The Value of Continuity of Care in Australian General Practice

Michael Wright

Centre for Health Economics Research and Evaluation

Faculty of Business

University of Technology Sydney

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Certificate of Authorship/Originality

I, Michael Clifford Wright, declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy in the Faculty of Business at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise reference or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution. This thesis is supported by an Australian Government Research Training Program Scholarship.

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Michael Wright

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Glossary	Abbreviations
2SLS	two-stage least squares
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AHHA	Australian Healthcare and Hospitals Association
AIC	Akaike information criterion
AIHW	Australian Institute of Health and Welfare
ALSWH	Australian Longitudinal Study on Women's Health
AMA	Australian Medical Association
ARIA	Accessibility/remoteness index of Australia
AUD	Australian dollar
BIC	Bayesian information criterion
BMI	Body mass index (calculated as weight in kilograms squared/height in metres)
CHERE	Centre for Health Economics Research and Evaluation
CI	Confidence interval
COCI	Bice Boxerman Continuity of Care index
COPD	Chronic obstructive pulmonary disease
eg	For example
FE	Fixed effects estimator
FFS	Fee for service (payment model)
GDP	Gross Domestic Product
GP	General Practitioner
HCC	Health care (concessional) card
HCH	Health Care Home model of care
HIC	Health Insurance Commission
HREC	Human Research Ethics Committee
iid	Independent and identically distributed
IRR	Incidence rate ratio
IV	Instrumental variable
LR	Likelihood ratio
MBS	Medicare Benefits Schedule
NA	Not applicable
NHMRC	National Health and Medical Research Council
NSW	New South Wales
NT	Northern Territory
OECD	Organisation for Economics Co-operation and Development
OLS	Ordinary least squares estimator

OR	Odds ratio
PBS	Pharmaceutical Benefits Scheme
PCMH	Patient centred medical home
PhD	Doctor of Philosophy
Qld	Queensland
RACGP	Royal Australian College of General Practitioners
RCGP	Royal College of General Practitioners (UK)
RE	Random effects estimator
SA	South Australia
SF-36	Short form 36
UK	United Kingdom of Great Britain and Northern Island
Unk	Unknown
UPC	Usual Provider Continuity
USA	United States of America
Vic	Victoria
WA	Western Australia
WHO	World Health Organization

Abstract

Introduction

Health systems internationally are facing demographic and financing pressures, together with changes to the health provider workforce. Multiple changes in the Australian population are increasing the demand for health care services. These demographic changes include population growth, an ageing population, and the increased burden of chronic disease in the population (AIHW 2016a). Additionally, the Australian health reform agenda is focusing on better integration and coordination of primary care, the utilisation of information technology, and increasing delivery of care by multidisciplinary teams (Australian Health Ministers' Advisory Council 2017; Primary Health Care Advisory Group 2015). These changes are potentially shifting the emphasis of general practice care away from a relationship between an individual doctor and a patient, towards care focused at a practice level. These changes are occurring in a primary health care system which permits patients to access care from multiple GPs in multiple locations.

Changes to primary care may affect the availability of continuity of care, a concept referring to the benefits obtained from consulting the same health care provider over time (Freeman & Hughes 2010). It has been suggested that continuity of care is a core component of high performing primary health care systems (American Academy of Family Physicians 2010; Bodenheimer 2014; Macinko, Starfield & Shi 2003) and international research has reported an association between increased continuity of care

and positive health outcomes (Cabana & Jee 2004; Saultz & Lochner 2005; van Walraven et al. 2010), and reduced health costs (Chen & Cheng 2011; Hussey et al. 2014; Raddish, Horn & Sharkey 1999; Shin et al. 2014). However, most of the existing empirical literature emerges from clinical medicine, is cross-sectional in design, and unable able to provide evidence of a causal relationship.

This thesis investigates continuity of care in the delivery of general practice care in Australia. It examines continuity of care with an individual general practitioner (personal continuity of care) and continuity of care with a general practice (site continuity of care), in order to understand whether unrestricted access to general practice services is consistent with high levels of continuity of care at both a provider and practice level, and whether an association between increased continuity of care and improved health screening (as a proxy for the quality of general practice care) exists.

Methods

Data

To provide a robust analysis of continuity of care, the empirical research presented in this thesis uses multiple data sources, including cross-sectional data from a survey of 2,477 Australians (the GP Survey), panel data from the Australian Longitudinal Study on Women's Health (ALSWH) survey and linked Medicare claims data. The absence of practice-level Medicare data limits its usefulness in investigating site continuity of care.

Analysis

All analyses were completed using Stata Version 14 (Statacorp 2017). Analysis of summary statistics and regression analysis of the GP Survey was conducted. Summary statistics and regression analysis of the ALSWH survey data and linked Medicare data was also completed. The panel nature of the ALSWH data permitted use of panel data modelling techniques. Panel data techniques provide stronger evidence of a relationship between continuity of care and improved quality of care than cross-sectional analysis. In order to control for some of the biases in existing continuity of care literature, additional econometric techniques are utilised. These techniques include the use of instrumental variables (IV) to control for the endogeneity of health care within models, and the use of individual fixed effects to control for unobserved patient-level factors which might confound the relationship between continuity of care and health screening.

Results

Results from the GP survey analysis showed that over 80% of patients identified having a usual GP and over 90% have a usual general practice. However, over 25% of respondents also reported attending more than one general practice in the previous year.

Analysis of the ALSWH survey data provided multiple statistically significant findings. Site continuity of care has increased in prevalence over time and is more common with increasing age. Personal continuity of care is decreasing in prevalence for women aged under forty, but increasing for women over sixty years of age. There are multiple differences in patient and practice characteristics associated with personal and site continuity of care, which will not be detected without investigation of continuity of care

at both levels. Both personal and site continuity of care are associated with increased cancer screening rates. Failing to control for the endogeneity of continuity of care downwardly biases estimates of the association between continuity of care and cancer screening. Significant differences in screening rates according to continuity of care persist after controlling for individual fixed effects.

Conclusion

This is the first Australian research to investigate both personal and site continuity of care. Most Australians report having continuity of care with either a single GP or with a general practice. Continuity of care is associated with increased quality of care, at least pertaining to cancer screening. This thesis concludes that policy attempts to encourage continuity of care have the potential to improve the quality of primary care. Policy interventions to encourage continuity of care include increasing awareness of the benefits of continuity of care and potentially providing incentives to patients and doctors. The availability of practice-level Medicare data would permit further investigation of the association between site continuity of care and general practice care. More robust research methods are needed in continuity of care research in order to better evaluate potential associations between personal and site continuity of care, and positive health outcomes.