

Supplier-Induced Demand for Medical Services

Staff
Working Paper

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Preface

The concept of supplier-induced demand (SID) in medical markets has been the subject of considerable debate for many years. The primary objective of this paper is to contribute to a better understanding of the competing viewpoints on SID for medical services — through a balanced assessment of the existing theory and evidence, using an economic framework focusing on Australian general practitioners. Its origins can be found in the Commission's research paper *Private Hospitals in Australia* (PC 1999), which argued that more research on this topic was warranted.

This paper forms part of a stream of research on health issues undertaken by the Commission and its predecessors in recent years. In addition to *Private Hospitals in Australia*, other published reports include *The Pharmaceutical Industry* (IC 1996); *Private Health Insurance* (IC 1997); and *International Pharmaceutical Price Differences* (PC 2001). The Commission is currently undertaking a commissioned research study on general practice compliance costs (to be finalised in early 2003).

In addition, the Commission and the Melbourne Institute of Applied Economic and Social Research (MIAESR) jointly convened a Health Policy Roundtable in Melbourne in March 2002. The Roundtable drew together thirty leading practitioners and analysts covering key health policy issues. The proceedings, subsequently published as *Health Policy Roundtable* (PC and MIAESR 2002), included a session on SID presented by Ian Monday.

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The views expressed in the paper are those of the authors and do not necessarily reflect those of the Commission.

Abbreviations

ACCC	Australian Competition and Consumer Commission
AIHW	Australian Institute of Health and Welfare
AMA	Australian Medical Association
DHAC	(Commonwealth) Department of Health and Aged Care
DHS	(Victorian) Department of Human Services
DHSH	(Commonwealth) Department of Human Services and Health
GP	General practitioner
HIC	Health Insurance Commission
HMO	Health Maintenance Organisation
HUDGP	Hunter Urban Division of General Practice
IC	Industry Commission
MIAESR	Melbourne Institute of Applied Economic and Social Research
NHMRC	National Health and Medical Research Council
OECD	Organisation for Economic Co-operation and Development
PC	Productivity Commission
PIP	Practice Incentives Program
PSR	Professional Services Review
PSRC	Professional Services Review Committee
SID	Supplier-induced demand

OVERVIEW

Key points

- Supplier-induced demand (SID) refers to the notion that doctors can manipulate their patients' demand for medical services to create additional demand for these services. It can arise from actions by doctors linked to self-interest or attempts to promote the well-being of their patients.
- While SID is commonly viewed negatively, with the associated judgement that it should be discouraged, some forms may yield positive outcomes.
- If demand inducement is pervasive, there could be a variety of economy-wide impacts. In particular, it could increase health expenditure without a commensurate improvement in health outcomes.
- A variety of market and institutional/regulatory influences can provide doctors with incentives or disincentives to engage in SID.
 - Substantial information asymmetries, the potential for an imperfect agency relationship and clinical uncertainty provide doctors with the capacity to engage in SID. However, these characteristics do not guarantee the presence of SID.
 - Systems for financing, organising and paying for medical services also influence doctor and patient behaviour. SID is more likely to prevail where consumers are free to choose their doctor, there is no contractual or employment relationship between doctors and third-party insurers, and doctors are remunerated on a fee-for-service basis.
- Empirical evidence on SID from Australia and overseas is inconclusive and incomplete. In practice, SID is difficult to identify because doctor behaviour and service patterns consistent with SID may also be consistent with appropriate medical treatment. Even so, on balance, the evidence suggests that SID is likely to be small relative to other influences on the provision of medical services.
- The many gaps in our knowledge about SID suggest that a cautious approach is warranted in assessing proposals for government intervention to influence SID.

Overview

The supplier-induced demand (SID) concept has attracted considerable attention in the health economics literature for some 30 years. This paper seeks to contribute to a better understanding of the concept and the influences on SID by focusing on some key aspects of the debate in relation to Australian general practitioners.

What is supplier-induced demand?

