

# Cost-effectiveness of a comprehensive teams-based intervention for pregnant women with diabetes: A Markov cohort study

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Deeksha Gupta, MS, MA<sup>1</sup>, Megan Schellinger, DO, MS<sup>2,3</sup>, Courtney Cart, MSW, MPH<sup>2</sup>, Jessica Britt, PhD<sup>2</sup>; Casey Fiocchi, RD, LD, CDCES<sup>2</sup>, Hannah White, MS, RD, LD, CDCES<sup>2</sup>, Michelle D. Stancil, MS, BSN, RN, CDCES<sup>2</sup>, Timothy J. Lyons, MD<sup>4,5</sup>, Edward A Frongillo, PhD<sup>1</sup>, Stella Self, PhD, MS<sup>1</sup>, Alain Litwin, MD<sup>2,3</sup> Caroline Rudisill, PhD, MSc<sup>1</sup>

PRISMA HEALTH.

<sup>1</sup>Arnold School of Public Health, University of South Carolina, <sup>2</sup>Prisma Health, Greenville, SC, <sup>3</sup>University of South Carolina School of Medicine-Greenville, SC, <sup>4</sup>Medical University of South Carolina, Charleston, SC, <sup>5</sup>Diabetes Free SC/BlueCross BlueShield Foundation of South Carolina

## Background

- Diabetes prevalence in pregnant women has increased by 33.4% in the last decade<sup>1</sup>
- In 2023, 13.3% adults in South Carolina were diagnosed with diabetes<sup>2</sup>
- Gestational diabetes rate in SC increased by 14.0% from 2016-2020<sup>3</sup>
- Poor diabetes control in pregnancy can increase the risk of hospitalization, higher healthcare costs, and exacerbate maternal and infant complications
- Social determinants of health (SDOH) factors including food insecurity, transportation deficits, difficulty to pay for medications and rural residence exacerbate adverse maternal and infant outcomes
- No economic evaluation studies have been conducted for initiatives addressing SDOH needs of pregnant women with diabetes

## Objective

To determine the cost-effectiveness of a multidisciplinary clinic program that provides comprehensive team care to under-resourced pregnant women with diabetes and addresses their social determinants of health

## Study setting

- In 2020, the MOMs (Management of Maternal Diabetes) program was funded by Diabetes Free SC at the Prisma Health OB/GYN Center, Greenville, SC
- Prisma Health is the largest healthcare system in SC; the OB/GYN Center is one of the state's largest prenatal clinics with 2,868 deliveries in 2023, serving a predominately Medicaid and uninsured population
- The MOMs multidisciplinary healthcare team is one of the three multi-sites across SC with wrap-around support for SDOH needs and outpatient insulin initiation for pregnant women
- Study population includes pregnant women with Type 1, Type 2 or A2GDM (gestational diabetes requiring insulin or other diabetes medication) with deliveries from June 1, 2020 – March 31, 2023

