



**USUAL ANTENATAL ASTHMA MANAGEMENT AND THE
CLINICAL TRANSLATIONAL POTENTIAL OF A
FRACTIONAL EXHALED NITRIC OXIDE (FENO)-BASED
MANAGEMENT STRATEGY**

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Program Scholarship

Declarations

Certificate of original authorship

I hereby certify that to the best of my knowledge and belief this thesis is my own work and contains no material previously published or written by another person except where due references and acknowledgements are made. It contains no material which has been previously submitted by me for the award of any other degree or diploma in any university or other tertiary institution. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968 and any approved embargo.

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I hereby certify that this thesis is in the form of a series of published papers of which I am joint author. I have included as part of the thesis a written statement from each co-author, endorsed by the Faculty Assistant Dean (Research Training), attesting to my contribution to the joint publications.

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Karen McLaughlin declares no conflict of interest.

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Acknowledgements

Apparently, a wise person once said that completing a PhD takes only 10% 'smarts' and 90% persistence and determination. I would like to acknowledge the accuracy of this statement as it relates to me. Completing a PhD was never my childhood dream or professional goal, and I actually swore never to study again after completing my Master of Philosophy! However, when offered the opportunity to further examine the issues faced by women whose pregnancies are complicated by asthma, I was unable to resist the challenge. My strong sense of determination and goal-setting kicked in, and here I am completing my PhD only months after my 50th birthday, as planned.

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Dedication

I dedicate this thesis to my parents

Kevin and Maree Worth

Publications

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Paper One

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Paper Three

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Psychosocial characteristics and perceived medication risk in pregnant women with asthma. *Journal of Paediatrics and Child Health*. 2010;46(S1):57-96. P081, Perinatal Society of Australia and New Zealand Conference, Wellington, New Zealand, March 2010. (Poster presentation)

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Gibson PG. The relationship between patient perceived risk of inhaled corticosteroids in pregnancy and medication adherence. *Respirology* 2009;14(S1): A42. Thoracic Society of Australia and New Zealand Conference, Darwin, NT, April 2009. (Poster presentation)

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Abstract

Background

Asthma remains the most common chronic health condition to complicate pregnancy in Australia, with approximately 12.7% of pregnant women affected. If asthma is poorly controlled during pregnancy the risk of pre-eclampsia, preterm birth and low birth weight babies are increased. Guidelines including recommendations for the management of asthma during pregnancy are available, but the use of these guidelines and management recommendations in antenatal care is unknown. A new strategy aimed at reducing asthma exacerbations and improving maternal and neonatal outcomes of pregnancies affected by asthma is Fractional exhaled Nitric Oxide (FeNO)-based management. The efficacy of this strategy to reduce asthma exacerbations in pregnancy has been established, but the translational potential of it into antenatal care has not been examined.

Aim

The studies contained in this thesis examine the usual antenatal asthma care currently occurring in Australia and the acceptability and feasibility of introducing a new management strategy involving the use of FeNO measurement to guide treatment.

Methods

The AGREE II tool was used to appraise current asthma in pregnancy guidelines. Cross-sectional surveys were developed and distributed to healthcare professionals currently providing antenatal care and to pregnant women with asthma in order to determine 'usual' antenatal asthma care. Qualitative face-to-face interviews with video elicitation, involving healthcare professionals and pregnant women, were used to determine the acceptability and feasibility of implementing a FeNO-based asthma management strategy into antenatal care.

Results

Recommendations for asthma management in pregnancy were found to be consistent, despite a level of ambiguity in specific elements. 'Usual' care described by survey respondents did not reflect guideline recommendations. The implementation of FeNO-based asthma management into antenatal care was considered to be acceptable and feasible.

Conclusion

An implementation strategy for FeNO-based management should be developed to provide a sustainable solution to the current inconsistent and ineffective management of asthma during pregnancy.

Abbreviations

ACM	Australian College of Midwives
ACQ	Asthma Control Questionnaire
ACT	Asthma Control Test
AGREE	Appraisal of Guidelines for Research and Evaluation
AMS	Asthma management service
AUD	Australian dollar
BLT	Breathing for Life Trial
CFIR	Consolidated Framework for Implementation Research
CI	Confidence Interval
CONSORT	Consolidated Standards of Reporting Trials
FeNO	Fractional exhaled Nitric Oxide
FEV ₁	Forced expiratory volume in the first second
FVC	Forced vital capacity
GERD	Gastro-oesophageal reflux disease
GP	General practitioner
ICS	Inhaled corticosteroid

IS	Implementation Science
JHH	John Hunter Hospital
LABA	Long acting β -agonist
MAP	Managing Asthma in Pregnancy study
NAC	National Asthma Council
OCS	Oral corticosteroid
RANZCOG	Royal Australian and New Zealand College of Obstetricians and Gynaecologists
RCT	Randomised controlled trial
RHW	Royal Hospital for Women
RR	Relative Risk
SABA	Short acting β -agonist
SGA	Small for gestational age
US	United States
USD	American dollar
VTE	Venous thromboembolism

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