Identifying Better Systems Design in Australian Maternity Care: a Boundary Critique analysis

Abstract

This article examines the background and limitations of maternity care policy and provision in Australia using the Boundary Critique method from critical systems thinking. We argue that the historical legacy of funding maternity care within medically dominated fee-for-service structures and acute hospital budgets is seriously flawed. Furthermore, it cannot deliver the policy goals of healthy and socially equitable birth practices. Despite the 2009 national Maternity Services Review and progress of a National Maternity Services Plan (2011), most mainstream Australian maternity services remain out-of-step with both health service research and evidence-based 'best practice'. The present system drives unnecessary clinical interventions, increased expenditure, short-term adverse health outcomes and the potential for a larger, unacknowledged legacy of future chronic disease. By contrast, boundary critique analysis suggests that redesigning for good maternity service provision can act as a population-level preventative health strategy, offering better value, better health and improved equity in maternity care.

Key Words: Health system interventions, Australian maternity services, health policy, health equity, Boundary Critique.

Introduction

Reform of maternity care has been on public policy, professional and health consumer agendas in several western countries since the 1990s (Sakala & Corry, 2008; Hendry, 2009; Reiger & Morton, 2012). There is growing concern about the medicalisation, centralisation and fragmentation of maternity services and about increasing health inequities and costs in relation to benefits (Benoit et al, 2010). Critics argue that the "industrial model of birth" is no longer appropriate for what is now a generally healthier, better educated population (Wagner, 2006; Walsh, 2006). It is also unsustainable in terms of human and financial resources (Australian Senate, 1999). This paper critically examines these issues in the context of the Australian government's recent maternity reform agenda (Commonwealth of Australia [COA], 2009; Newnham, 2010). We base our analysis on the Boundary Critique framework and principles adopted from Critical Systems Thinking (CST) (Midgley, 2000; Ulrich, 2000: 20).

The first section describes Australia's existing system of maternity provision and recent attempts at reform. Our argument is that the location of maternity care within the acute health sector, while developed principally out of concern to reduce maternal and neonatal mortality through medical supervision of birth, has created a problematic systemic legacy. In Section two we then discuss the value of the Boundary Critique (BC) method for analysing current policy challenges, especially for explaining why changing the system is so difficult. As an analytic framework, the application of BC can make clear the problems with the present system, the 'what *is'*. By identifying the current 'Boundary judgements'— that is the assumptions, knowledge and values embedded in the system — features of a new, improved system ('what *ought* to be') can then be articulated (Ulrich, 2000: 258-59). Although not all aspects suggested by Ulrich's four systemic BC categories (motivation, power, knowledge, legitimation) and twelve questions (Ulrich, 1998: 11) can be addressed fully here, this basic framework makes transparent how the current Australian maternity system operates and what the alternatives may be.

In Section three, following the BC method, we question the implications, deficits and longer-term implications of the current acute health oriented system of maternity care. We re-examine the key problems of funding, cost effectiveness and workforce inefficiencies, stakeholder power, and health outcomes and inequities already identified by public inquiries (Australian Senate, 1999; Commonwealth of Australia, 2008, 2009). BC encourages us to go further however, that is to identify. the underlying and complex patterns of motivation, power, knowledge and legitimation at work. We contrast 'what is' with alternative possibilities. Accordingly, in the fourth and final section, we use Boundary Critique to outline the values and features of better systems design, notable those oriented to public health concerns. By articulating possible alternative boundary judgements, the BC method can point us not only towards '*What Ought to Be*'— but to strategies for structural improvements to Australia's maternity care system based on broader boundaries of knowledge and concerns. In addition to providing a deeper understanding of the barriers to change currently, this paper also identifies some limitations of the BC framework when applied in practice. This may assist future critique of other health care systems.

Section 1: The Current Australian Maternity Care System

In accord with a wider health reform agenda in Australia—driven recently by the Federal Government but also initiated earlier at state levels (Reiger, 2006)—maternity care reform has been widely debated yet remains highly contentious. Comparative analysis of maternity care systems reveals the importance of historical, national and cultural factors (De Vries et al, 2001). The

development of Australia as a federation across a large and diverse country has shaped the organisation of health services. The dominance of biomedical model approaches at the expense of other modalities is well documented (eg Sax, 1984; Willis, 1989). Australia's traditional maternity system was developed in the late nineteenth and early twentieth centuries to manage acute childbirth problems, such as infection. It institutionalised a medical view of pregnancy and birth both in terms of financing arrangements and professional power. In the nineteenth century, doctors formed part of a small, educated elite and were determined to maintain their autonomy. They resisted state funding for primary health care, promoting the system of private, fee-for-service practice which became the dominant medical model (Gillespie, 1991). In maternity care, medical organisations campaigned to replace midwives, who were largely (and sometimes with good reason) portrayed as unskilled or even dangerous. From 1912, doctors were aided in this by the Federal Government's £5 'baby bonus' paid to women if a general medical practitioner attended their birth (Reiger, 1985: 89). During the early twentieth century midwives lost their autonomy, though not entirely their identity, by being incorporated into hospital-based nursing and subordinated to medical authority (Willis, 1989; Summers, 1995; Reiger, 2001; Donnellan–Fernandez & Eastaugh, 2003).

As births moved into hospitals from homes and cottage midwifery units, large public hospitals in metropolitan cities increasingly provided medical training and set clinical standards. Medicalised birth rituals were thus applied to more and more women (Reiger, 2001). This medical dominance of maternity care was strengthened as obstetrician/ gynaecologists became increasingly organised as a specialty after WW2 (Schofield, 1995). Reflecting both the precedent of private fee-for-service and the assumption that any families able to do so should pay for their own maternity care, doctors' power and influence was built in to Federal Government health financing arrangements in the 1950s—1960s (Gillespie, 1991; Schofield, 1995). At state and territory level where services are administered and delivered, doctors have also had a strong influence on maternity policy and practice (Reiger, 2001). The development of a compulsory national health insurance system through the 1970s (Medibank) and 1980s (Medicare) underpinned medical incomes. The role of general practitioners (GPs) attending births diminished in major urban centres however, and private specialist dominance of the sector grew with further political encouragement in the late 1990s to 2007 (Gray, 2000; CHERE Report, 2009; Van Gool et al, 2009).

The optimal mix of public and private health insurance and services delivery, including maternity care, remains contentious. Approximately two-thirds of births occur in Australian public hospitals

funded out of acute care budgets with resources commonly allocated according to 'Casemix Diagnostic Related Groups' based on episodic medical procedures. Yet each of the eight state and territory jurisdictions which administer hospitals utilise different weightings and funding formulae to resource facilities (Podger, 2006). Accusations of cost shifting between state and federal authorities and fragmentation of services are rife (Parliament of Australia, 2006). This is further complicated by competition between acute care health facilities for priority funding to accommodate increasing demand for inpatient and chronic illness services. In contrast, public health initiatives, for example health promotion and primary care services delivered in the community, seek to minimise hospitalisation. These competing priorities produce challenges for balancing policy, funding, and service delivery (Gray, 2000; McAuley & Menadue, 2007; Segal, 2008).

This brief overview of Australia's maternity service structures shows that the motivating factors embedded in the system reflect the interests of powerful professional stakeholders, especially those of doctors. By contrast, in some other health systems (e.g., Netherlands, Britain, and since the 1990s, New Zealand and Canada) primary health care policy funds primary providers such as midwives in community-based services as the first contact point for healthy pregnant women and acknowledges homebirth to be a viable option (De Vries et al, 2001, 2004; Chapman, 2007; Government of New Zealand, 2007; Hendry, 2009; MacDonald & Bourgeault, 2009; Birthplace Collaborative Group, 2011). Since WW2, homebirth has not been financially or politically supported in Australia, although consumer and midwifery activism has promoted women's rights to choice of birthplace (Donnellan–Fernandez, 1996; Reiger, 2001).

