

267 Treating patients in HAPO glucose category 4 to improve maternal and neonatal outcomes: a cost effectiveness analysis

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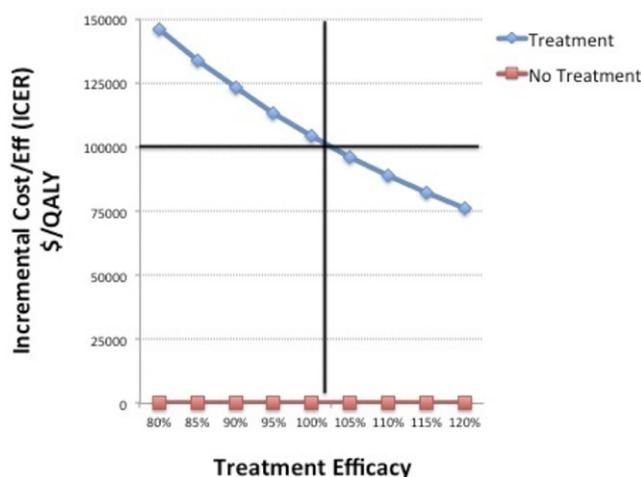
OBJECTIVE: The HAPO study demonstrated a linear relationship between maternal hyperglycemia and adverse pregnancy outcomes. Subjects were divided into seven categories according to fasting glucose levels, with Category 4 representing patients with glycemic levels in the top 12-23%, representing patients just below the cutoff for gestational diabetes (GDM) under the new IADPSG guidelines. This study examines the cost-effectiveness of treating patients in HAPO Category 4 for GDM, accounting for the costs and benefits of treating hyperglycemia in pregnancy.

STUDY DESIGN: A decision analytic model was built using TreeAge software that compared treatment vs. no treatment for patients in HAPO Category 4. Outcomes included preeclampsia, mode of delivery, maternal death, macrosomia, shoulder dystocia, brachial plexus injury (permanent and transient), hypoglycemia, hyperbilirubinemia, and neonatal death. Existing randomized controlled trials were used to estimate the effect of treatment on outcomes. Utilities were applied to discounted life expectancy at a discount rate of 3% to generate QALYs. In addition, an index adjusting for treatment efficacy was used for sensitivity analysis. The cost-effectiveness threshold was set to \$100,000 per QALY.

RESULTS: Treating patients in HAPO Glucose Category 4 was more effective (56.914280 QALYs with treatment vs 56.903297 without treatment) but more expensive (\$12,660.70 with treatment vs \$11,514.91 without treatment), with an incremental cost of \$104,323.96/QALY. In a one-way sensitivity analysis of the effect of treatment on outcomes, treatment must exceed 102.6% of its expected effect for treating HAPO Group 4 to become cost-effective.

CONCLUSION: Treating patients in Category 4 of the HAPO Study for GDM is not cost-effective. Further studies to investigate other methods of improving perinatal outcomes in this group are warranted.

One-Way Sensitivity Analysis: Treatment Efficacy



One-way sensitivity analysis of GDM treatment efficacy versus incremental cost-effectiveness ratio. For treatment to remain cost effective, treatment must exceed 102.6% of its expected effect in improving perinatal outcomes.

268 The impact of gestational change in body mass index (BMI) on adverse pregnancy outcomes among women with gestational diabetes

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OBJECTIVE: Previous studies have shown that women who have minimal to no weight gain have a higher incidence of gestational diabetes (GDM). This is likely an example of reverse causality resulting from dietary counseling once the diagnosis of GDM is made. In general, weight restriction is not advocated in pregnancy. However, given that better dietary intake among gestational diabetics may result in weight loss, its impact on adverse pregnancy outcomes warrants investigation.

STUDY DESIGN: This is a retrospective cohort study using linked birth certificate and discharge diagnosis data (All-California, Rapid-Cycle, Maternal/Infant Database) from the year 2007. Inclusion criteria: singleton gestation, GDM, known prepregnancy BMI and gestational weight gain. Subjects were divided into categories based on change in pregnancy BMI: BMI loss (<-0.5), no change (-0.5 to 0.5), minimal (0.6 to 5), moderate (5.1 to 10), excessive (>10). Odds ratios (OR) and 95% confidence intervals (CI) for adverse pregnancy outcomes were calculated. No change in pregnancy BMI served as the reference group.

RESULTS: There were 28,534 women in the study. While the odds of gestational hypertension and preeclampsia were only increased among gestational diabetics with excessive BMI change (aOR, 1.83; 95% CI, 1.33-2.51), cesarean delivery was increased in those with both moderate (aOR, 1.39; 95% CI, 1.19-1.61) and excessive BMI change (aOR, 2.47; 95% CI, 2.02-3.02). Birthweight >4000g was increased with any positive change in BMI: minimal (aOR 1.42; 95% CI, 1.09-1.85), moderate (aOR 2.26; 95% CI, 1.73-2.95), excessive (aOR, 4.83; 95% CI, 3.57-6.54). When accounting for shorter duration of pregnancy among those with premature births, the odds of preterm delivery and low birthweight were as high or higher in women with excessive BMI gain as they were among women with BMI loss.

CONCLUSION: Weight restriction among gestational diabetics may not be harmful and may improve outcomes among this cohort of women.

Unadjusted incidence of adverse pregnancy outcomes as a function of change in pregnancy body mass index

	BMI Loss	No Change	Minimal Change	Moderate Change	Excessive Change	P-Value
GHTN/Preeclampsia	7.5%	8.7%	7.7%	10.8%	15.6%	<0.001
PTB<34 wks	4.6%	2.3%	2.2%	3.2%	7.1%	<0.001
Cesarean Delivery	42.6%	39.3%	39.9%	45.3%	58.8%	<0.001
BW>4000g	6.4%	7.9%	10.2%	14.4%	27.7%	<0.001
BW<2500g	9.1%	6.2%	5.8%	6.0%	8.0%	<0.001