Antenatal care in complicated cases

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Date: 1.12.2021

Description of condition and intervention

Antenatal care is an important facet for ensuring a positive pregnancy experience for women and their unborn children. Components of antenatal care propagate about the healthy behaviours, provide interventions targeting good health for the mother and the baby. The World Health Organization recommends at least four antenatal visits during the pregnancy. Comprehensive guidelines provided by WHO gives evidence-informed recommendations on the routine antenatal care. These guidelines are relevant to all the pregnant women in any healthcare or community (WHO 2021).

Specific interventions included as part of antenatal care in complicated cases of pregnancy and need timely management commencing from the antenatal care visit for better health outcomes for the mother and the baby. We assess the effects and costs of the following interventions as part of management of chronic illnesses during pregnancy in this evidence brief.

Pregnancy diabetes management
Hypertension disorder in pregnancy, case management

International guidelines

Organization	Indications/recommendations	Applicability in LIC & Lower MIC settings
World Health Organization 2016	Recommendations on Antenatal Care for a Positive Pregnancy Experience.	Yes

Intervention attributes

Type of interventions & Delivery platform

Table 1: Type of interventions & delivery platform

Intervention	Type	Delivery platform
1. Pregnancy diabetes management	Curative	Health centre
2. Hypertension disorder in pregnancy, case management	Curative	Health centre

Equity

In addition to considerations like cost-effectiveness and health systems factors, dimensions of equity can be relevant for priority setting. The opportunity for a long and healthy life varies according to the severity of a health condition that individuals might have, so there are inequities in individuals' opportunities for long and healthy lives based on the health conditions they face. Metrics used to estimate the severity of illness at an individual level can be used to help prioritize those with less opportunity for lifetime health. FairChoices: DCP Analytics Tool uses Health adjusted age of death (HAAD), which is a metric that estimates the number of years lived from birth to death, discounting years lived with disability. A high HAAD thus represents a disease less severe in terms of lifetime health loss, while a low HAAD represents a disease that is severe on average, causing early death or a long period of severe disability. It is also possible to estimate the distribution of HAAD across individuals with a health condition. FairChoices shows for each intervention an average HAAD value of the conditions that are affected by respective interventions that have health effects. Additionally, a plot shows HAAD values for around 290 conditions (Johansson KA et al 2020).

Time dependence
Moderate level of urgency. Treatment outcomes not highly affected by some days of delay.

Population in need of interventions
Table 2: Population in need of interventions

Intervention	Treated population		Affected population		Disease state addressed
	Treated age	Treated fraction	Affected age	Affected fraction	
Pregnancy diabetes management: Treatment of diabetes during pregnancy	10 to 54 years; pregnant female	0.06	10 to 54 years; pregnant female	0.06	Indirect maternal deaths
Pregnancy diabetes management benefits to fetus	0 to 0 year		0 to 0 year	0.06	Other neonatal disorders
Hypertension disorder in pregnancy, case management	15 to 49 years; pregnant female;	1	15 to 49 years	0.271	Maternal hypertensive disorders

Intervention effect and safety

Table 3: Effect and safety of interventions for chronic illness during pregnancy

Effect of intervention		Certainty of evidence
Mortality Pregnancy diabetes management: Treatment of diabetes during pregnancy	40% reduction in mortality with the intervention (OneHealth Tool)	See appendix
Hypertension disorder in pregnancy, case management	50% reduction in maternal mortality (Table 39, Appendix Guttmacher report 2014)	
Incidence Pregnancy diabetes management benefits to fetus	70% reduction in incidence of diabetes (assumed)	

Model assumptions

Table 4: Summary of model parameters and values used in FairChoices – DCP Analytical Tool

Category	Model parameter	Notes
Intervention	1.Pregnancy diabetes management 2. Hypertension disorder in pregnancy, case management	
Cost calculation		
Treated population		Global Burden of Disease Study 2019
Gender	See Table 2	
Age		
Treated fraction		
Effect calculation		
Affected population	Those with condition	
Affected gender		
Affected fraction age	See Table 2	
Affected fraction		
Comparison	No intervention	

Mortality Reduction (RRR)*
 	
Pregnancy diabetes management:
    Treatment of diabetes
    during pregnancy
 	
Hypertension disorder in pregnancy, case management
	0.4
	
	0.7
		OneHealth Tool
		
		Table 39, Appendix Guttmacher report 2014

Intervention cost

The cost of pregnancy diabetes management is estimated to be 327 USD per woman with Gestational Diabetes (GD) in 2011 in India. The cost is based on antenatal care costs for women (GD), including diet and exercise counseling, glucose control medications and monitoring, HbA1c tests, fetal ultrasound, echocardiogram, and alpha-fetoprotein tests (Marseille E et al 2013).

References

WHO 2021: WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience. Geneva: World Health Organization; 2016. PMID: 28079998.

Johansson KA et al 2020: Johansson KA, Coates MM, Økland JM, Tsuchiya A, Bukhman G, Norheim OF, Haaland Ø. Health by disease categories. Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs. 2020 Sep 30:105.

OneHealth Tool: OneHealth Tool. Geneva: World Health Organization; 2021. Available from https://www.who.int/tools/onehealth (accessed on 25-October-2021) One Health Tool

Marseille E et al 2013: Marseille, E., Lohse, N., Jiwani, A., Hod, M., Seshiah, V., Yajnik, C.S., Arora, G.P., Balaji, V., Henriksen, O., Lieberman, N., Chen, R., Damm, P., Metzger, B.E., Kahn, J.G., 2013. The cost-effectiveness of gestational diabetes screening including prevention of type 2 diabetes: application of a new model in India and Israel. J. Matern. Fetal Neonatal Med. 26, 802–810. https://doi.org/10.3109/14767058.2013.765845

Table 39, Appendix Guttmacher report 2014: Darroch JE, Sully E, Biddlecom A. Adding it up: investing in contraception and maternal and newborn health, 2017—supplementary tables. New York, NY: The Guttmacher Institute. 2017.

Appendix

Literature Review for effectiveness & safety

This literature search is an example of Level 1 search for intervention inputs taken from DCP3 or generated in an ad hoc manner (e.g., quick google search found one study of cervical cancer screening cost-effectiveness that was used to create an effectiveness parameter for that intervention).

Level of evidence of efficacy studies:

1. low (expert opinions, case series, reports, low-quality case control studies)

2. moderate (high quality case control studies, low quality cohort studies)

3. high (high quality cohort studies, individual RCTs)

4. very high (multiple RCTs, meta-analysis, systematic review, clinical practice guidelines)