In 2008 the new Australian Labor Party federal government initiated a national health reform agenda largely to curb increases in health spending. It also sought to address jurisdictional demands to increase acute hospital and primary care services, and significant inequity in population health outcomes, especially among Aboriginal and Torres Strait Islander peoples and rural and remote populations (Department of Health and Ageing [DOHA], 2011a). Despite claims of an overall strong safety record in childbirth services [COA, 2009], government directions for reform of maternity care were influenced by several factors: dissatisfaction with a lack of access to primary maternity services including continuity of midwifery care models (Newman et al, 2011); the closure of 130 rural maternity unit between 1997–2007 [Rural Doctors Association Australia [RDAA], 2007; COA, 2009]; disparate outcomes for vulnerable groups of women and babies (Kildea et al, 2010), and evidence of high levels of medical intervention (Australian Senate 1999; COA, 2008) especially in the private sector. Private maternity care in Australia is distinguished by higher rates of unnecessary medical

interventions, overservicing, maximisation of provider income (Roberts et al, 2000; van Gool, 2009; Donnellan – Fernandez, 2011a; Dahlen et al, 2012) and out-of-control costs (Russell, 2008; DOHA, 2011b:4). Medicare obstetric expenditure had increased significantly after promotion of private health insurance by the previous government which introduced a Federal Medicare 'Safety Net' to limit consumer outlays but allow obstetricians and other specialists to increase charges. Before capping in 2009, Extended Medicare Safety Net expenditure on obstetrics increased by 300% between the years 2004-2009 [DOHA, 2011b], with a 71% rise in one year (Quinlivan, 2004:26). Cost factors therefore also loomed large, but so too did questions of health outcomes and workforce capacity.

The emerging national health reform agenda promised new opportunities to address key problems in maternity care (Australian Health Ministers Advisory Council [AHMAC], 2008; DOHA, 2011a). Following the initial Maternity Services Review (MSR) and consultation process (Commonwealth of Australia [COA] 2008, 2009) a National Maternity Services Plan was endorsed by state Health Ministers in 2010. This included four priority areas: access, service delivery, workforce and infrastructure [AHMAC, 2010]. New government initiatives included an AUS$120.5 million maternity reform package to increase care options available to women, and to increase the overall capacity, productivity and responsiveness of the health workforce. New legislative arrangements introduced specific Medicare Benefits Schedule and Pharmaceutical Benefits Schedule Items for midwives and provided access to a Commonwealth Professional Indemnification Scheme for 'eligible' midwives. The Australian government has promoted these measures as improving access and choice for women [COA, Explanatory Memorandum: the Health Legislation Amendment [Midwives and Nurse Practitioners Bill], 2009]. Other new initiatives include expanding the Medical Specialist Outreach Assistance Program to rural and remote communities, expanding the 24-Hour National Pregnancy Telephone Counselling Helpline, increasing training support for doctors and midwives (Department of Health & Ageing [DOHA], 2010), and Medicare funding for innovative models of continuity of midwifery care.

Whilst significant change was promised by the MSR process, and some delivered, critics claim that it fails to embrace the significant *system-wide* and *structural* reforms needed to improve outcomes for women and babies (Newnham, 2010; Dahlen et al, 2011a; Donnellan–Fernandez, 2011a). Critique centres on professional practice and regulatory arrangements that continue to prioritise biomedical maternity service models (Barclay & Tracy, 2010; Lane 2012), the dearth of culturally safe services (Kildea et al, 2010), and continuing disenfranchisement of marginalised groups, including those

seeking birthing services at home (Dahlen et al, 2011b). As with some thirty-seven previous national, state and regional reviews of Australian maternity services (Bogossian, 2010), many consumers and professionals remain astounded at the lack of *fundamental* change to Australia's maternity care system, in particular, lack of expanded access to public health midwifery models. The disjuncture between the existing system and the goals of reforming it seem to require a better framework than used by the MSR for analysing problems of the current system and for envisioning its redesign. For this we turn now to the methodology of Boundary Critique.

Section 2: Methods – Boundary Critique as an analytic framework

Systemic Boundary Critique is a method adopted from Critical Systems Thinking (CST) specifically oriented to encouraging the competencies required for critical reflective citizenship. With its origins in the work of operations research founder, Churchman (1968; 1970; 1987), CST and the concept of 'boundary critique' has been developed by systems theorist Werner Ulrich (2000; 2002), and further applied by Midgley and others to analyse various social issues and policy concerns— from water management, homelessness and poverty, to gendered knowledge and public health (Kintrea, 1996; Boyd et al, 1999; Midgley, 2000, 2006). As Ulrich (2002) point outs 'the critical employment of boundary judgments', or for short 'Boundary Critique' (BC) involves critical interrogation of what is regarded as 'in' and 'out' of an issue or policy concern. This is similar to Bacchi's (2009) concept of the 'representation' of a problem as critical to policy processes. As an approach, Boundary Critique clarifies the basic assumptions, ideology and power interests underpinning a system, whose views and intentions constitute the system of concern, and thus who benefits from it (Ulrich, 2002). Systematic Boundary Critique entails three stages: first, the sources of selectivity that condition a claim are *identified* by making transparent the underpinning boundary judgments; second, these boundary judgments are *questioned* with respect to their practical and ethical implications; and third, unqualified claims to knowledge or rationality are *challenged* by compelling argumentation.

Underpinning the BC process is the premise that 'in civil society, expertise alone is not sufficient legitimisation for the consequences which professional interventions may impose on citizens' (Ulrich, 2003: 3). Ulrich relies on Habermas's (1972) theory of knowledge – comprising constitutive interests, whereby humans have *technical* interests in predicting and controlling natural and social environments, *practical* interests in accomplishing mutual understanding, and *emancipatory* interests in releasing themselves from power relationships and false ideology. Accordingly, human emancipation is core to boundary critique practice through encouraging professional critical reflection. Ulrich (2006) argues that employing the analytic framework of Systematic Boundary

Critique and CST pragmatises reflective citizenship by supporting civil liberties, political participation, social and economic rights and industrial democracy, including democratic control of science and technology. Recent systemic intervention practitioners, such as Midgley (2000:132), stress that the framework's real utility rests in practical *use* of the method and that 'systemic intervention is purposeful action by an agent to create change'. The advantages of the BC framework include it being independent of specific expertise; addressing unequal knowledge, skills and power; transparently identifying issues and interests; making boundary judgements explicit and named; and serving an emancipatory interest. It is particularly valuable therefore for analysing maternity care as a public health intervention.

A critical analysis of Boundary Judgements in Australian maternity care

In developing the following application of the BC framework, the authors bring a range of experience from Australian maternity services reform for over two decades at grassroots, several jurisdictional and national levels. Although no obstetricians were involved in the development of our analysis, two authors are social science academics as well as having long-term engagement with consumer birth advocacy groups. The other two authors are midwives who have practised, taught and researched in Australian and other maternity services contexts. All have their public health interest and policy expertise reflected in publications and current academic appointments and all remain engaged in efforts towards maternity sector reform.

The authors followed an iterative process using the BC framework which requires identifying, questioning and challenging boundary judgements. Ulrich's BC strategy involves four categories, within which key questions have to be asked about existing and alternative social arrangements: (1) Sources of Motivation underpinning the system; (2) Sources of Power driving the system; (3) Sources of Knowledge; and (4) Sources of Legitimation (Ulrich, 1998: 11; 2000: 258-59). The goal was to first use this process to develop a critique of how the current system operates (*'what is'*), and then to identify alternative possibilities (*'what ought to be'*). Table 1 summarises our analysis of the inter-related problems of the current Australian maternity system. In column three ('The Current System – *'what is'*) we identify twelve boundary judgements and the values and assumptions on which the current system is based, in relation to each source area of motivation, power, knowledge and legitimation. Our analysis is explained in the text of Section 3. Column four (*'A Better System – 'what ought to be'*) provides recommendations for conceptualizing a better systems boundary. These are explained in the text of Section 4, along with some limitations of the BC method.

