MEASURING THE NURSING AND MIDWIFERY CONTRIBUTION

Update 4

National Council for the Professional Development of Nursing and Midwifery

NOVEMBER 2010

Developing and Revising Clinical Outcomes for Pre-Conceptual Care of Women with Diabetes: A Midwife's Experience

Yvonne Moloney has been a clinical midwife specialist (CMS) in diabetes at the Mid-Western Regional Maternity Hospital (MWRMH), Limerick since 2002. She is currently working towards becoming an advanced midwife practitioner and is undertaking the postgraduate diploma in advanced practice at NUI, Galway. Her caseload comprises women with Type 1 or Type 2 diabetes or with gestational diabetes who are under the care of consultant obstetricians at MWRMH and/or consultant physicians/endocrinologists at the Mid-Western Regional Hospital (MWRH) in Limerick. Her role as a CMS requires her to provide direct and indirect clinical care to the women in her caseload. Other aspects of her CMS role include advocacy, counselling, teaching, engaging in professional development, audit, research and quality improvement (National Council, 2008). She runs a midwife-led pre-conceptual care clinic for women with Type 1 or Type 2 diabetes. In this factsheet she presents an overview of how she developed her midwifery interventions and outcomes in relation to the care of women attending this clinic.

Epidemiology of Diabetes

The prevalence of diabetes in Ireland is increasing and has been predicted to increase by 37% over the ten-year period 2005-2015 (Department of Health and Children, 2010). International research has shown the following risks and/or complications during pregnancy among women with pre-existing diabetes and to the foetus:

- an increased risk of miscarriage, foetal anomalies and pre-term labour (SIGN, 2010);
- a greater risk to the foetus of stillbirth, birth injury, perinatal morbidity and mortality (SIGN, 2010);
- an increased risk of maternal morbidities such as pregnancy-induced hypertension, pre-eclampsia and obstructed labour (obstructed labour may occur in instances where babies present with shoulder dystocia and may cause pelvic floor damage to the mother during delivery) (Kitzmiller et al, 2008);
- additional risk of adverse outcomes in women who are obese, have increased parity or are older (CEMACH, 2005); and
- a higher risk to the foetus of obesity and diabetes during childhood and in adult life due to the hyperglycaemic intra-uterine environment (Clausen et al, 2008).

Hence, pre-conceptual and antenatal care of women with pre-existing diabetes has implications for them, their babies and society as a whole.

The Pre-Conceptual Care Clinic

Women who attend the pre-conceptual care clinic led by Yvonne have either type of diabetes and may present with complications of diabetes such as retinopathy, nephropathy, neuropathy or cardiovascular disease; some may also have other chronic conditions such as cystic fibrosis. What they have in common is that they want to plan their pregnancy and that they will need multidisciplinary holistic care in order to maintain good health during their pregnancy. Approximately 10-20% of the women attending the pre-conceptual care clinic may be having difficulty conceiving and so require the cause of this to be investigated. They may then undergo treatment for infertility which can affect their glycaemic control. The CMS in diabetes endeavours to provide emotional support to these women and their partners both at the clinic and by telephone.

Selecting Interventions for Pre-Conceptual Care

In its discussion paper *Clinical Outcomes,* the National Council attempts to describe the complex environment in which nurses and midwives make interventions (National Council, 2010). This environment is depicted as having several layers, each of which affects the nurse's or midwife's practice. The degree to which different factors in the environment affect her practice depend on their proximity and/or relevance to her patients/clients and care setting (National Council, 2010,

Figures 2 and 3, pp3-4). Figure 1 in this update shows the complex environment in which a midwife or clinical midwife specialist makes decisions about and performs pre-conceptual care interventions appropriate to women with pre-existing diabetes. Box 1 shows examples of typical intended clinical outcomes of Yvonne's midwife-led clinic and the interventions that she makes to ensure these outcomes occur. The other associated outcomes shown in the right-hand column of Box 1 are those that the service provider, the multidisciplinary team and the midwife herself might expect and these may be care-, patient- and/or performance-related (Kleinpell, 2009). Yvonne used the following documents and other documentation to guide her selection of interventions appropriate to the intended outcomes of her care:

- Audit conducted by the CMS between 2006 and 2008 of her outcomes in relation to 100 women with Type 1 or Type 2 diabetes attending the pre-conceptual care clinic and the "diabetes in pregnancy" clinic
- Health Service Executive (HSE) (2010) *Guidelines for the Management of Pre-gestational and Gestational Diabetes Mellitus from Pre-conception to the Postnatal Period*
- NMPDU (former SEHB) (2003) *Clinical Nurse/Midwife Specialist Role Resource Pack*
- Research evidence (see ***Sources and Resources***)

