

Postpartum screening after gestational diabetes mellitus: Aiming for universal coverage

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INTRODUCTION

Ever since Carrington *et al.* coined the term “Gestational diabetes” in 1957,^[1] the subject of gestational diabetes mellitus (GDM) has attracted considerable controversy, spanning screening methodology, diagnostic criteria, and management strategies.^[2,3] Controversy surrounds postpartum screening as well: The choice of test; screening frequency; and strategies to ensure adequate postpartum screening rates are open to debate.^[4-6] The need to recognize these high-risk women at the earliest, during and after pregnancy, however, is beyond doubt, as early detection has been shown to improve not only short-term outcomes, but long-term health as well.^[3]

THE NEED FOR UNIVERSAL COVERAGE

Lifestyle modification as well as pharmacological intervention can prevent or delay women with a history of GDM from progressing to type 2 diabetes mellitus (T2DM), as effectively as in people with prediabetes.^[7] To do this, however, one needs to identify high-risk individuals through regular postpartum follow-up.^[8] Globally, however, postpartum screening rates are poor, reported mostly below 50%.^[6] These rates stand in stark contrast to the success achieved by our colleagues in paediatrics and community health, who target the same population (mothers) to ensure universal immunization coverage of their infants. This editorial

focuses on the opportunity provided by postpartum screening, discusses how to achieve universal screening in women with a history of GDM, and the optimize use of this window to help change the natural history of diabetes.^[9]

AIMING FOR UNIVERSAL COVERAGE

Four important steps have been identified which may help us in achieving our aim of universal screening:

- Understanding barriers to universal postpartum screening
- Identifying appropriate screening methodology
- Utilizing person-friendly screening strategies
- Choosing optimal screening frequency.

Understanding barriers

Patient related

A recent European study observed that while pregnancy motivates women to modify their behavior so that they can have a healthy baby, these changes are often not maintained after delivery. Though women are aware of their risk of developing diabetes, they do not always convert this knowledge to action.^[10] This change in attitude towards healthy lifestyle measures, after delivery, creates a challenge for any postpartum screening program among women with GDM.

Tiredness, maternal attachment and childcare demands are prominent barriers in the early postnatal months. Later, work, family and child development became more significant barriers.^[10] In addition to these, distance from hospital, socioeconomic challenges, pressure for house-hold work, inability to travel alone for testing, lack of adequate family support for child care, and difficulty in taking time off work, are seen as factors which negatively impact the postpartum screening response in developing countries.^[11]

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Adequate counseling of the patient, and her family, including the mother-in-law, should help in addressing some of these barriers. A sustained community awareness program, on the lines of social marketing, may be needed to emphasize the importance of regular follow-up after delivery.

Health care provider related

There are marked interdisciplinary differences amongst health care providers with relation to advising postpartum investigations. Shah *et al.* observed that internists/ endocrinologists ordered the majority of postpartum diabetes screening tests while obstetricians recommended the fewest.^[12] Stuebe *et al.* reported primary care providers more likely than obstetricians, ordered a postpartum screening test for women with a known history of GDM.^[13] Kim *et al.* investigated different scenarios to predict postpartum glucose testing in a university hospital, and found that after adjusting for confounders, the only variable that significantly predicted testing was a visit to an endocrinologist after delivery.^[14] We share a similar experience in India. Eight out of ten women with GDM are controlled by medical nutrition therapy alone,^[15] and most of them are not referred to physicians. This adversely affects postpartum screening, as most patients are not informed or counseled why follow-up is essential, what investigations have to be done, at what time, and with whom to follow later on. There is also low awareness regarding long-term implications of GDM. This is especially important as one-third of women with diabetes pass through the stage of GDM, which allows an important window of opportunity for prevention.^[16] We propose active efforts to enhance interdepartmental coordination and communication amongst medical professionals. Establishment of specialized diabetes and pregnancy clinic, jointly run by obstetricians and endocrinologists/ internists, involving nursing and paramedical staff, could be a significant step in overcoming the barriers discussed.

Health care related

Lack of universal insurance, easy access to centre, and inconsistent guidelines are major health care related issues that result in poor postpartum screening.^[6] These need to be addressed at a local, as well as national level.

Identifying best screening methodology

There is no doubt that 75-g oral glucose tolerance test (OGTT) is the most sensitive test for postpartum screening of GDM. It helps in detecting maximum number of cases of prediabetes/diabetes as compared to fasting plasma glucose (FPG) and glycated hemoglobin (HbA1c).^[5] FPG alone may miss 30–40% of cases of type 2 diabetes and will not detect isolated impaired glucose tolerance.^[17]

HbA1c as a screening test has not been adequately studied.^[18] In Asian populations, FPG and HbA1c concentrations have much lower sensitivity than postprandial glucose concentration for detection of diabetes. In the DECODA study (a study of 11 Asian cohorts), more than half of patients with diabetes had isolated postprandial hyperglycaemia.^[17] However, inconvenience to the patient and practical infeasibility limit its applicability in resource challenged settings.^[4] Our opinion on this debate is wherever facilities are available, 75-g OGTT should be offered to the patient, who should also be informed about its high sensitivity. If she is not willing for same, or in situations where OGTT is practically infeasible, FPG or HbA1c can be used for postpartum screening.^[19]

Utilizing person-friendly screening strategies

Person-friendly strategies build upon an understanding of barriers to screening and draw upon available resources and strengths, which can be marshalled by a high level of commitment.