SID refers to the notion that doctors, in acting as agents for their patients, can use their ‘discretionary power’ to engage in demand-shifting or inducement activities such that their recommended care differs from that which an informed patient would deem appropriate. The induced demand may take the form of an increase in the number of services or a change in the service mix provided to patients. It can relate to two broad types of medical service — consultations and referrals (for example, pathology and diagnostic imaging).

A commonly cited motive for SID is self-interest on the part of the treating doctor. Under this scenario, the additional treatment generated by the doctor is driven primarily by financial considerations, rather than by an impartial assessment of the medical necessity of the treatment. Such additional treatment may, for example, be driven by a desire by doctors to boost their incomes.

SID may also arise even if doctors act in the perceived interests of their patients. For example, if a doctor inadvertently underestimates the difficulties experienced by a patient in meeting the cost of medical procedures, the level of care recommended may exceed that which the patient would have nominated.

While SID is usually regarded as an unwelcome and undesirable phenomenon with negative impacts for the community at large, it may give rise to positive outcomes. For example, where a doctor persuades a patient to undertake more treatment where the patient would otherwise have opted for a less than clinically effective package of care.

Why does SID matter?

If SID was a common feature of general practice in Australia, the impacts on the community could be significant. For example, it could result in a higher than necessary share of the nation's resources being devoted to health care and could lead to a deterioration in the health of some patients if the treatment is inappropriate. It could also have important implications for the conduct of health policy. For example, if pervasive, SID would undermine the effectiveness of co-payments and price/fee controls as a means of restraining health costs. Similarly, it would reduce the effectiveness of controls that limit the number of doctors.

Factors influencing the scope for SID

A variety of market, behavioural, institutional and regulatory influences may provide doctors with incentives or disincentives to engage in SID (or patients with incentives or disincentives to resist SID).

Medical market characteristics

The potential for SID to arise is shaped by some characteristics of medical markets that distinguish them from 'competitive' markets, in particular:

- substantial information gaps and asymmetries that encourage patients to seek medical advice and delegate decision making to doctors;
- potential weaknesses in the agency relationship between doctors and patients; and
- the impact of clinical uncertainty on doctors' decision-making processes.

These characteristics create the *possibility* that inducement-type activities may occur. However, they do not *guarantee* the presence of SID in medical markets. There is, in fact, considerable debate over the influence of these factors on the extent of SID.

In this context, it is important to note that there is not a single homogeneous medical market, but rather a number of sub-markets including preventative, general, specialist, emergency and remedial medical services. The significance of the market characteristics outlined above, and hence the possibility of SID arising, is likely to vary between the different sub-markets. In general, the scope for demand inducement is likely to be greater where medical care is complex, there are significant asymmetries of information and knowledge, and the cost to the patient of obtaining additional information is high.

To some degree, the scope for SID arises in any ‘specialty’ market where consumers have significantly less information than producers. Examples include motor vehicle repairs, financial advice and legal services. But, while acknowledging this, proponents of SID argue it is the combination of the distinguishing characteristics of medical markets and the extent to which they influence market outcomes, that sets medical markets apart — and creates more extensive opportunities for SID to occur.

Doctor and patient objectives

The preparedness of patients to devolve decision making to doctors provides scope for doctors to induce demand for their services. The extent of induced demand is shaped by a diverse range of factors, including the circumstances of patients.

Although the doctor-patient relationship features a prominent and shared objective — enhancing the patient’s well-being — doctors are also motivated by other objectives, including self-interest in a number of guises. Doctors’ decisions about the provision of medical services are also influenced by factors such as clinical uncertainty, remuneration arrangements, the ownership structure of their practices (including linkages with other health care providers) and the wider institutional and regulatory framework within which they operate.

Some of these influences can result in patients with broadly similar conditions being provided with different patterns of treatment. Some would view such differences as indicators of SID. However, in practice, this is inherently difficult to identify because the ‘appropriate level of care benchmark’ is often not unambiguously clear.

Institutional and regulatory environment

The design of public or private insurance in most OECD countries provides patients with little incentive to restrain their demand for medical services. This is fertile ground for possible SID. Beyond this, the likelihood of SID being pervasive also depends upon the institutional framework for the organisation and delivery of medical services.