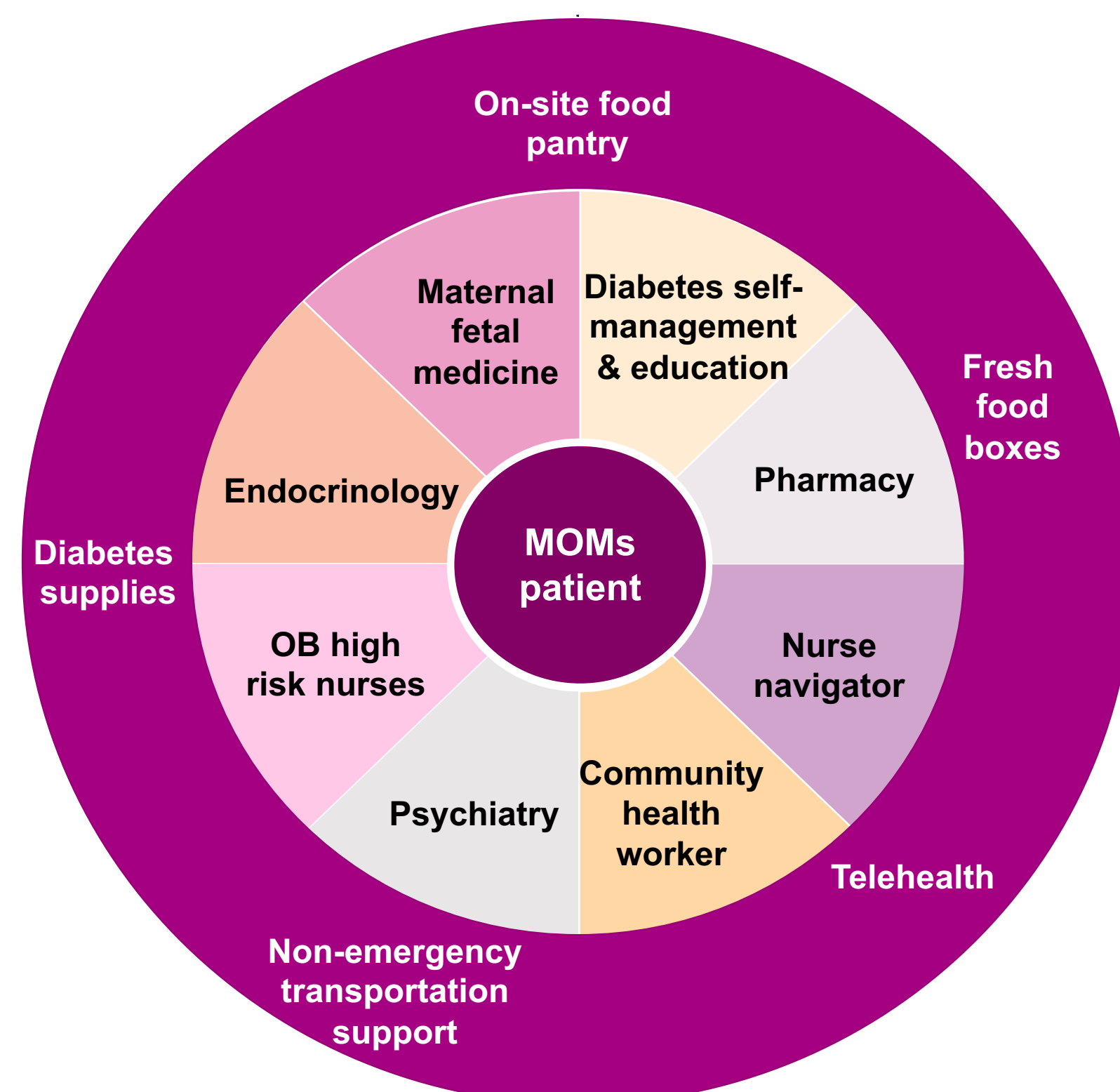


Figure 1: MOMs team-based care model

## MOMs patients population

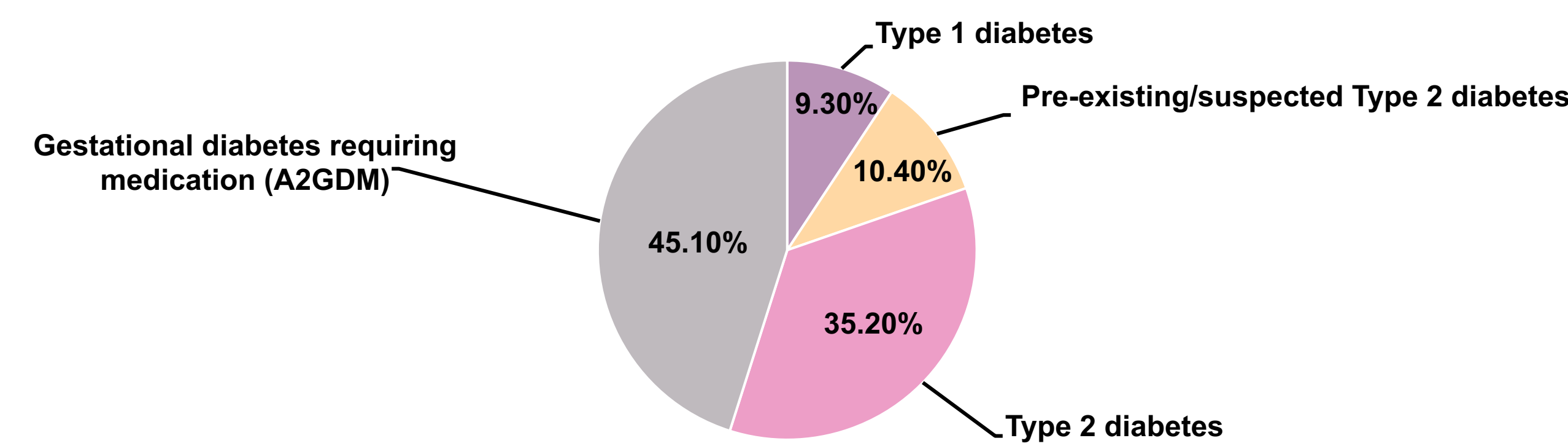


Figure 2: MOMs patients (n=483) by diabetes type

Table 1: MOMs patients characteristics

Demographics	n	Percent
Age (in years), mean (SD)	483	30.3 (6.3)
Pre-pregnancy BMI, mean (SD)	483	35.9 (6.3)
Race/ethnicity		
African American	126	26.1%
White	187	38.7%
Hispanic	144	29.8%
Other	26	5.4%
Preferred language		
English	344	71.2%
Spanish	131	27.1%
Other	8	1.7%
Insurance		
Commercial/Private	71	14.7%
Medicaid	262	54.2%
Uninsured	150	31.1%

## Methods

- A modeling-based Markov cohort model will be used to determine the incremental cost-effectiveness ratio (ICER) for the MOMs program versus standard care.
- ICER will be estimated as cost per hospitalization averted during pregnancy for MOMs patients versus those receiving standard care:

$$ICER = \frac{(cHOSP_{MOMS} + cPROG_{MOMS}) - cHOSP_{STD}}{HOSP_{MOMS} - HOSP_{STD}}$$

where,

$cHOSP_{MOMS}$  = Hospitalization costs during pregnancy for MOMs patients  
 $cPROG_{MOMS}$  = MOMs program implementation costs  
 $cHOSP_{STD}$  = Hospitalization costs in pregnancy for standard care patients  
 $HOSP_{MOMS}$  = Hospitalization episodes in pregnancy for MOMs patients  
 $HOSP_{STD}$  = Hospitalization episodes during pregnancy for standard care patients (literature-derived)