Determining Outcomes

In order to establish a baseline of the outcomes of her work in the midwife-led pre-conceptual care clinic, Yvonne collected retrospective data on the pregnancies of 100 women with Type 1 or Type 2 diabetes who were cared for at the MWRMH. Outcomes such as Caesarian section rates and stillbirth/ neonatal death rates at the MWRMH were compared with national rates (see Hospital In-Patient Enquiry (HIPE) and National Perinatal Reporting System (NPRS) data) and/or local data (i.e., data collected at the MWRMH and the MWRH). Some sample findings are shown in Table 1. Of the 100 women, twenty with Type 1 diabetes (Group 1) and eighteen with Type 2 diabetes (Group 2) attended the midwife-led pre-conceptual care clinic (n=38). Yvonne was particularly interested in:

- the number of women taking folic acid,
- the long-term level of control they had over their blood glucose levels (indicated by the level of glycated/ glycosylated haemoglobin in the blood and measured using the HbA1C test; readings of ‹8% were sought in this audit),
- the Caesarian section rate, and
- the incidence of foetal macrosomia (i.e., babies with a perinatal weight greater than 4kg were noted), stillbirth and neonatal death.

Box 1. *Pre-Conceptual Care of Women with Type 1 or Type 2 Diabetes: Examples of Typical Outcomes.*

Examples of intended clinical outcomes:	Examples of associated interventions by the midwife[1]:	Examples of other associated outcomes
The woman: • has knowledge of the need for control of glycaemia prior to conception • has knowledge of normal blood glucose levels for pregnancy • can monitor blood glucose levels with minimal assistance • achieves and maintains control of glycaemia • can adjust insulin dosage in accordance with blood glucose levels • has knowledge of the need for high-dose folic acid in the 3 months prior to conception • takes high-dose folic acid for 3 months prior to conception	The midwife: • undertakes a full assessment of the woman's health status with reference to national guidelines (HSE, 2010) and other agreed protocol(s) • provides advice and health promotion information on: - achieving and maintaining a healthy body weight (refers to dietitian as necessary) - assessing and treating complications of diabetes prior to conception and during pregnancy - smoking cessation (refers to health promotion officer as necessary) - high-dose folic acid • reviews current medications (including oral hypoglycaemic agents and insulin), identifies teratogenic medications and suggests changes to prescription where appropriate or according to protocol • assesses the woman's self-management of diabetes, reviews her insulin injection technique and injection sites, and adjusts insulin requirements in line with blood glucose level and according to protocol(s) • refers the woman to other members of multidisciplinary team as necessary, e.g., ophthalmologist, renal specialist, cardiac specialist, etc	• The woman receives appropriate antenatal care • The risk of miscarriage is reduced • The risk of stillbirth and neonatal death is reduced • The risk of congenital abnormalities is reduced • Audits of the midwife's documentation show adherence to best-practice guidelines • Costs of care are maintained within service performance indicators

[1] These are examples only and are not intended as a template for midwifery and nursing care.

Table 1. Findings from a Retrospective Audit of Data from a Sample of Women with Type 1 or Type 2 Diabetes Mellitus (N=100) who Attended for Delivery at the Mid-Western Regional Maternity Hospital from 2006 to 2008.