Some components of the organisational and payment arrangements appear to be particularly conducive to the development of SID, for example, where:

- consumers are free to choose their doctor;
- there is no contractual or employment relationship between third-party insurers and doctors; and
- doctors are paid on a fee-for-service basis.

Other elements of the wider institutional and regulatory framework that may influence SID are the type of systems used to monitor and review the activities of doctors, medical indemnity arrangements and the system governing the relationships between doctors and other health care providers.

What does the empirical evidence say?

Despite widespread empirical research overseas and in Australia, demand inducement still lacks a definitive test and is inherently difficult to assess. In large part, this is because SID can only be estimated indirectly and medical markets are characterised by substantial government intervention which gives rise to extensive ‘noise’ in the underlying data.

A wide variety of approaches has been employed to test the inducement hypothesis. The major ones include measuring the effect of variations in the numbers of doctors on the volume of services and assessing the impacts of fee changes on service patterns. In addition, evidence has emerged in Australia in three specific areas relating to: defensive medical practices; the emergence of corporate medicine; and the service monitoring activities of the Health Insurance Commission.

While inconclusive and incomplete, it is possible to make some broad observations about the empirical evidence relating to SID.

- The findings differ — some studies find support for SID while others do not. Nevertheless, there is arguably sufficient evidence to accept that SID can occur.
- There does not appear to be any robust and reliable evidence on the likely magnitude of SID, although most existing studies suggest that, where SID arises, it is small both in absolute terms and relative to other influences on the provision of medical services.
- It is likely that this absence of definitive evidence will remain, as there are a number of fundamental and seemingly unresolvable methodological and data problems associated with trying to assess SID.

Some practical implications

The potential for SID to arise, coupled with the many gaps in our knowledge about its underlying causes and impacts, pose some challenges for health policy. However, as the available evidence, albeit limited, suggests that the impacts of SID are relatively small, there are grounds for adopting a cautious approach to assessing proposals for government interventions to influence SID. Broad brush measures directed at containing SID without a careful assessment of the likely benefits and

costs carry the risk of producing unwelcome repercussions within the health care system without offsetting benefits.

In principle, there may be scope to target particular forms of SID directly (such as those that may arise through some defensive medical and corporate ownership-related medical practices). However, the design of appropriate responses in such areas is constrained by data deficiencies and the broader challenge of assessing the relevant benefits and costs.

1 Introduction

1.1 The concept of supplier-induced demand

Advice provided to patients by their doctors is usually the main factor determining their medical care. Furthermore, the doctor is often also the provider of the recommended treatment (for example, follow-up consultations).

In simple terms, the concept of supplier-induced demand (SID) is that doctors are in a position to manipulate their patients' demand for medical services to create additional (induced) demand for these services. Their motivation for doing so may be to promote their own self-interest or enhance the well-being of their patients.

The induced demand may occur through an increase in the number of services provided by doctors to patients or a change in the service mix. It can relate to two broad types of medical service — consultations and referrals (for example, pathology and diagnostic imaging).

From a health policy perspective, SID is typically seen as raising two main concerns. First, it could increase expenditure on health and place pressure on government budgets. Second, it could have efficiency implications, because it may raise the share of a nation's resources devoted to health care with few or no offsetting benefits.

The significance of demand inducement for the appropriate design of health policy was recognised by Reinhardt (1989, p. 339):

The issue of physician-induced demand goes straight to the heart of probably the major controversy in contemporary health policy, namely, the question of whether adequate control over resource allocation to and within health care is best achieved through the demand side by letting consumers (patients) discipline providers who compete against one another on the basis of quality and price, or through regulatory controls on the supply side.

Some examples of areas where SID could have a profound impact on the appropriate design of health policy include:

- the effectiveness of using co-payments to contain increases in health expenditure;

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- the effectiveness of price or fee controls in restraining increases in health costs; and
 - the desirability of using supply-side initiatives, such as determining the appropriate number of doctors, the development and use of clinical protocols, and the use of utilisation reviews or service monitoring arrangements.