Periodic reminders for postpartum screening

Clark *et al.* conducted a randomised controlled trial on postpartum follow-up of GDM, in which the response rate was 60.5% in the group in which both patient as well as doctor received reminders for screening, but only 14.3% if no postal reminders were given.^[20] In view of the dramatic response to these reminders, they should be introduced into regular practice.^[19] For example, in patients with normal glucose tolerance or HbA1c, reminders can be sent every 3 years. If results fall in the prediabetic range, reminders could be sent annually (as per American Diabetes Association [ADA] guidelines on the frequency of testing).^[5,19] In India, an initiative can be led by large public funded health care insurance providers such as the central government health services, armed forces, railways, and employees state insurance, and subsequently extended across the country.

Sampling by hemoglobin A1c during visits for child immunization

If there is a lack of response to periodic reminders (perhaps two or three), a proactive effort could be made to test the women during visits for child immunization. The vaccination of the child provides opportunities of multiple contacts with woman, which be utilized for postpartum screening as well. C.e.HbA1c may be a suitable modality for this scenario, as it does not require fasting, can be collected at any time of the day, without regards to meal times. And is not time-consuming. The ADA HbA1c high-risk cutoff of 5.7% yielded a sensitivity of 45% and specificity of 84% for identifying women with abnormal glucose tolerance in the ATLANTIC-diabetes in pregnancy

study.^[21] Thus, HbA1c can help identify an additional 50% women with diabetes, out of those who are unable to attend clinic-based postpartum screening programmes, despite periodic reminders.

Self-administered oral glucose tolerance test

A recent study evaluated feasibility of using a disposable, self-administered, capillary blood sampling OGTT device in a community setting.^[22] The investigators found that self-administered OGTTs can be performed successfully by untrained individuals, and could help screen people who might need a formal OGTT to confirm the presence of impaired glucose tolerance or diabetes. The utility of self-administered OGTT should also be studied in postpartum women, who can easily understand the procedure, are willing to undergo the test, and have access to facilities for the same.

Taking help of existing health care programs in India

India has a strong and extensive public health network, which works through a “bottom-up” approach. The vast system of primary, secondary and tertiary health centres is guided by well-drafted Indian Public Health Standards, 2012 (IPHS), which lay down minimum requirements for the provision of care at each level. Care and follow-up of GDM can easily be integrated with to the IPHS. Concordance with ongoing programs, such as scheduled immunization visits, will help improve screening rates in women, who may otherwise find it difficult to visit a health care facility for themselves.

Choosing optimal screening frequency

South Asians have not only high rates of development of diabetes after GDM, but they develop the condition earlier than people of other ethnicities. Krishnaveni *et al.* have found conversion rates of 37% to T2DM in 35 women with GDM at 5 years, as compared to 2% in controls.^[23] Similarly, Kale *et al.* reported conversion rates of 52% for T2DM at mean follow-up period of 4.5 years in 126 women with a history of GDM.^[24] We (Tandon *et al.*) have documented conversion rates of 34.5% to diabetes and 40% to prediabetes within 5 years of delivery among women with history of GDM (Abstract, IDF World Diabetes Congress, 2013). These studies imply that Indian women with GDM should have frequent postpartum screening if we aim to modify natural history and reduce the risk of diabetes.

Thus, the recommendation by ADA to screen women with a history of GDM at three-yearly intervals may not be relevant for South Asians. While considering the relative ease and economy of glucose testing in South Asia, coupled with the heavier burden of diabetes complications and

their treatment, we suggest shorter screening intervals after delivery: 1-year in women with normal results, and 3–6 months in abnormal results. There is an urgent need for establishing optimal screening frequency for different ethnicities, as current ADA guidelines on screening are also not evidence based. Similarly, the sensitivity and specificity, utility, and practical feasibility of different tests needs to be determined in South Asian women.

CONCLUSION

A concerted, sustained inter-professional and interdisciplinary effort is required to prevent diabetes. The need for such an effort has never been greater. Women with a history of GDM present an easily identifiable, and approachable cohort which can be targeted to ensure early detection and management of diabetes. The principles enunciated in this editorial should help encourage efforts, in research and practice, to achieve universal postpartum follow-up of this vulnerable group. By doing so, we will be able to convert a perceived disease state into an opportunity for prevention of disease and maintenance of health.

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