a composite outcome)¹ (GRADE: Low)
 - Length of stay in the neonatal intensive care unit (GRADE: Low)
- May result in little to no difference in:
 - Time to delivery (GRADE: Low)
 - Gestational age at delivery (GRADE: Low)
 - Preterm delivery (GRADE: Low)
 - Maternal admission to hospital (GRADE: Low)
 - Neonatal admission to hospital/specialist care unit (GRADE: Low)
 - Maternal length of stay in hospital (GRADE: Low)

Safety

How safe is the health technology/intervention likely to be?

In people with suspected pre-eclampsia, PlGF-based biomarkers used as an adjunct to standard clinical assessment between 20 weeks and 36 weeks plus 6 days' gestation:

- May reduce severe adverse maternal outcomes (measured as a composite outcome)¹ (GRADE: Low)
- May result in little to no difference in perinatal/neonatal adverse outcomes (GRADE: Low)

Burden of Illness

What is the likely size of the burden of illness pertaining to this health technology/intervention?

Pre-eclampsia affects up to 5% of pregnancies, most frequently after 20 weeks' gestation. According to data from the Better Outcomes Registry and Network, Ontario, the prevalence of pre-eclampsia in Ontario is about 1.3%.

Need

How large is the need for this health technology/intervention?

Diagnosing pre-eclampsia is challenging, as symptoms and signs are highly variable: individuals can be asymptomatic despite severe disease and disease can progress over several weeks before diagnosis is confirmed. Assessment begins during prenatal appointments when blood pressure is measured and risk factors for pre-eclampsia are assessed. The presence or absence of hypertension (high blood pressure) does not accurately identify or exclude pre-eclampsia. An earlier diagnosis for those with suspected pre-eclampsia is important to monitor and deliver the babies of those who will develop pre-eclampsia or treat with antihypertensive drugs those who do not have pre-eclampsia but have elevated blood pressure at the end of pregnancy.

Patient Preferences and Privacy

Patient Preferences and Values

Do patients have specific preferences, values, or needs related to the health condition, health technology/intervention, or life impact that are relevant to this assessment?

Participants valued preventive care and felt that PlGF-based biomarker testing may support symptom appraisal and health-seeking behaviours for those with suspected pre-eclampsia. As it relates to the patient–doctor partnership, participants viewed PlGF-based biomarker testing as a way to potentially establish a shared understanding across specialized care teams should urgent treatment be needed. In addition, those we spoke to valued interventions that are clinically effective and minimally invasive.

Overall, the participants felt that PlGF-based biomarker testing was non-invasive and patient-centred, and they perceived risks to the test to be minimal.

Autonomy, Privacy, Confidentiality, and/or Other Relevant Ethical Principles as Applicable

Are there concerns regarding accepted ethical or legal standards related to patient autonomy, privacy, confidentiality, or other ethical principles that are relevant to this assessment?

Participants viewed having access to information as an integral part of patient autonomy and preferred to have access to the results of their PlGF-based biomarker testing. In their view, having independent access to the results may facilitate self-advocacy and improve communication with their primary health care provider. It was also viewed as potentially beneficial for family members as caregivers who may have to advocate on a pregnant person's behalf in emergency care settings.

When reflecting on optimal ways to communicate the results of the PlGF-based biomarker testing, the participants expressed concerns over receiving their results online (e.g., through a patient portal) without any additional context. The majority expressed a strong preference for an accompanying consultation with their health care provider to help contextualize the findings.

Equity and Patient Care

Equity of Access or Outcomes

Are there disadvantaged populations or populations in need whose access to care or health outcomes might be improved or worsened that are relevant to this assessment?

There are equity considerations that are relevant to this health technology assessment. Specifically, the prevalence of pre-eclampsia may be higher in certain racial and ethnic groups, and in certain regions in Ontario. Currently, routine PlGF-based biomarker testing to help diagnose pre-eclampsia in people with suspected pre-eclampsia is only available in Toronto. The implementation of PlGF-based biomarker testing may decrease the number of patients with suspected pre-eclampsia—particularly individuals who live in remote or northern areas—who miss days of work, incur costs travel, and are admitted to hospital unnecessarily because of the inability of clinical assessment alone to rule out suspected pre-eclampsia.

Patient Care

Are there challenges in the coordination of care for patients or other system-level aspects of patient care (e.g., timeliness of care, care setting) that might be improved or worsened that are relevant to this assessment?

Patient care coordination might be improved with the use of PlGF-based biomarker testing as an adjunct to standard clinical assessment for those with suspected pre-eclampsia by supporting care in the most appropriate setting. For example, if pregnant people seek care for symptoms of pre-eclampsia, such as high blood pressure, results of PlGF-based biomarker testing may help predict which patients have or will develop pre-eclampsia and require further monitoring in hospital and which patients can return to the community setting with antihypertensive medications.

Cost-Effectiveness

Economic Evaluation

How efficient is the health technology/intervention likely to be?

Results from published economic studies were not applicable to Ontario. We did not conduct a primary economic evaluation as the impact of the test on maternal and neonatal outcomes is uncertain.

Feasibility of Adoption Into Health System

Economic Feasibility

How economically feasible is the health technology/intervention?

Publicly funding PlGF-based biomarker testing would result in additional costs from \$0.27 million to \$0.46 million per year, for a total of \$1.83 million over 5 years.

Organizational Feasibility

How organizationally feasible is it to implement the health technology/intervention?

PlGF-based biomarker testing is currently available at two Toronto academic hospitals. The ease with which these tests can be made available in community laboratories—either hospital-based or non-hospital-based (particularly in remote or northern regions)—is unclear.

Reference

- 1) Ontario Health. Placental growth factor (PLGF)–based biomarker testing to help diagnose pre-eclampsia in people with suspected pre-eclampsia: a health technology assessment. Ont Health Technol Assess Ser [Internet]. 2023 May;23(3):1–146. Available from: <https://hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/placental-growth-factor-plgf-based-biomarker-testing-to-help-diagnose-pre-eclampsia-in-people-with-suspected-pre-eclampsia>

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