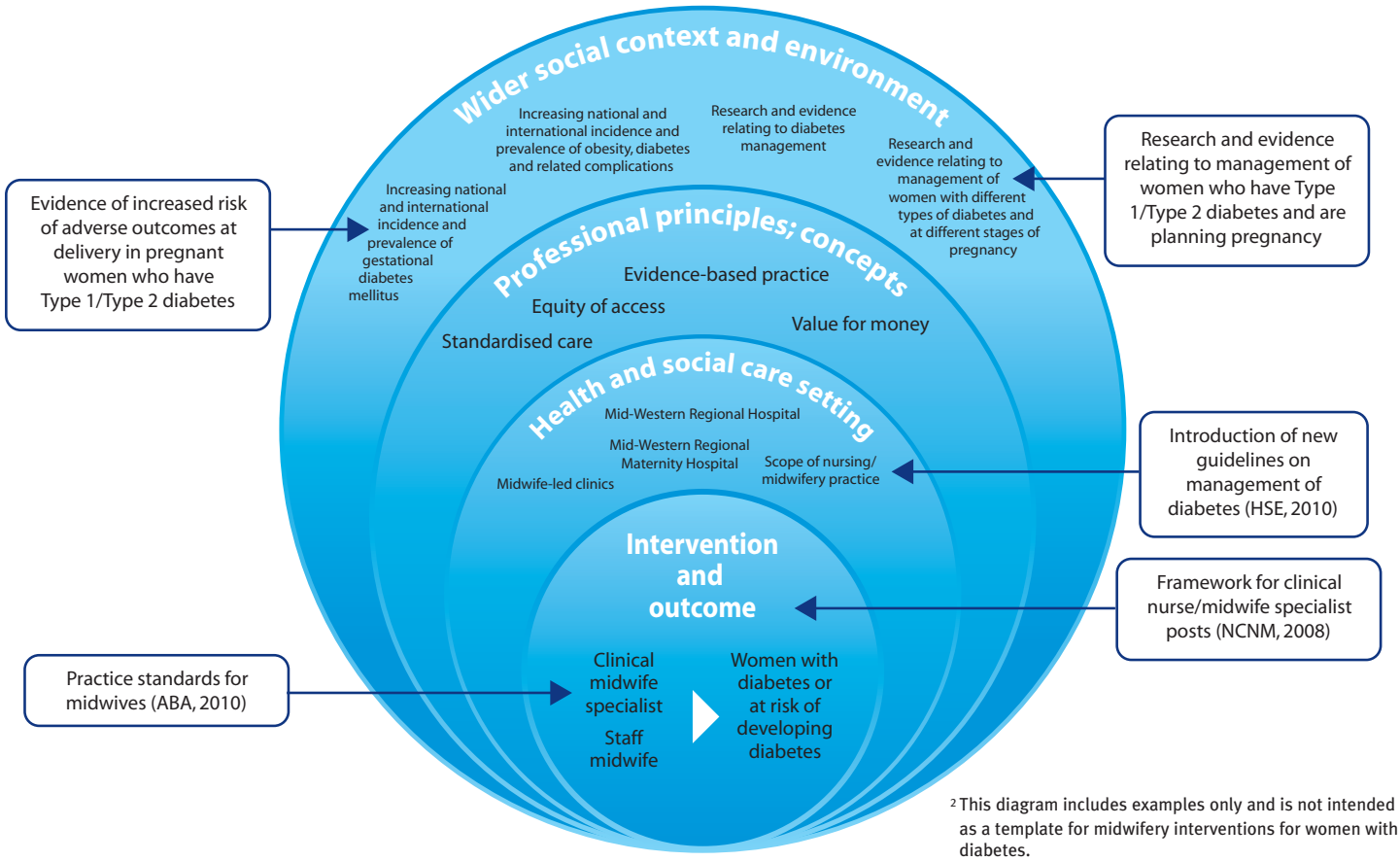
Finding	Group1: Women with Type1 Diabetes	Group 2: Women with Type 2 Diabetes	Total
Number of women in the sample	63	37	100
Number who received care at the midwife-led clinic	20	18	38
Number who were taking folic acid	27	17	44
Number who had a HbA1C result <8% at time of booking antenatal care	41	31	72
Rate of Caesarian section	30	12	42
Incidence of foetal macrosomia (perinatal weight >4kg)	13	3	16
Incidence of stillbirth	0	3	3
Incidence of neonatal death	0	0	0

Tables 2 and 3 show more detailed findings in relation to the women's long-term level of control over their blood glucose levels and in relation to the outcomes of delivery.

Table 2. Findings Relating to Long-Term Blood Glucose Control from a Retrospective Audit of Data from a Sample of Women with Type 1 or Type 2 Diabetes Mellitus (N=100) who Attended for Delivery at the Mid-Western Regional Maternity Hospital from 2006 to 2008.

	HbA1c (%)
Ideal HbA1c level when planning pregnancy (HSE, 2010)	6.1
Average HbA1c for women who planned their pregnancy (n=38)	6.6
Average HbA1c for women who did not plan their pregnancy	7.5
Average HbA1c for an age-matched group of non-pregnant women with diabetes	7.8
Average HbA1c level at delivery	6.33

Figure 1. The Complex Environment in which Interventions Relating to the Pre-Conceptual Care of Women with Type 1 or Type 2 Diabetes Are Made and Clinical Outcomes Are Determined. Adapted from National Council (2010, p3)[2].



[2] This diagram includes examples only and is not intended as a template for midwifery interventions for women with diabetes.