Table 1: Key problems in Australia's Maternity Care System

	Boundaries	**Current System (*"What Is"*)**	**Better System (*"What Ought to Be"*)**
Sources of Motivation	**The Client** *whose interests should be served?*	Centralised hospital setting, biomedical providers, the 'Standard Client'. (Willis, 1989; Schofield, 1995; Australian Senate, 1999; COA, 2009)	Locally-based services oriented to individual need and cultural appropriateness for individual women, babies and families. (Tracy et al, 2006; Kildea et al, 2010; McIntyre, 2012)
	The Purpose *what should be the consequences?*	*Procedures*: reimburse for clinical 'episodes of care' within ***acute care hospitals*** (fragments people and processes; discourages care in the community and discourages 'keeping birth normal'). (Newman, 2009)	*People & Processes:* reimburse for improved health outcomes, ie: vaginal birth, and reduction of unnecessary medical interventions (based on ***primary health care principles and care in the community***).(Walsh, 2006; Wagner, 2006; Birthplace Report, 2011)
	Measures of improvement *how do we decide that consequences constitute improvement*	Health outcome benchmarks, but no penalties for non – compliance, and no 'common sense' linkage to funding. (Tracy and Tracy, 2003; Bogossian, 2010)	Benchmark measures of 'normal birth', better physical and mental health outcomes for women, babies, families – short and long term. Integrated services and reduced expenditure per site. (Hartz et al, 2012a; Hartz et al, 2012b; McLachlan et al, 2012; Tracy et al, 2013)
Sources of Power	**The Decision-maker(s)** *who is in a position to change the measure of improvement?*	**Policymakers** make decisions through structural frameworks and what is funded on MBS, hospital visiting rights, private subsidisation, access to indemnification (with limited funding for 'primary' care models) . (Maternity Coalition, 2002; 2008)	**Policymakers genuinely working with consumers to decide focus of investment and disinvestment** "**Women** have the right to choose freely and have control over their sexual and reproductive health" (UN 1996). (Newman and Johnston, 2005)
	Resources *what resources or conditions of success should be controlled by the decision – maker?*	**Service Providers** are the focus, (current default is medicalised care). Funding predominantly directed to biomedical models of care. Role and level of technology prioritised over and above women's needs & rights. (Barclay et al, 2003; Russell, 2008; van Gool et al, 2009; Lane, 2012)	**Women and babies** are the focus. Funding follows the woman (as opposed to the system & procedures). Gives choice & prioritises women's needs and rights. Workforce efficiency - focus on primary care workforce, not specialists Technology available, but not the primary focus. (Maternity Coalition, 2002; 2008; Barclay and Tracy, 2010)

	Decision environment *what conditions are/should be part of the decision-making environment, what decisions should the decision-maker NOT control?*	**Historical and traditional** forms of medical service delivery and practice. Traditional encouragement to hospitalised care. (Newman et al, 2011)	Priority to **evidence-based** practice for best health outcomes, with flexibility. Recognition of social determinants, differing needs, population health approach. (Sakala and Corry, 2008; Hatem et al, 2008; Donnellan–Fernandez, 2011b)
Sources of Knowledge	**The Professional(s)** *who are/ought to be considered a professional/ expert (as researcher, planner, etc?*	Policymakers, obstetricians, professional colleges, traditional and existing practice; professional experience; research evidence (excluding consumers) (Reiger and Lane, 2009) (Reiger, 2011)	Consumers-as-experts; midwives, obstetricians, policymakers, professional experience; research evidence. (CHERE, 2009; Reiger and Lane, 2009; Lynch, 2011; Childbirth Australia, 2012)
	Expertise *what expertise ought to be consulted; what counts as relevant knowledge?*	Medical, traditional, historical, scientific, technological. Institutional guidelines, policies & procedures encourage socialised compliance. (Cherniak and Fisher, 2008)	Women's views: pregnancy, birth & parenting as a social paradigm. Midwifery views, medical and policy views (primary health care) are complementary, not dominant. (Reiger & Morton, 2012)
	Guarantee *(who should be the guarantor of success; that improvement will be achieved?)*	Limited mechanisms define and identify success; eg: perinatal mortality. Current lack of quality control and accountability for service outcomes and comorbidities. (Dahlen et al, 2011a; Dahlen et al, 2011b)	Annual review of national indicators and public availability of maternity services and perinatal data collection; longitudinal analysis of health outcomes; user satisfaction surveys (as per Victoria and NZ). Overseen by State Directors General of Health, and Consumer Watchdog. (Bogossian, 2010; AIHW, 2013)
Sources of Legitimation	**Witness** *who should be witness to the interest of those affected but not involved? those who can't speak for themselves?; future generations?*	See Decision Environment, guidelines, policies and professionals, medical 'authority', the legitimacy of the 'market'. (Benoit et al, 2010)	All those affected *should* be involved. If this is not possible, standard ethical care should be judged by community consensus which includes consumers, midwives, medical specialists, ethicists. (Midgley, 2006; McAuley and Menadue, 2007; WHO, 2007; Davis-Floyd et al, 2009)
	Emancipation *what secures the emancipation of*	Consumer representation and participation often rhetorical & tokenistic.	Personal resources (education, empowerment, culture) which support self-emancipation and

	those affected from the premises and promises of those involved?	(Donnellan–Fernandez, 2011a)	inclusion of consumer groups which support this (Newman et al, 2011)
	World View *what should these be; how should these be reconciled?*	Pregnancy and birth only normal in retrospect, risk seen as best managed in tertiary environments with medical specialists as gatekeepers of standards and 'normality'. 'Industrial model of birth' prevails. (Newnham, 2010)	Pregnancy and birth are not illnesses and should be managed in primary care settings including community and home, with referral to medical care as indicated by the primary care professional (WHO , 1996, 2006, 2007; National Maternity Services Plan, 2011; White Ribbon Alliance for Safe Motherhood, 2011)

Section 3: Underlying key problems with the Maternity System in Australia

In ascertaining and analysing the range of available evidence relevant to applying a BC framework, it became clear that Australia's maternity system faces four significant problems— those related to funding, workforce inefficiencies, stakeholder power, and population health outcomes and inequities. These were identified as key areas in the national Maternity Services Review [MSR] [COA, 2009] and National Maternity Services Plan [COA, 2011]. Examination through a BC lens however, reveals further underlying patterns requiring analysis—the complex web of intersections of motivation, power, knowledge and legitimation which are not, ultimately, reducible to schematic characterisation.

Funding Arrangements

Current funding arrangements for healthy pregnant women privilege medical and acute sector hospital-based care. Block grants and fee-for-service payments influence organisation of health services and provider behavior in three ways: firstly,by incentivising centralisation and the provision of episodic maternity care, encouraging privatisation, fragmentation and a focus on acute care, rather than prioritising a public health population approach and continuity models of primary care (Benoit et al, 2010; DOHA, 2011b; Donnellan – Fernandez, 2011a; 2011b). Secondly, they exclude care such as outpatient and home care facilities (Duckett, 2008:153) and by excluding community based care (Maternity Coalition, 2002; 2008). Thirdly, services have been increasingly rationalised into tertiary care acute hospitals (Tracy et al, 2006; Dahlen et al, 2012). How maternity care is funded is clearly a pivotal boundary judgement closely interwoven with sources of motivation, power, knowledge and legitimacy. In the current system many women experience antenatal and

postnatal care provided by general medical practitioners who do not attend the birth [COA, 2009], overall care for around a third of Australian women is provided by private obstetricians and includes higher rates of medical intervention (Roberts et al, 2000; Dahlen et al, 2012), and 30% of childbearing women who live in rural or regional areas have limited or no local access to services (Wilson et al, 2009). Even in metropolitan areas very few women can choose midwifery care within birth centers or midwifery group practices. Some recent initiatives however are expanding options for public sector midwifery-based care, including home birth options (McLachlan, 2012 et al; Tracy et al, 2013).

It is doubtful that even the new National Health and Hospitals Network will have any real capacity to address this system distortion. Through this Network, the Federal Government is to become a significant direct funder of public hospital services supporting a limited range of primary care services through 'Medicare Locals' [DOHA, 2011a]. As yet maternity care has not been configured into these arrangements. In the current system, therefore, maternity services funding is not based on the motivation of seeking to maximise health outcomes and minimise costs, but on replication of biomedical models and subsidy of the interests and power associated with private sector care. Boundary Critique thus affirms the real or 'standard Client' of the system (i.e. 'whose interests should be served') as being the centralised maternity system and providers who service a biomedical model, rather than locally-based services and individual women, babies and families.

Workforce Inefficiencies

A second major problem is current and projected skilled health workforce shortages. Significant evidence is available that systemic service and workforce organisation is suboptimal from an efficiency and sustainability perspective (Australian Health Workforce Advisory Committee [AHWAC], 2004; COA, 2009; Wilson et al, 2009). Reports indicate that the current specialist obstetric workforce is not sustainable (AHWAC, 2004; Health Workforce Australia [HWA], 2012). Applying BC makes it clear that the current midwifery workforce is configured to meet the labour requirements of the acute hospital and biomedical service sector. Yet this labour force is not sustainable. Workforce shortage numbers are currently estimated to be between 1800–2300 midwives (AHWAC, 2002; Australian College of Midwives, 2005; HWA, 2012). Current work force attrition rates demonstrate that midwives leave the profession due largely to feeling deskilled, disengaged and devalued within the dominant medicalised maternity system (Barclay et al, 2003; Homer et al, 2009; Reiger & Lane, 2013). Many are frustrated by their limited capacity to care for women across the full scope of midwifery practice as defined by international authorities (WHO, 1996; 2006; International

Confederation of Midwives, 2010). Further, midwives educated through comprehensive three-year Bachelor of Midwifery programs introduced in Australia over the last decade are not having their skills recognised, utilised, or fully integrated within existing workforce models. As a result, a proportion are lost to attrition soon after graduation.