The SID concept has attracted considerable attention in the health economics literature and a variety of conceptual models and empirical tests of SID have been reported in a diverse range of studies. Despite the intensive scrutiny, SID and its implications for health policy remain controversial. In this context, a mid-1990s assessment of the literature by Labelle, Stoddart and Rice (1994, p. 349) still seems accurate, namely, that:

Lack of agreement among analysts pervades almost every aspect of the discussion of SID. The literature provides numerous, and not necessarily consistent, definitions of the phenomenon. Studies employ a variety of approaches to test for its existence, nature and extent. The validity of the results of both the theoretical models and empirical tests is controversial. Accordingly, there is no general agreement on the development and implementation of public policy based on the results.

Reflecting this, a number of analysts have expressed the view that the debate will never be satisfactorily resolved (see, for example, Fuchs 1986; Hadley, Holahan and Scanlon 1979; Pauly 1988; Phelps 1986). An Australian researcher (Doessel 1995, p. 58) observed that: ‘this area of research can be described as a theoretical and empirical quagmire’.

1.2 Purpose and scope of the study

This paper does not seek to resolve the demand inducement issue once and for all. Nor does it seek to provide a detailed review of the SID literature.¹

Instead, its purpose is to contribute to a better understanding of the concept and influences on SID, and related policy issues, by focusing on some key aspects of the debate, namely:

- the concept of SID itself – what is it?
- how might it arise?
- what does the existing evidence tell us?
- what are some of the policy implications?

¹ For the interested researcher or policy analyst there are several useful reviews (see, for example, Eisenberg 1986; Folland, Goodman and Stano 2001; McGuire 2000; Sloan and Feldman 1978).

There are two important boundaries on the scope of this study. First, the focus is on *supplier*-induced demand — that is, doctors (as suppliers) inducing demand (from patients) for medical services. A related issue, but one not considered here, is *supply*-induced demand — the tendency of health equipment and facilities to be used because they are available. Indeed, the earliest studies of inducement in the health sector found a positive correlation between the number of hospital beds available and levels of hospital utilisation — leading to the observation, ‘a bed built is a bed filled’.²

Second, the focus is on general practitioner (GP) services, rather than doctors in general. While much of what has been written about SID has a general applicability to all doctors, most research has applied to GPs. Moreover, GPs are usually patients’ main agents for information and decisions regarding medical treatment — around three-quarters of doctor-patient episodes in Australia involve vocationally-registered GPs (HIC 2002).

1.3 Outline of the paper

There are four parts to the paper:

- conceptual issues relating to SID, medical markets and doctor/patient behaviour (chapters 2–4);
- the institutional and regulatory environment (chapter 5);
- empirical evidence on SID (chapter 6); and
- policy issues relating to SID (chapter 7).

Chapter 2 explores the concept and meaning of SID — interestingly, although the subject of extensive debate, there is no definitive and widely accepted definition of SID. Chapter 3 describes the characteristics of medical markets and discusses how they differ from other markets. It also examines how it may be possible for the supply of, and the demand for, medical care to be interdependent — thus creating a necessary (but not sufficient) condition for SID. Chapter 4 develops an analytical framework to examine influences on doctor and patient behaviour.

One of the key factors thought to influence opportunities for SID to arise is the institutional and regulatory framework within which doctors operate. Chapter 5 examines different types of institutional and regulatory mechanisms associated with health care markets and discusses their possible role in creating an environment conducive to SID.

² See, for example, Roemer (1961), and Shain and Roemer (1959).

Chapter 6 examines the empirical evidence. It provides a broad overview of the extensive published research — from both Australia and overseas — that has looked at the existence and pervasiveness of SID.

Finally, chapter 7 presents some concluding comments on the challenges posed by SID. It also identifies possible areas for future research.

2 The concept of supplier-induced demand

This chapter initially focuses on the concept of SID, in particular its definition. It subsequently discusses the main drivers of SID and related identification problems.