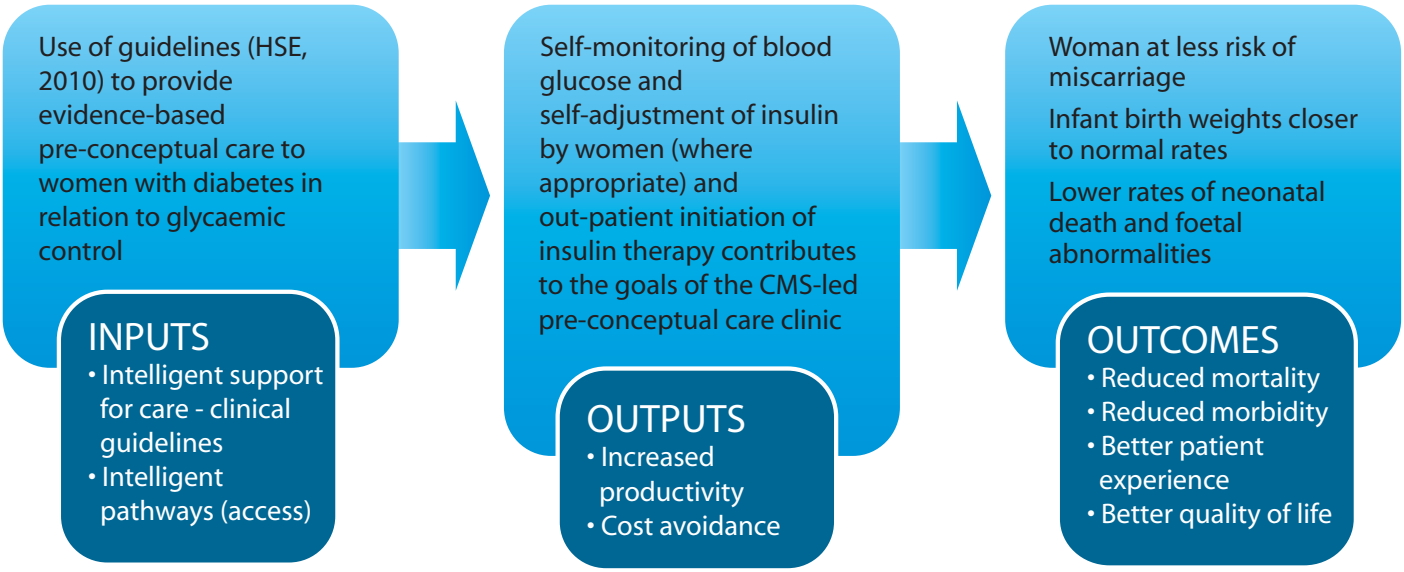
Table 3. Findings Relating to the Outcomes of Delivery from a Retrospective Audit of Data from a Sample of Women with Type 1 or Type 2 Diabetes Mellitus (N=100) who Attended for Delivery at the Mid-Western Regional Maternity Hospital and Compared to those of Women without Diabetes (2006-2008)

Mode of Delivery/Outcomes	Women with Type 1 or Type 2 Diabetes (N=100)	Background Rate (i.e., population of women without diabetes attending MWRMH from 2006 to 2008
Vaginal delivery (including stillbirths)	35%	-
Caesarean section	42%	28%
Miscarriages	23%	-
Stillbirths	3%	0.5%
Neonatal death	0%	-
Live births	74%	-
Average birthweight (Foetal macrosomia indicated by perinatal weight >4kg)	3.3829kg	-

Struck by the low rates of attendance at the midwife-led pre-conceptual care clinic and of the use of folic acid, Yvonne recognised the need to promote attendance at the clinic among women with diabetes. She also considered the rates of Caesarian section among women with diabetes to be high compared to those in women without diabetes. In order to achieve the desired outcome of higher attendance at the clinic, she proposed to other members of the multidisciplinary team that all appointment letters sent out from the MWRH to women of child-bearing age would contain a reference to the pre-conceptual care clinic and to the benefits of taking folic acid. She has been involved in an initiative concerning a review by obstetricians of Caesarian sections at the hospital.

By auditing her work and outcomes of the midwife-led pre-conceptual care clinic at the MWRMH, Yvonne has established a baseline which can be used for comparison purposes. She can use this information when setting targets and performance indicators in line with the national goals and performance indicators of the Health Service Executive (see Figure 2). Audits of her outcomes for 2009 and 2010 are already underway and will demonstrate the efficacy of her interventions.

Figure 2. Clinical Outcomes of Interventions Relating to Pre-Conceptual Care of Women with Diabetes in the Context of the HSE's Programmatic Approach. Adapted from the *HSE National Service Plan,* 2010, p9.



Sources and Resources

Sources and Resources contains all references cited in Update 4 and suggestions for further reading. It is published on a separate sheet and is available to download from www.ncnm.ie (Nursing/Midwifery Interventions).

National Council for the Professional Development of Nursing and Midwifery
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Sources and Resources

This sheet contains all references cited in ***Update 4: Developing and Revising Clinical Outcomes for Pre-Conceptual Care of Women with Diabetes: A Midwife's Experience*** and suggestions for further reading. *Update 4* is available to download from www.ncnm.ie (Nursing/Midwifery Interventions).

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