Even recent MSR legislative changes extending Medicare rebates to 'eligible' midwives remain problematic. Despite doctors' reluctance to enter formal agreements with them, privately practicing midwives are now required by Commonwealth Law to have 'collaborative arrangements' with 'one or more medical practitioners' or institutions before their services attract Medicare rebates (Health Amendment [Midwives and Nurse Practitioners] Act 2010; National Health Determination, 2010; Lane, 2012). This has placed professionally autonomous midwives back under medical control through mandated 'collaborative' agreements, and birthing women under medical control to access Medicare-funded midwifery care (Barclay & Tracy, 2010).

Stakeholder Power

Another problem which BC methodology highlights is the imbalance in stakeholder power within the current medicalised system. This includes who is considered 'expert', whose knowledge 'counts' and who is able to influence decision makers. As Table 1 indicates, the problems associated with stakeholder power extend across all four BC dimensions but are particularly problematic in relation to sources of knowledge and power. In the current system experts are defined as professionals and policy makers. The 'sources of knowledge' are assumed to reside in biomedicine rather than with women themselves or shared with other groups, for example midwives (Reiger & Lane, 2009; Newman et al, 2011). Such narrow or selective boundary judgements reflect historically gendered power dynamics which privilege men and continue to disadvantage women as service consumers and limit the authority of the largely female midwifery profession (Reiger, 2008; 2011).

Where dominant knowledge and/or power relations are contested by different stakeholders, boundary judgements are used to serve and maintain current authoritative knowledge interests. Narrow boundary judgements work to secure 'control' of technological, institutionalised guidelines, policies and procedures, guaranteeing the current service paradigms and systems of medical power based on expert biomedical knowlege (Cherniak & Fisher, 2008; Reiger, 2011; Reiger & Morton, 2012). In Australian maternity care, selective boundary judgements have been used to marginalise or exclude particular groups and services even from the maternity reform agenda, such as neglect of low-technology community-based and homebirth provision in the MSR. Further, non-medical

stakeholders such as consumer advocacy groups like the national Maternity Coalition and Childbirth Australia (see http://childbirth.org.au/; Maternity Coalition, 2002, 2008; Newman et al, 2011) and midwifery organisations have lobbied for a broader range of funded maternity services and for improved workforce capacity. Relationships of power and social control by professional 'experts' within current health system service models (with enforced compliance of women), have long-term effects on mothers, babies, and families, including co-morbidities and psychological health problems (Buist et al, 2008; Newman, 2009).

Health Outcomes and Inequities

A fourth problem identified within the MSR process concerns disparate population health outcomes and inequities for different groups. The boundary judgements considered here include 'what constitutes measures of improvement?' and 'who is witnessing the interests of those affected but not involved?' Although the MSR claimed that Australia is 'one of the safest countries in which to give birth or to be born' [COA, 2009: 3], this fails to acknowledge these disparities, along with the excess use of medical interventions in childbirth (Senate, 1999; Li et al, 2012; AIHW, 2013). Aboriginal and Torres Strait Islander populations (Kildea et al, 2008; Kildea & Wardaguga, 2009), and women living in rural and remote areas (Wilson et al, 2009) have been shown to have significantly poorer outcomes.

Current maternal and child health outcomes in Australia are complicated not only by social disadvantage and poor access to culturally safe services, but by socio-economic disparities working in contradictory ways so that even wealthier women are affected. For example, the 2007 Perinatal Statistics (Laws et al, 2007) show that 'the proportion of women who had induced or no labor, and the proportion who had instrumental delivery or caesarean section, increased with socioeconomic advantage'. Links between health insurance status and increased rates of obstetric intervention and cost are now well established by Australian studies, whereby advantaged women (who should be healthier) and who can afford private insurance are more likely to have obstetric interventions (Roberts et al, 2000; Tracy & Tracy, 2003; Shorten & Shorten, 2000; O'Leary et al, 2007; Shorten & Shorten, 2007; Tracy et al, 2007a; Tracy et al, 2007b; Benoit et al, 2010; Dahlen et al, 2012).

These various problems have long term population health consequences. These include the adverse impacts of Australia's high caesarean section rate; suboptimal breastfeeding rates and associated increases in allergies, asthma, childhood obesity and diabetes, as well as high rates of perinatal depression (Donnellan–Fernandez, 2011b; Lynch, 2011; Stavrou et al, 2011; AIHW, 2012; Hyde et al,

2012). One alarming example of increasing morbidity associated with the medicalised maternity system is the 20% increase in the risk of childhood-onset Type 1 Diabetes after caesarean section that cannot be explained by known confounders (Cardwell et al, 2008). Research on the relationship between fertility and family size in Australia (Newman, 2009) also identifies unintended consequences of high levels of traumatic birth as a 'sleeper' issue affecting early parenthood and maternal and child health. Longer-term emotional and physical legacies also negatively impact family planning and the desire for further children, adversely affecting national fertility rates (Newman, 2009). BC analysis also therefore makes transparent the continuing lack of systemic intervention to reduce what are significant co-morbidities and negative impacts on life course health outcomes.

Section 4: Better Systems Design

From the evidence provided, it is clear that the Australian system has some serious flaws. We argue that a better maternity care system would be driven by focussing on a different underlying set of Motivations, Sources of Power, Knowledge and Legitimation. We now use BC to describe the values and features of the better system, *'What Ought to Be',* including some examples from other countries. This is followed by recommendations of what needs to be changed in the highly interrelated fields of funding, workforce, stakeholder power, and health outcome inequities.

As pregnancy and birth are not illness, a new system with a philosophy based on primary health care principles and practice should replace the current dominant biomedical paradigm (McIntyre, 2012). A better system would advance public health approaches that prioritise achieving lifecourse health outcomes in maternal and infant health (Lynch, 2011; Hyde et al, 2012). This necessitates placing woman and their babies at the centre of all decision making and services planning, including advancing the values associated with a broad 'bio-psycho-social ' (body-mind-spirit) view of birth (Reiger & Dempsey, 2006), an interpretation supported by World Health Organisation recommendations [WHO 1996; 2006]. In the new system the interests of women and families, rather than those of providers and institutions, would be the primary focus of all levels of maternity services (Newman et al, 2011). Culturally safe services would be available to all childbearing populations irrespective of geographical location, with point of access close to the places women live and work. Targeted public health models to address current inequities in maternal and infant health outcomes would be prioritised (Kildea et al, 2010). The values of this new system would be underpinned by a philosophy of woman-centred care, a social model of birth, and the provision of midwifery led services and midwifery led units, including continuity of care, with integrated networks for those requiring higher levels of care (Davis – Floyd et al, 2009).

International evidence shows that supporting and promoting normal birth within primary midwifery care models reduces medical intervention and morbidity (Hatem et al, 2008). Additionally, small-scale evaluations across Australia have demonstrated improved health outcomes linked to midwifery-led care, albeit generally catering for small numbers of women (20 – 500 per annum), with limited capacity to meet population level demand (Nixon et al, 2003; Tracy et al, 2005; Community Midwifery Western Australia [CMWA] 2006; Tracy & Hartz, 2006; Tracy et al, 2006; Power et al, 2008; Scherman et al, 2008). Whilst midwifery led services and units are uncommon in Australia, they constitute established, mainstream public health options in some western health systems (Birthplace Collaborative Group, 2011).In Australia, a new responsive system would place the midwife first and foremost as the most appropriate and cost effective health professional to care for the majority of healthy women and babies in all settings (including the home) (WHO 1996; 2006; Barclay, 2008). This includes integrated midwifery service models for those women and babies experiencing health complexities (Turnbull et al, 2009; Tracy et al, 2013).