2.1 What is SID?

Although controversial, the concept of SID is commonly viewed as encompassing the notion that doctors, in acting as agents for their patients, can use their ‘discretionary power’ to engage in demand-shifting or inducement activities such that their recommended care differs from that which an informed patient would deem appropriate. SID usually takes the form of an increase in the number of services or a change in the service mix provided to patients.

However, there is a variety of views about the concept, its possible extent and even its very existence. (An example of these differences, in the Australian context, is set out in box 2.1.) Perhaps most importantly, there is no generally accepted definition of SID. For example, opinions vary as to whether a comprehensive definition should incorporate reference to the ‘effectiveness’ or ‘appropriateness’ of care and/or to the motives underlying doctors’ recommended care. This section focuses on this latter issue — the definition of SID.

An examination of the various definitions used in the literature points to four broad types:

- positive and value free;
- normative with negative connotations;
- normative with mixed connotations; and
- normative with neutral connotations.

Box 2.1 **The SID controversy — an Australian example**

An Australian example of the differences of opinion relating to SID can be found in an exchange between Paterson and Richardson covering medical workforce policy and the relevance or otherwise of the notion of SID. Paterson (1995, p. 8 and p. 12), representing the neoclassical view, argued that the doctrine of SID is erroneous. In support of this claim, he observed that ... 'There is obviously no consumption of anything before it is invented and then produced, but that is not to say there was no demand for it ... Health economics is apparently innocent of the rudimentary distinction between latent demand and consumption'. Further, ... 'Up to the point where co-payments fall to zero, the supplier-induced demand theory falls on Occam's Razor. It is simply not needed to explain the facts while the patient faces a non-zero price'. In contrast, Richardson (1995, p. 34) observed that ... 'The usual assumptions underlying the model of SID contrast with Paterson's assumptions. They are that: '... patient information is poor and doctors act as their agents. Demand is a function of the agent's advice and there is always at least the potential for SID. ... Doctors/agents also face imperfect information'. Richardson maintained that this could lead to increased provision of services in response to doctors' perceptions of what was in the best interests of their patients.

Sources: Paterson (1995) and Richardson (1995).

A *positive and value free* specification is provided by Hadley, Holahan and Scanlon (1979, p. 247) in the following terms:

The concept of physician-created demand or demand-inducement refers to the physician's alleged ability to shift patients' demand for medical care at a given price, that is, to convince patients to increase their use of medical care without lowering the price charged.

Here, inducement arises from the doctor's alleged ability to convince patients to increase their usage of medical care. The definition includes no reference to the motivation underlying inducement. However, the mechanism for inducement is attributed by the authors to the patient's general lack of medical knowledge, consequent reliance on the doctor's advice and the weak incentive on the patient to say 'no' where services are provided against the backdrop of small direct charges to the patient and extensive insurance coverage.

Fuchs (1978) puts forward another positive and value free definition arguing that inducement arises where a treatment deviates from a level that equates the marginal cost and marginal benefit for the patient. Significantly, to the extent that this involves demand-shifting or inducement, in principle it could involve under or over-servicing in relation to the patient's care needs. Fuchs argues that the 'optimal' or 'necessary' level of care will vary depending on the specification used to determine the end goal of treatment — maximising the patient's gain relative to the cost of

treatment or health status regardless of cost. One practical implication of Fuchs' reference to 'optimal' or 'necessary' care is that the extent of inducement, if any, will be sensitive to the benchmark used to identify 'optimal' or 'necessary' care. Given the pervasive nature of clinical uncertainty for many medical treatments, this highlights one of the difficulties of identifying SID.

An example of a *normative with negative connotations* definition is given by Folland, Goodman and Stano (2001, p. 204):

The phenomenon of SID occurs when physicians abuse the agency relationship with their patients in order to generate demand for personal gain; this is made possible because physicians are more fully informed than their patients.

