

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/334806649>

# Cost Analysis of the Credentialed Diabetes Educator Diabetes in Pregnancy Care Model versus Conventional Care

Conference Paper · April 2015

CITATIONS

0

READS

24

3 authors, including:



**Amanda L Neil**

University of Tasmania

112 PUBLICATIONS 1,705 CITATIONS

[SEE PROFILE](#)



**Giuliana Murfet**

University of Technology Sydney

22 PUBLICATIONS 29 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



App-based mindfulness for employee stress protection [View project](#)



A Consensus Approach to Building Diabetes Capabilities in the Healthcare Workforce [View project](#)



# Cost Analysis of the CDE™ DIP Care Model versus Conventional Care

**A Neil<sup>1</sup>, H Weber<sup>2,3</sup>, G Murfet<sup>3</sup>**

1. Menzies Institute for Medical Research, University of Tasmania, Hobart, Australia
2. Rural Clinical School, University of Tasmania Burnie, Australia
3. Tasmanian Health Organisation- North West, Australia, Burnie, Australia

## Introduction

Diabetes in pregnancy increases the risk of short and long-term adverse health outcomes in mothers and infants (1,2), with consequential resource implications (3).

Reliance on conventional care including care initiation by an endocrinologist in rural/remote areas with resource and/or workforce constraints may compromise timely diagnosis and/or management (4).

Innovative strategies such as the Credentialed Diabetes Educator (CDE™) DIP Care Model, an evidence-based integrated interdisciplinary, screening and management protocol, may facilitate appropriate and timely care (4,5).

## Aims

Assess the economic credentials of the CDE™ DIP Care Model in a rural region of Australia.

## Methods

Simple modelled economic analysis of CDE™ DIP care model compared with standard antenatal diabetes care, over a one-year period, from a health care system perspective.

Assumed 1250 pregnancies, approximately the annual number in North West Tasmania.

### Source Data:

Two, three-year uncontrolled clinical audits (07/2003-06/2006 - retrospective; 01/2010-12/2012 - prospective) of pregnancies identified as complicated by diabetes pre- and post- full implementation of the DIP Model in 2009.

### Model inputs:

Rates of screening, identification, and outcomes assessed relative to all births in the region over each three year period.

Adverse neonatal outcomes assessed as i) infants with congenital abnormalities (CA); and ii) infants with a severe metabolic impact (SMI), defined as infants born with macrosomia and hypoglycaemia +/- birth injuries.

Resource use – derived from protocol (number and length of visits) and spectrum of use (tests, scripts) ascertained during clinical audits (2010-2012 post-audit). Neonates experiencing an adverse outcome were assigned an AR-DRG (6), P06A-B or P67A-C.

Unit costs were based on salary costs for AHPs and published standards otherwise (2012 AUD).

Average annual costs were assessed.

## Results

3- Year Audits (N<sub>pre</sub>=3748; N<sub>post</sub> = 3858)

Number of pregnant women identified with GDM through screening increased from 64 to 222 (1.7% to 5.8% of all pregnancies).

Number of pregnancies complicated by diabetes managed increased from 84 to 246.

Total number of known and suspected pregnancies complicated by diabetes increased from 112 to 248.

In pregnancies complicated by diabetes, the number of infants born with: i) congenital abnormalities (CA) decreased from 16 to 6 (0.4% to 0.2% of all pregnancies, p=0.03) of which 12 (pre) and 0 (post) had SMI.

ii) SMI (excluding CA) decreased from 34 to 20 (0.9% to 0.5% of all pregnancies, p=0.04).

Modelled economic analysis (N=1250):

### POPULATION, RESOURCE USE & COSTS

	Standard Care	CDE™ Model
<b>SCREENING</b>	40%	100%
Prenatal GCT (tests)	500	1250
Prenatal OGTT (tests)	21	67
Postpartum OGTT	8 (36%)	45 (67%)
Costs	\$7698	\$20,362
<b>MANAGED</b>	30	75
• Pre-existing	8	8
<b>Diabetes Care</b>	Visits: Minutes	Visits: Minutes
Physician	129: 3105	79: 1903
Obstetrician	130: 2310	275: 4485
Dietician	66: 3631	358: 9608
DNE	75: 2656	455: 11,833
Insulin (N, scripts)	19, 94	34, 109
Costs	\$24,804	\$45,588
<b>TOTAL COSTS</b>	<b>\$32,503</b>	<b>\$65,950</b>

Total costs increased by \$33,447 under the CDE™ model including universal screening.

Average expenditure for diabetes care reduced by \$219 per patient managed given workforce changes (↓ physician and ↑ allied HPs visits).

Five fewer babies were born without congenital abnormalities, and another five without severe metabolic impacts generating annual care savings estimated at over \$150,000.

## Conclusions

Universal screening (CDE™ Model) more than doubled identification of women with GDM.

The CDE™ DIP Care Model post-pregnancy follow-up facilitates pre-conception/early care.

The Model is efficient and sustainable within a severely resource constrained rural context.

## References

1. de Valk HW, van Nieuwaall NHG & Visser GHA 2006. Pregnancy outcome in Type 2 diabetes mellitus: a retrospective analysis from the Netherlands. *The Review of Diabetic Studies* Fall 3(3): 134–142.
2. Australian Institute of Health and Welfare 2010. Diabetes in pregnancy: its impact on Australian women and their babies. Diabetes series no. 14. Cat. no. CVD 52. Canberra: AIHW.
3. Wier LM, Witt E, Burgess J, & Elixhauser A. Hospitalizations Related to Diabetes in Pregnancy, 2008. HCUP Statistical Brief #102. December 2010. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcupus.ahrq.gov/reports/statbriefs/sb102.pdf>
4. Murfet GO, Allen P & Hingston TJ. (2014) Maternal and neonatal health outcomes following the implementation of an innovative model of nurse practitioner-led care for diabetes in pregnancy. *Journal of Advanced Nursing* 70(5): 1150–1163.
5. Murfet G & Neil A. 2015. Improving the Management & Effectiveness of Diabetes in Pregnancy (DIP) Care: a pivotal role for the Nurse Practitioner. 8th International DIP Symposium – Diabetes, Hypertension, Metabolic Syndrome & Pregnancy. Berlin, [current conference abstract]
6. Independent Hospital Pricing Authority (IHPA) (2014) National Hospital Cost Data Collection Australian Public Hospitals Cost Report 2011-2012, Round 16 <http://www.ihsa.gov.au/internet/ihsa/publishing.nsf/content/nhcdc-cost-report-2011-2012-round16-html-appendices~appendix-c>