Randomised trials and cohort studies confirm the health benefits to mothers and babies from continuity of care where a midwife follows each woman through her pregnancy, labour, birth and transition to parenting (Hatem et al, 2008). Models variously named 'caseload midwifery practice', 'midwifery group practice', 'know your midwife', and 'community midwifery' currently exist in isolated sites in most states and territories of Australia, with demand exceeding access and services supply (Hartz et al, 2012a). These primary care models include collaboration with obstetricians and other health professionals as each woman's needs dictate (McCourt & Page, 1996; Biro et al, 2000; Homer et al, 2001; Hodnett et al, 2004; Turnbull et al, 2009; Hartz et al, 2012b; McIntyre, 2012; McLachlan et al, 2012; Tracy et al, 2013). Evaluations show these models to be safe, rated highly by women, and effective in improving work satisfaction and hence retention of midwives. They are cost effective, costing no more (and often less), than standardised, fragmented care (Tracy et al, 2013). Because maternity care systems play a significant role in achieving good health as a basic human right (Newman & Johnston, 2005), moving these models from acute care hospitals to primary community services settings would be a key objective of the better system.

To achieve better systems design in Australian maternity services, the BC analysis indicates a number of interrelated areas where key changes are required. These include: the implementation of funding mechanisms that are linked with achieving the policy objectives outlined in the National Maternity Services Plan [COA, 2011]; expansion of primary public health service models of midwifery led care

that effectively utilise current midwifery skills and develop future workforce capacity; processes that guarantee stakeholder agency and community decision making in implementing local maternity services change; and greater system flexibility and accountability for achieving improved population health for groups of mothers and babies where access, equity and outcomes are currently poor.

Critical systems analysis supports advancing public health funding to encourage primary care in the community and increase best practice maternity service outcomes. This includes improving the rates of vaginal birth and breastfeeding. Funding that prioritises integrated services from antenatal through birth to postnatal care (a "Pregnancy-Parturition-Parenting" focus) and acknowledges the physiological and mental health lifecourse impact of birth experiences on infant, maternal and family health (Buist et al, 2008; Newman, 2009) will assist this objective. The first goal of the funding plan, 'what ought to be', must be oriented toward maximising outcomes in the short and long term for whole of population health (Lynch, 2011). Second, quarantined funding for midwifery led care and units should be allocated federally and guided by population – based, primary health principles (McAuley & Menadue, 2007). Third, funding should be benchmarked against performance and best practice outcomes underpinned by the National Maternity Services Plan [COA, 2011] with appropriate measures of improvement to address issues of cultural safety, equitable access to services, and disparate outcomes for different groups of mothers and babies. Fourth, the short and longer term costs associated with the burden of chronic disease management directly linked to poor birth system performance (e.g. morbidity associated with high caesarean section rate) should be taken into account by Australian policy makers and funders, as currently occurs in other health systems (Reinharz et al, 2000; De Vries et al, 2009; Birthplace Collaborative Group, 2011).

As outlined in Table 1, Sources of Motivation, Power, Knowledge and Legitimation that are consistent with community expectations are central to the social view of pregnancy and childbirth. In the better system, community participation is core to planning, decision environment, service implementation and evaluation of all aspects of maternity services. This ensures greater accountability in allocating resources and community validation of service innovation in maternity care, including outcomes in different settings. A better system would see shared power, including egalitarian processes for decision-making where policymakers genuinely work with consumers and local communities to decide the focus of investment and disinvestment to meet women's fundamental human rights to choose freely and responsibly and have control over all matters related to their sexual and reproductive health (United Nations, 1996; Newman & Johnston, 2005; The White Ribbon Alliance for Safe Motherhood Australia, 2011).

The ‘better system’ will also reflect broader boundaries of Professionals and Expertise to address interrelated workforce and funding challenges. Application of BC principles suggests the key to solving current workforce problems is addressing disparities of professional power and changing how care is delivered. This includes expanding what expertise is consulted, what counts as authoritative knowledge and optimising use of current health professionals’ skills. Ongoing use of the term ‘workforce shortage’ maintains focus on particular professions, thus channeling policy attention into traditional professional power structures, rather than recognising workforce flexibility and the possibilities for changed skill mix (Duckett, 2008). Better use of the workforce requires increased local access to maternity services, especially publicly salaried midwifery-led models, more midwifery led models for women in the private sector, and strategies to encourage hospital avoidance and receive ‘care in the community’ (Nixon et al, 2003; CMPWA Inc. 2006; Government of South Australia, 2006).

Further, the improved system will support a genuine universal insurance model recognising parity between medicine and midwifery for the same service. Preliminary implementation of maternity reform has highlighted several barriers that continue to constrain women’s access to continuity of midwifery care. Medicare currently provides Federal Government funding for selected practitioners to provide government-specified services. The recent MSR reforms, which were designed to increase accessibility to midwifery care, have resulted in an unworkable situation. First, legislative and policy oversights and impediments associated with funding and practice reforms have resulted in intensified conflict of professional interests (Barclay & Tracy, 2010). Second, midwives in most states do not have the capacity under the public hospitals act to admit women in their own right to birth in hospital. Third, private obstetricians are not bound to enter into a collaborative agreement with midwives in the same way that midwives *are* bound to enter into a collaborative agreement with an obstetrician. These barriers continue to prevent women from accessing continuity of midwifery care from Medicare–eligible midwives (Lane, 2012). Whilst the Federal Standing Council on Health [SCoH] has stated an intention to expand ‘collaborative arrangements’ for midwives to include public sector hospitals and facilities [SCoH, 2012], federal regulations enabling such arrangements have yet to be enacted. A systemic approach to inter-jurisdictional policy is required to facilitate this capability and to address localised provider and institutional resistance.

In re-defining the parameters of knowledge, power and legitimation, we argue that the better system will redefine whose interests should be served as ‘The Client’. Applying CST principles means

a broader boundary definition of 'what counts' in the consequences of the system, short and long term. The new, 'just' system will recognize and respond to those with special needs, including underserved and vulnerable groups. This approach addresses current maternal / infant health inequities and enhances outcomes for whole of population. Partnerships between midwives and Aboriginal health workers are already highly effective in some states (New South Wales, Queensland, South Australia and the Northern Territory) but opportunities to give birth 'on country' are available to very few Indigenous women, even though this has been effective in reducing maternal and perinatal mortality and birth interventions in other countries (Houd et al, 2003; Kildea et al, 2010). Other population groups, including refugees and women on low-incomes, or women living with a disability, will also benefit from improved access to better maternity care.

Three systemic service strategies to close the gap in maternal – infant outcomes would include: expansion of service models proven to deliver low mortality and morbidity directly associated with birth; expansion of culturally safe services to minimise longer term adverse effects on the physical and mental health of the mother, baby, and family; expansion of services to increase equity of access and outcomes for vulnerable populations and underserved groups. Midwifery led models that are well supported within an integrated maternity system have proven effective in delivering on each of these strategies in other comparative health systems (Davis – Floyd et al, 2009).

Limitations of applying a BC Framework

The argument of this paper is based on informed policy analysis rather than on specific empirical enquiry. Our application of the BC Framework to Australia's maternity system not only throws new light of the problems of 'what is' and possible solutions, but also enables us to identify some limitations associated with the method. It is clear that systems complexities mean considerable overlap between the Sources of Motivation, Power, Knowledge and Legitimation as they play out in Australian maternity care. It seems that boundary judgements being made by stakeholders can be shaped in unpredictable ways, and may shift erratically, but, as in the context of the MSR, not necessarily in accordance with the interests and 'purposeful actions' of specific agents. Depending on whether agents like professionals or policy makers seek to create change or to maintain the status quo, additional layers of uncertainty and complexity can also operate (or be manipulated) by agents. Their actions can enable or frustrate these intersecting relationships. Compounding this heightened complexity are the new systems challenges that have arisen when collective agents, notably health policy makers, seek to 'standardise' boundary judgements within fixed values and frames of reference that are not shared by all, rather than accommodate diversity.

Recognising the social realities of the Australian community highlights the problems associated with a homogenous approach to reforming maternity care, i.e. 'one size does not fit all'. Even using BC framework to apply and advance transparent boundary judgements based on evidence provides no guarantee that the boundaries will be redefined according to the evidence. There is also no guarantee that decision makers and power brokers will exercise greater accountability. In fact, the reverse may occur. 'Adjustments' with the intent to reform 'parts' of a system to satisfy particular agents, such as Medicare 'eligibility' for midwives, can have a variety of unintended consequences. This often causes disequilibrium or unexpected distortion and division in other areas of the system, in this case intensified internal divisions between midwives.