Here, inducement is attributed to an imperfect agency relationship between doctor and patient. The motivation is personal gain for the doctor in the form of (say) higher income for services rendered than would otherwise arise. The potential for abuse arises because doctors are better informed than their patients and presumably, therefore, able to generate additional demand for their services. In this context, an imperfect agency relationship does not arise simply because the doctor influences the patient's demand for medical services. Rather, it arises because the doctor exerts 'undue' influence (that is, encourages the patient to use a level or mix of services different from that which would have been chosen by a patient with information and knowledge equivalent to the doctor).

An example of a *normative with mixed connotations* definition is provided by Bradford and Martin (1995, p. 492):

Demand inducement can constitute either unnecessary use of existing methods of treatment or the invention of new treatments. To be considered inducement (in the usual pejorative sense) these treatments must be of questionable medical value and instigated for profit and not medical reasons. An honest attempt by the physician to persuade a patient to accept a particular treatment should not be construed as inducement.

Here, inducement covers treatments of questionable medical value initiated by a doctor for financial gain.

Finally, an example of a *normative with neutral connotations* definition is given by Labelle, Stoddart and Rice (1994, p. 363) who argue that a useful specification of SID has two main requirements — first, a consideration of the effectiveness of the agency relationship and, second, an assessment of the clinical effectiveness of any induced services:

... the identity of the party (providers or patients) initiating utilisation is insufficient for a useful concept of SID. A more useful concept requires at least the notion of agency and the degree to which the agency relationship operates effectively. Moreover, it

requires the incorporation of the notion of the clinical effectiveness of induced utilisation because the normative significance of SID *for policy makers* depends as much on this as it does on the degree to which physicians act as perfect agents (emphasis in original).

The definitions put forward by Bradford and Martin (1995) and Labelle, Stoddart and Rice (1994) highlight an important issue that is often overlooked in the SID debate. Inducement can give rise to ‘good’ or ‘bad’ outcomes for patients depending on the medical value or clinical effectiveness of the induced services. ‘Good’ SID may arise where a doctor persuades a patient to undertake more treatment where the patient would otherwise have opted for a less than clinically effective package of care. Conversely, ‘bad’ SID arises where a doctor persuades a patient to undertake treatment in excess of that which an informed patient would prefer and the treatment is of questionable medical value. Reflecting these differing dimensions of SID, the community-wide implications of inducement need to be explored from the perspective of its impact on the health status and well-being of patients, rather than the more limited notion of an imperfect agency relationship.

Another issue often overlooked in the SID debate is the emergence of what amounts to another agency relationship in the supply of medical services beyond the conventional doctor-patient relationship — namely, an institutional-based ‘agency relationship’ between doctors and funders/regulators of health services. While each relationship has its own distinctive features, they are not independent of each other.

This second agency relationship has evolved in response to initiatives by governments and other third-party payers to secure better value for money from doctors on behalf of their clients — taxpayers and consumers of health care services. Within this second agency relationship, the autonomy of doctors to determine the composition of medical services is circumscribed, to some extent, by a variety of measures, such as clinical guidelines, monitoring and review arrangements and incentive schemes to promote the provision of some services. Many of these measures are designed to lessen the provision by doctors of services of questionable medical value, while others seek to promote the provision of ‘high value’ services.

Key aspects of this second agency relationship are examined more closely in chapter 5.

2.2 Potential drivers of SID

Drawing on the definitions of SID outlined above, it is possible to identify two broad sets of circumstances where SID may arise.

The first, and most commonly cited situation, is linked to an imperfect agency relationship whereby a doctor deliberately generates additional demand for medical services of questionable value for personal gain. This could reflect a range of influences — for example, a desire to maintain income levels in response to increased competition or to employ defensive medical practices to reduce the risk of malpractice claims. This form of SID corresponds to the conventional view as captured in the ‘normative with negative connotations’ definition referred to earlier (that is, Folland, Goodman and Stano (2001) and the pejorative notion of inducement referred to by Bradford and Martin (1995)).

SID may also arise where doctors genuinely seek to promote the best interests of the patient by providing what they consider to be appropriate care. However, on occasions, the care provided may not correspond to that which a fully informed patient would demand. For example, if a doctor inadvertently underestimates the difficulties experienced by a patient in meeting the cost of medical procedures, the level of care recommended may exceed that which the patient would have nominated. (If the doctor overestimates the difficulties, the converse could be true.)