## Acknowledgement

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## Preliminary results: MOMs program costs

- Results describe program costs ( $cPROG_{MOMS}$ ) of addressing SDOH and providing diabetes supplies, technology and medication for uninsured and underinsured
- Estimation of other program costs (e.g., fixed resources, training costs, staff time cost, outpatient insulin starts, telehealth) to be included in the final analysis.

Table 2: Preliminary MOMs program costs

MOMs program cost variables	Cost per patient
<b>SDOH supplies</b>	
Fresh food box	\$7.95
Food pantry bag	\$3.22
Non-emergency transportation (e.g., Yellow Cab)	\$0.69
Gas card/bus pass	\$0.30
<b>Diabetes patient supplies</b>	
Snack bag	\$2.98
Hygiene bag	\$3.26
Dental kit	\$0.94
<b>Diabetes treatment</b>	
Continuous glucose monitoring (readers, sensors)	\$157.32
Diabetes medication	\$396.28
HbA1C supplies (e.g. glucose test kits, control units)	\$4.01

## Next steps

- MOMs hospitalization rates, transition probabilities and hospitalization costs will be from health system billing and electronic medical records
- Control group hospitalization rates and transition probabilities will be derived from the literature
- Control group hospitalization costs to be calculated using MOMs hospitalization costs (MOMs patients and control group costs are assumed to be same per unit hospitalization)