It is clear that in maternity care, as no doubt in other fields, sources of motivation, power, knowledge and legitimation, interact to form a complex web of relationships. The shifting patterns can be amorphous and are not easily reducible to schematic characterisation. These realities suggest that when using BC analysis it is important to maintain the identification and centrality of the 'Client' and the 'Purpose' as 'core' to all other considerations; (i.e. in the maternity system, 'Women'). Identifying the 'purpose' and 'scope' of boundary judgements across all parts of the BC framework is also important as is recognising areas of tension and disagreement when different values produce conflicting boundary judgments. Ongoing validation of diverse sources of legitimation and evaluation of 'how' and 'which' Clients are engaged or disengaged in determining boundary judgements is also critical to overcoming marginalisation and exclusion.

Conclusion

For many years, critics of Australia's maternity care system have despaired at the continuing status quo of a medicalised maternity system which does not support improved physical and mental outcomes for women and babies, as broadly defined, and which does not offer effective choice in models of care. The CST analysis developed in this paper makes it clear that construction of knowledge boundaries revolve around competing interpretations of what childbirth means, who should provide care services, and where. Together, these reflect and reproduce ongoing partiality towards an acute sector orientation, including the positioning of medical providers and institutions as the major stakeholders. They therefore lessen the possibilities of what, we argue, *'ought to be'*, that is, federal funding and workforce solutions to deliver better health outcomes to women, families and local communities. As we have argued, this would include an equitable supply of midwifery primary care services, and shifting stakeholder power from professionals to birthing

women. The National Maternity Services Review Discussion Paper offered considerable promise in addressing many of these issues but, the Final Report appears to have been limited by traditional patterns of motivation, power, knowledge and legitimation. Boundary Critique makes transparent many of the underlying assumptions which drive the current system and why the efforts of reformers often result in minimal or no change.

In summary, a critical systems approach supports the conclusion that the *'what is'* of current Australian maternity care is not only inefficient—with widespread confusion and cost–shifting, inequities and inadequate workforce and service planning—but its narrow focus on acute care is seriously misplaced. Employing Critical Systems Analysis strengthens the argument for fundamental maternity system redesign. *'What ought to be',* we have argued requires a public and population health approach as the way to enable greater equity and access to services, and strategies to reduce negative mental and physical health impacts of poorly supported childbirth. Long term political and professional vision is essential to ensuring that Australian maternity service policy planning and reform initiatives effectively meet the needs of childbearing women and their families.

REFERENCES

AUSTRALIAN COLLEGE OF MIDWIVES (2005) Solving maternity workforce shortages through getting the skill mix right. Submission from the Australian College of Midwives to *the Australian Government, Productivity Commission Inquiry into the Health Workforce 2005,* July, 1-36.

AUSTRALIAN HEALTH MINISTERS ADVISORY COUNCIL (2008) *Primary Maternity Services in Australia - A Framework for Implementation*. AHMAC, Canberra.

AUSTRALIAN HEALTH MINISTERS ADVISORY COUNCIL (2010) *Australian Health Ministers, Communique.*Department of Health and Ageing, Canberra.

AUSTRALIAN HEALTH WORKFORCE ADVISORY COMMITTEE (2002*) The Midwifery Workforce in Australia 2002–2012,* Sydney.

AUSTRALIAN HEALTH WORKFORCE ADVISORY COMMITTEE (2004) *The Specialist Obstetrics and Gynaecology Workforce in Australia,* Sydney.

AIHW NATIONAL PERINATAL EPIDEMIOLOGY AND STATISTICS UNIT AND AIHW (2013)*National Core Maternity Indicators.* Cat. no. PER 58. Canberra.

AUSTRALIAN SENATE (1999) *Rocking the Cradle: Federal Senate Inquiry into Childbirth Procedures.* AGPS, Canberra.

BACCHI C (2009) *Analysing Policy: What's The Problem Represented to Be?* Pearson Australia, NSW.

BARCLAY L (2008) Woman and midwives: position, problems and potential. *Midwifery* 24(1): 13 – 21.

BARCLAY L ET AL (2003) *The Australian Midwifery Action Project Report.* Centre for Family Health and Midwifery, University of Technology, Sydney.

BARCLAY L & TRACY S (2010) Legally binding midwives to doctors is not collaboration. *Women and Birth* 23(1): 1-2.

BENOIT C ET AL (2010)Medical dominance and neoliberalism in maternal care provision. *Social Science and Medicine* 71: 475-81.

BIRO M ET AL (2000) Team midwifery care in a tertiary level obstetric service. *Birth* 27(3): 168-173.

BIRTHPLACE IN ENGLAND COLLABORATIVE GROUP and NPEU (2011) Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies. *British Medical Journal* 343:d7400 doi: 10.1136/bmj.d7400 (Published 24 November 2011).

BOGOSSIAN F (2010) An urgent call to implement systematic monitoring of a comprehensive set of quality indicators for maternity services. *Women and Birth* 23(1): 36-40.

BOYD A, BROWN M and MIDGLEY G (1999) *Developing Services with Young People Missing from Home or Care*. Centre for Systems Studies, Hull.

BUIST A ET AL (2008) Postnatal mental health of women giving birth in Australia 2002-2004: findings from the Beyondblue National Postnatal Depression Program. *Australian New Zealand Journal of Psychiatry* 42(1): 66-73.

CARDWELL C ET AL (2008) Caesarean section is associated with an increased risk of childhood-onset type 1 diabetes mellitus *Diabetologia* 51(5): 726-735.

CENTRE FOR HEALTH ECONOMICS RESEARCH AND EVALUATION (CHERE) (2009) *Extended Medicare Safety Net Review Report.* Sydney.

CHAPMAN C (2007) *Birth Cost Information, Netherlands Ministry of Health, Welfare and Sport, Curative Care Department/Primary Care and Integrated Care Division.* The Hague: Direct Correspondence 19/4/07, as compared to Australian figures quoted September 2008 in Improving Maternity Services: Discussion Paper.

CHERNIAK D and FISHER J (2008)Explaining obstetric interventionism. *Women's Studies International Forum* 31: 270-77.

CHILDBIRTH AUSTRALIA (2012)Homepage. http://childbirth.org.au/, accessed 10 September 2012.

CHURCHMAN C (1968) *The Systems Approach.* Dell, New York.

CHURCHMAN C (1970)Operations research as a profession. *Management Science* 17: B37–53.

CHURCHMAN C (1987) Systems profile: Discoveries in an exploration into systems thinking. *Systems Research* 4: 13 –146.

COMMONWEALTH OF AUSTRALIA (2008) *Improving Maternity Services in Australia: A Discussion Paper.* Department of Health and Ageing (DOHA), Canberra.

COMMONWEALTH OF AUSTRALIA (2009) *The Report of the Maternity Services Review.* DOHA, Canberra.

COMMONWEALTH OF AUSTRALIA (2009) *Explanatory Memorandum The Health Legislation Amendment (Midwives and Nurse Practitioners Bill).* Canberra.

COMMONWEALTH OF AUSTRALIA (2011) *National Maternity Services Plan.* The Australian Health Ministers Conference, Canberra.

COMMUNITY MIDWIFERY WESTERN AUSTRALIA INCORPORATED (2006) *Annual Report 2005-2006.* Community Midwifery WA Inc., Fremantle.

DAHLEN H ET AL (2011a) Homebirth, freebirth and doulas: Casualty and consequences of a broken maternity system. *Women & Birth* 24(1): 47-50.

DAHLEN H ET AL (2011b) Homebirth and the National Australian Maternity Services Review: Too hot to handle? *Women and Birth* 24(4): 148–155.

DAHLEN H ET AL (2012) Rates of obstetric intervention among low-risk women giving birth in private and public hospitals in NSW: a population-based descriptive study. *BMJ Open 2012;2:e001723.* Doi:10.1136/bmjopen-2012-001723

DAVIS – FLOYD ET AL (2009) *Birth Models That Work*. University of California Press Ltd, Berkeley.

DEPARTMENT OF HEALTH & AGEING (2010)*Midwife Reform Legislation Fact Sheet.* http://www.health.gov.au/internet/main/publishing.nsf/Content/maternityservicesreview-MidwifeReformLegislationFactsheet, accessed 10 September 2012.