While there is some agreement on the broad circumstances in which SID may arise, in practice, the identification of SID is extremely difficult (see chapter 6). This reflects a number of distinctive features of the decision-making environment for medical services. For example:

- patients preferences vary in relation to the types and level of care for particular medical conditions, as does their capacity to effectively communicate these to their doctor; and
- because of clinical uncertainty about the relative merits of alternative treatments for particular medical problems, the nature and intensity of the care recommended does not always provide a reliable indication of whether a doctor is inducing demand.

In practice, the likelihood of SID occurring and the magnitude of its impacts will be shaped by the interaction of a range of factors that affect doctor and patient behaviour and the effect of institutional and regulatory arrangements on the market for medical services. These matters are examined in chapters 4 and 5.

3 The market for medical services

In competitive markets, consumers are ‘sovereign’ and supply and demand are independently determined. Proponents of SID, on the other hand, argue that the market for medical services exhibits a combination of characteristics that results in supply and demand being interdependent rather than independent. The notion that the demand for medical care is determined by the preferences and decisions of doctors (suppliers), rather than patients (consumers), represents a significant departure from standard neoclassical economics.

This chapter examines how the nature of medical markets might shape the potential for SID to occur. Its key objectives are to assess:

- how key features of medical markets may differ from those of competitive markets and whether these features may *potentially* create conditions conducive to SID; and
- the *significance* of medical market characteristics with respect to SID, including the extent to which they may differ from other ‘real world’ markets.

The chapter draws on current Australian data to illustrate some aspects of medical markets. It does not, however, attempt to comprehensively describe the Australian market for medical services.¹

3.1 The characteristics of medical markets

It has long been recognised that medical markets have characteristics that distinguish them from many other markets.²

Attributes of medical markets that explain why they may differ from competitive markets and shape the potential for SID to arise are:

- characteristics of medical care as a commodity and factors affecting its demand;

¹ For a useful description of the structure and characteristics of the market for general practice services in Australia, see *General Practice in Australia: 2000* (DHAC 2000a).

² See, for example, Arrow (1963), Klarman (1965), Mushkin (1958) and, more recently, Rice (1998).

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- information gaps and asymmetries that encourage patients to seek medical advice and delegate decision making to doctors;
 - potential weaknesses in the agency relationship between doctors and patients;
 - the impact of clinical uncertainty on the decision-making processes of doctors; and
 - the market power of doctors.

A synthesis of these key characteristics — and how they differ from competitive markets — is provided in table 3.1. These characteristics and differences are discussed below.

However, the potential for SID to arise as a result of these characteristics will be significantly influenced by institutional and regulatory arrangements (for example, the method by which doctors are paid for their services). These arrangements influence, and sometimes determine, patients' access to medical care and how patients and doctors interact. Importantly too, they impact on doctors' incentives to engage in demand inducement activities and patients' incentives to resist such activities. The influence of the institutional and regulatory framework on doctor and patient behaviour — and the scope for SID — is discussed in chapter 5.

The nature of medical care

Medical care has characteristics that make it unlikely patients will be the best people to judge the impacts on their welfare of consuming different levels of care.

First, while patients may want good health, vitality and longevity, these are not in any sense commodities that can be directly purchased. Rather, patients purchase medical care — which broadly comprises the elements of diagnosis, information and treatment — to improve their health status.

Second, medical care is heterogenous and non-tradeable. This means it is not a standard 'one size fits all' commodity. Rather, medical care covers a wide range of services, from purely private consumption (for example, cosmetic surgery) to purely social goods that are made available to everyone regardless of their ability to pay (for example, trauma care) (Reinhardt 1989). Further, one form of medical care is not necessarily a perfect substitute for another.