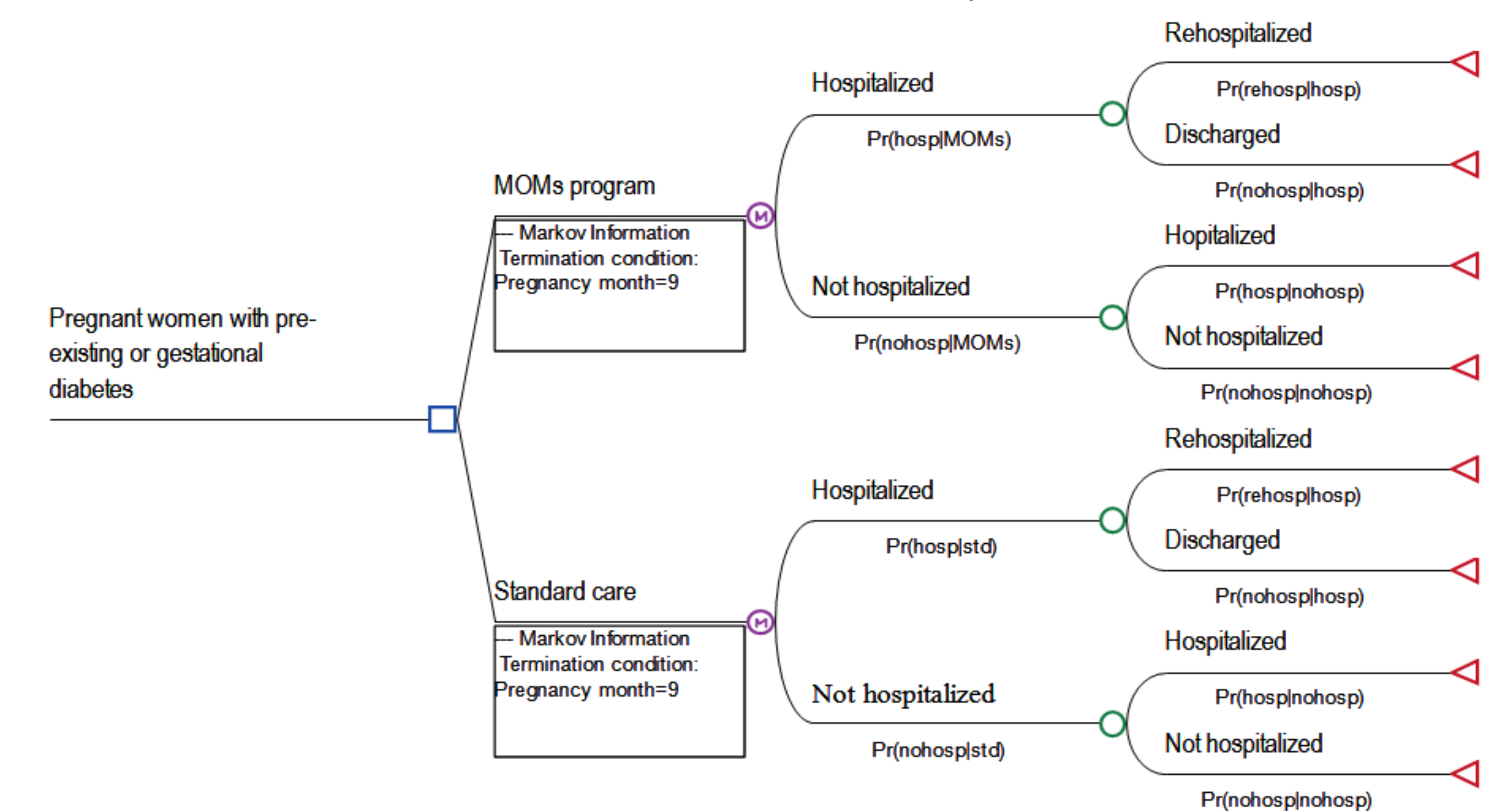


Figure 3: Markov cohort model

## References

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