DEPARTMENT OF HEALTH & AGEING (2011a)*Implementing the National Health and Hospitals Network 2011*.http://www.health.gov.au/nationalhealthandhospitalsnetwork, accessed 10 September 2012.

DEPARTMENT OF HEALTH & AGEING (2011b) *Extended Medicare Safety Net Review of Capping Arrangements Report 2011: A Report by the Centre for Health Economics Research and Evaluation – Contextual Overview.* Commonwealth of Australia: Canberra.

DE VRIES R ET AL (2001) *Birth by Design: Pregnancy, Maternity Care and Midwifery in North America and Northern Europe.* Routledge, New York.

DE VRIES R (2004) *A Pleasing Birth: Midwives and Maternity Care in the Netherlands.* Temple University Press, Philadelphia.

DE VRIES ET AL (2009) The Dutch Obstetrical System: Vanguard of the Future in Maternity Care. In *Birth Models That Work (*DAVIS-FLOYD R, BARCLAY L, DAVISS B and TRITTEN J, eds), University of California Press, Ltd, Berkley: 31 – 53.

DONNELLAN-FERNANDEZ R (1996) Personal, professional, structural, and cultural challenges to autonomous practice - a midwife's perspective, In ANF (SA Branch) et aled. *Autonomous Practice in Nursing and Midwifery*. Conference Proceedings: 58-69.

DONNELLAN-FERNANDEZ R (2011a) Having a baby in Australia: Women's business, risky business or big business? *Outskirts: Feminisms Along the Edge* 24: 1–26.

DONNELLAN-FERNANDEZ R (2011b) Lifecourse measures to evaluate the equity of cost and quality in public health midwifery models. *Women & Birth* 24(S1): 37.

DONNELLAN-FERNANDEZ R and EASTAUGH M (2003) Midwifery regulation in Australia: a century of invisibility, *Proceedings of the Sixth International Conference on the Regulation of Nursing and Midwifery,* Melbourne, October 2003.

DUCKETT S (2008) *The Australian Health Care System*, Third Edition. OUP, Sydney.

GILLESPIE J (1991) *The Price of Health*. Cambridge University Press: Cambridge, UK.

GOVERNMENT OF SOUTH AUSTRALIA (2006) *Midwifery Group Practice: An Evaluation of Clinical Effectiveness, Quality and Sustainability.* CYWHS: Women's & Children's Hospital, Adelaide.

GOVERNMENT OF NEW ZEALAND (2007) *New Zealand Primary Maternity Services Notice 2007*. Ministry of Health: Wellington.

GRAY G (2000) Private practice publicly supported: Equity in hospital and medical financing. *Just Policy* 18:4–14.

HABERMAS J (1972) *Knowledge and Human Interests*. Heinemann, London.

HARTZ D ET AL (2012a) Australian caseload midwifery: the exception or the rule. *Women Birth* 25(1): 39-46.

HARTZ D ET AL (2012b)Australian maternity reform through clinical redesign. *Australian Health Review* 36: 169–175.

HATEM M ET AL (2008)Midwife–led versus other models of care for childbearing women. *Cochrane Database of Systematic Reviews,* Issue 4. Art No: CD004667.Doi:10.1002/14651858.CD004667.pub2

HEALTH WORKFORCE AUSTRALIA (2012) *Health Workforce 2025: Doctors, Nurses and Midwives – Volume 1*.

HENDRY C (2009)The New Zealand maternity system. In *Birth Models That Work (*DAVIS-FLOYD R, BARCLAY L, DAVISS B and TRITTEN J, eds), University of California Press, Ltd, Berkley: 55–86.

HODNETT E ET AL (2004) Continuous support for women during childbirth: *Cochrane Database Systematic Review*.

HOMER C ET AL (2001) Collaboration in maternity care: a randomized controlled trial comparing community-based continuity of care with standard hospital care. *British Journal Obstetrics & Gynecology* 108(1): 16-22.

HOMER C ET AL (2009) The role of the midwife in Australia. *Midwifery* 25(6): 673-681.

HOUD S, QINUAJUAK J and EPOO B (2003) The outcome of perinatal care in Inukjuak, Nunavik, Canada 1998-2002. *Circumpolar Health* 63 Suppl 2:239-241.

HYDE M ET AL (2012) The health implications of birth by Caesarean section. *Biological Reviews* 87(1): 229-243.

INTERNATIONAL CONFEDERATION OF MIDWIVES (2010) Global Standards for Midwifery Education: http://www.internationalmidwives.org/, accessed 10 September 2012.

KILDEA S ET AL (2010) 'Closing the Gap': How maternity services can contribute to reducing poor maternal infant health outcomes for Aboriginal and Torres Strait Islander women. *Rural and Remote Health,* 10 (online): 1383.

KILDEA S ET AL (2008) Making pregnancy safer in Australia: The importance of maternal death review. *Australian & New Zealand Journal of Obstetrics & Gynecology* 148: 130-136.

KILDEA S and WARDAGUGA M (2009) Childbirth in Australia: Aboriginal and Torres Strait Islander women. In *Childbirth Across Cultures, Science Across Cultures: The History of Non-Western Science* (SELIN H, ed), pp275-286, Springer Science + Business Media BV.

KINTREA K (1996) Whose partnership? Community interests in the regeneration of a Scottish housing scheme. *Housing studies* 11: 287-306.

LANE K (2012) When is collaboration not collaboration? When it's militarized. *Women & Birth* 25(1): 29–38.

LAWS P ET AL (2007) *Australia's Mothers and Babies 2005*. Cat no. PER 40. AIHW National Perinatal Statistics Unit, Sydney.

LI Z ET AL (2012)Australia's mothers and babies 2010. Cat. no. PER 57. Canberra: AIHW National Perinatal Epidemiology and Statistics Unit.

LYNCH J (2011) Why are economists interested in early childhood health and development?7th Annual Healthy Development Adelaide Oration, 25 August 2011, University of Adelaide.

MACDONALD M and BOURGEAULT I (2009) The Ontario Midwifery Model of Care. In *Birth Models That Work (*DAVIS-FLOYD R, BARCLAY L, DAVISS B and TRITTEN J, eds), University of California Press, Ltd, Berkley: 89 – 117.

MATERNITY COALITION (2002) National Maternity Action Plan for the introduction of community midwifery services in urban and regional Australia, *Birth Matters* 6(3):2–23.

MATERNITY COALITION (2008) *Funding Primary Maternity Care: A proposal to address cost shifting as an obstacle to public, primary maternity services*. http://www.maternitycoalition.org.au, accessed 10 September 2012.

MCAULEY I and MENADUE J (2007) *A Health Policy for Australia: Reclaiming Universal Health Care.* Centre for Policy Development, Rethink Paper Number 1, May 2007.

MCCOURT C and PAGE L (1996) *Report on the Evaluation of One-to-One Midwifery*. Thames Valley University, London.

MCINTYRE M (2012). Safety of non-medically-led primary maternity care models: A critical review of the international literature. *Australian Health Review* 36(2): 140–147.

MCLACHLAN H ET AL (2012).Effects of continuity of care by a primary midwife (caseload midwifery) on caesarean section rates in women of low obstetric risk. *British Journal of Obstetrics & Gynaecology*: 1-10. doi: 10.1111/j.1471-0528.2012.03446.x.

MIDGLEY G (2000) *Systemic Intervention: Philosophy, Methodology, and Practice.* Kluwer Academic / Plenum Publishers, New York.

MIDGLEY G (2006)Systemic Intervention for Public Health. *American Journal Public Health* 96(3): 466–472.

NEWMAN L (2009) The health care system as a social determinant of health: qualitative insights from South Australian maternity consumers. *Australian Health Review* 33(1): 62–71.

NEWMAN L and JOHNSTON J (2005) Maternity care: a human rights issue? *Birth Matters* 9(1): 3-5.

NEWMAN L ET AL (2011) Maternity Coalition: Australia's national maternity consumer advocacy organization. In *The 21st Century Motherhood Movement* (O'REILLY A, ed), pp 80-92, Demeter Press, New York.

NEWNHAM E (2010) Midwifery directions: The Australian maternity services review. *Health Sociology Review* 19(2): 245-259.

NIXON A ET AL (2003) *The Community Midwives Project: An Evaluation of the Set Up of the Northern Women's Community Midwives Project*, Northern Metropolitan Community Health Service, Adelaide.

O'LEARY C ET AL (2007)Trends in mode of delivery during 1984–2003. *British Journal Obstetrics & Gynecology* 114: 855-864.

PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA (2006) *The Blame Game Report on the Inquiry into Health Funding*. House of Representatives Standing Committee on Health and Ageing: Canberra.

PODGER A (2006) Reconceiving Federal-State-Regional Arrangements in Health, In *Federalism and Regionalism in Australia: New Approaches, New Institutions?* (BROWN A and BELLAMY J, eds), pp 135-154, Australian National University ePress, Canberra.

POWER C ET AL (2008)*Evaluation of the Southern Aboriginal Maternity Care Project*, Southern Adelaide Health Service, Government of South Australia, Adelaide.

QUINLIVAN B (2004) Medicare cuts an artery. *Business Review Weekly* November 11-17: 26.

REIGER K (1985) *The Disenchantment of the Home: Modernising the Australian Family, 1880–1940.* Oxford University Press, Melbourne.

REIGER K (2001)*Our Bodies, Our Babies*. Melbourne University Press, Melbourne.

REIGER K (2006) A neoliberal quickstep: Contradictions in Australian maternity policy [Special issue]. *Health Sociology Review. Childbirth, Politics and the Culture of Risk*, 15(4): 330 – 340.

REIGER K (2008) Domination or mutual recognition?Midwifery as the "Other" of obstetrics. *Social Theory & Health* 6: 132-147.

REIGER K (2011)Knights or knaves? Public policy, professional power and reforming maternity services. *Healthcare for Women International* 32(1):2-22.

REIGER K and DEMPSEY R (2006) Performing birth in a culture of fear [Speacial Issue]. *Health Sociology Review. Childbirth, Politics and the Culture of Risk*, 15(4): 363 – 373.

REIGER K and LANE K (2009) Working together: collaboration between midwives and doctors in public hospital settings. *Australian Health Review* 33(2): 315 – 324.

REIGER K and LANE K (2013) 'How can we go on caring when nobody here cares about us?' Australian public maternity units as contested care sites. *Women & Birth 26*: 133 137. http://dxdoi.org/10.1016/j.wombi.2012.11.003

REIGER K and MORTON C (2012)Standardizing or Individualizing?A Critical Analysis of the "Discursive Imaginaries" Shaping Maternity Care Reform. *International Journal of Childbirth* 2(3): 173-186.

REINHARZ D ET AL (2000) Cost–effectiveness of midwifery services versus medical services in Quebec. *Canadian Journal Public Health* 91(1): 12-15.

ROBERTS C ET AL (2000) Rates for obstetric intervention among private and public patients in Australia, *BMJ* 321: 137-141.

RURAL DOCTORS ASSOCIATION OF AUSTRALIA (2007) Press Release

RUSSELL L (2008) *The Increasing Cost of Private Maternity Services*. The Menzies Centre for Health Policy. http://www.menzieshealthpolicy.edu.au:1-3.

SAKALA C and CORRY M (2008)*Evidence-based Maternity Care.* Milbank Memorial Fund, New York.

SAX S (1984) *A Strife of Interests: medical power and politics in Australia.* Allen& Unwin, Sydney.

SCHERMAN S ET AL (2008) The first year of a midwifery-led model of care in Far North Queensland. *Medical Journal of Australia* 188(2): 85-88.

SCHOFIELD T (1995) *A Politics of Childbirth: Public Policy and Childbirth in New South Wales, 1950 – 1990*. PhD Thesis, University of Sydney, Sydney.

SEGAL L (2008) Health reform: a healthy community and a healthy economy, do we have to choose? *Gift of Knowledge Public Seminar*, University of South Australia: 15 July, Adelaide.

SHORTEN B and SHORTEN A (2000) Women's choice? The impact of private health insurance on episiotomy rates in Australian hospitals. *Midwifery* 16: 204-212.

SHORTEN A and SHORTEN B (2007) The impact of the public to private hospital shift on regional birthing outcomes. *Women & Birth* 20(2): 49-55.

STANDING COUNCIL ON HEALTH (2012) *August 10 Communique*. www.ahmac.gov.au

STAVROU E ET AL (2011)Epidemiology and trends for Caesarean section births in New South Wales, Australia. *BMC Pregnancy & Childbirth* 11(8). http://www.biomedcentral.com/1471-2393/11/8.

SUMMERS A (1995) For I have ever so much more faith in her ability as a nurse: The eclipse of the Community Midwife in South Australia 1836–1942.Flinders University, SA, Ph.D. Thesis.

THE WHITE RIBBON ALLIANCE FOR SAFE MOTHERHOOD (2011) *Respectful Maternity Care: The Universal Rights of Childbearing Women*: http://www.whiteribbonalliance.org/, accessed 10 September 2012.

TRACY S and TRACY M (2003) Costing the cascade: estimating the cost of increased obstetric intervention in childbirth using population data. *BJOG* 110: 717-724.

TRACY S ET AL (2005) An integrated service network in maternity: the implementation of a free standing midwifery led unit. *Australian Health Review* 29(3): 332–339.

TRACY S and HARTZ D (2006) *The Quality Review of Ryde Midwifery Group Practice, September 2004 - October 2005*,Northern Sydney and Central Coast Health, Sydney.

TRACY S ET AL (2006) Does size matter? A population based study of birth in lower volume maternity hospitals for low risk women. *British Journal of Obstetrics & Gynecology* 113(1): 86-97.

TRACY S ET AL (2007a).Associating birth outcomes with obstetric interventions in labour for low risk women. *Women & Birth* (2): 41-48.

TRACY S ET AL (2007b). Admission of term infants to neonatal intensive care: A population based study. *Birth* 34(4): 301-307.

TRACY SK ET AL (2013)Caseload midwifery care for women of all risk compared to standard hospital care: a randomized controlled trial. (Midwives @New Group practice Options: M@NGO trial.) Lancet (accepted for publication 13/6/2013)

TURNBULL D ET AL (2009) An evaluation of Midwifery Group Practice. Part I: Clinical effectiveness. *Women & Birth* 22(1): 3-9.

ULRICH W (1998) *Systems Thinking as if People Mattered: Critical Systems Thinking for Citizens and Managers.* Working Paper No. 23 1998, Lincoln School of Management, UK: 1-15.

ULRICH W (2000) Reflective practice in the civil society: the contribution of critically systemic thinking. *Reflective Practice* 1(2): 247-268.

ULRICH W (2002)Boundary Critique. In *The Informed Student Guide to Management Science* (DAELLENBACH H and FLOOD R, eds), pp 41-42, Thomson Learning, London.

ULRICH W (2003) *A Brief Introduction to Critical Systems Thinking for Professionals & Citizens*: http://www.geocities.com/csh_home/cst_brief.html, accessed 10 September 2012.

UNITED NATIONS (1996) *Report of the Fourth World Conference on Women*¸ Beijing, 4-15 September 1996, UN: New York, Item 96, p36.

VAN GOOL K, ET AL (2009)Who's getting caught? An analysis of the Australian Medicare Safety Net, *The Economic Review* 42(2): 143-154.

WAGNER M (2006) *Born in the USA: How a Broken Maternity System Must Be Fixed to Put Women and Children First*. University of California Press: Berkeley, California.

WALSH D (2006) Subverting assembly-line birth: Childbirth in a free-standing birth centre. *Social Science & Medicine* 62(6): 1330-134.

WILLIS E (1989) *Medical Dominance: The Division of Labour in Australian Health Care, 2nd edition.* Allen & Unwin, Sydney.

WILSON N, ET AL (2009) A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas, *Remote Health* 9, online: 1060. http://www.rrh.org.au/articles/showarticlenew.asp?ArticleID=1060

WORLD HEALTH ORGANISATION (1996) *Care In Normal Birth: A Practical Guide*, Family and Reproductive Health: WHO, Geneva. http://whqlibdoc.who.int/hq/1996/WHO_FRH_MSM_96.24.pdf, accessed 10 September 2012.

WORLD HEALTH ORGANISATION (2006) *Standards for Maternal and Neonatal Care*, Department of Making Pregnancy Safer and Department of Reproductive Health and Research: WHO, Geneva.

WORLD HEALTH ORGANISATIONS COMMISSION ON THE SOCIAL DETERMINANTS OF HEALTH (2007) *Challenging Health Inequity through Health Systems*, Final Report, Knowledge Network on Health Systems: WHO, Geneva.

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