Table 3.1 The characteristics of competitive markets and medical markets — a synthesis

<i>Characteristic</i>	<i>Key differences between competitive and medical markets</i>
Medical care as a commodity	<p>Standard economic theory assumes that in a competitive market there is a single homogeneous and tradeable commodity.</p> <p>In medical markets, patients have a derived demand — through a desire for good health — for medical care. The nature of medical care makes it difficult for patients to assess the product before they consume it and, in many cases, even judge its overall effectiveness after consumption.</p>
Demand for medical care	<p>Standard economic theory assumes that demand for a good or service is predictable and that consumers behave rationally.</p> <p>In medical markets the demand for medical care is often unpredictable and irregular. Also, illness can impair a patient's ability to make rational decisions.</p> <p>Substantial risks can be associated with making wrong decisions about the consumption of medical care.</p>
Asymmetry of information and knowledge	<p>Standard economic theory assumes that both producers and consumers have perfect information.</p> <p>In medical markets, with the possible exception of routine and repeat services, doctors generally have more information and knowledge relevant to determining the medical conditions of their patients and the treatments that are most likely to be helpful.</p> <p>The extent of the information and knowledge asymmetries between doctors and their patients is likely to increase as the complexity of patients' medical conditions increase.</p>
Principal-agent relationship	<p>Standard economic theory assumes that, in general, consumers are best placed to make decisions about their consumption of goods and services. They have no need for an agent.</p> <p>In medical markets, patients typically relinquish (to some extent) responsibility for making decisions about their demand for medical care to their doctors.</p> <p>The extent of delegation is probably more marked than for purchases from other specialised agents.</p>
Uncertainty	<p>Standard economic theory assumes that consumers know the various possible outcomes of their consumption decisions and can attach probabilities of occurrence to them.</p> <p>In medical markets, both patients and doctors can face considerable uncertainty associated with determining the appropriate level of care.</p> <p>The extent of the uncertainty confronting patients is likely to be more pronounced than for many other commodities.</p>
Market power of doctors	<p>Standard economic theory assumes that producers do not have the power to affect market outcomes.</p> <p>It is generally accepted that doctors have some degree of market power related to information and knowledge asymmetries, as well as institutional influences on medical markets.</p>

Patients also face a dilemma in translating their desire for good health into a *demand* for medical care.

- Demand requires both information (for example, of their current health status, treatment availability and effectiveness) and medical knowledge (or expertise) — both of which will be often lacking (see below).
- Medical care is essentially produced and consumed at the same time. In the absence of detailed knowledge, it is difficult for patients to assess the product before they consume it. The relationship between the doctor and the patient therefore contains a large element of trust.
- Demand by individuals for many forms of medical care is unpredictable and irregular. This makes the demand for medical care somewhat different to other goods and services, such as food, clothing and utilities, where demand is characterised by regular patterns.

Information and knowledge asymmetries

In competitive markets — and indeed most other markets — producers have more information than consumers about the method of production and the characteristics of their commodity. At the same time, however, consumers usually have a better understanding of how consuming the commodity is likely to affect their welfare.

Medical markets do not appear to fit this model. The nature of medical markets and the doctor-patient relationship suggests that, compared with their doctors, patients will often be relatively poorly informed about their condition, treatment options, expected outcomes and likely costs.

Doctors usually have more information concerning the patient's current health status, options for treatment and long-term outlook. Doctors also have the knowledge needed to interpret this information and make a judgement about the best course of treatment. In medical markets, both patients and doctors are aware of this informational inequality — which has the effect of colouring their relationship.

Given the nature of medical care, doctors are also likely to have more expertise about the technical relationship between medical care and the patient's health status. This imbalance is unlikely to be bridged by the doctor providing the patient with more information. As McGuire, Henderson and Mooney (1988, p. 40) observe:

While information may be supplied by the doctor, and health services more generally, it will not always be converted into knowledge — information that is understood and retained for at least some period of time — by the patient. Consequently, supplying information may not result in increased knowledge. This will be especially so for the

more unusual health events and because of the irregular nature of much health care utilisation.

The extent of the information and knowledge asymmetries between doctors and their patients is likely to increase as the complexity of the patient's medical condition increases. The cost to patients — financial and otherwise — of obtaining information and expertise from other sources to reduce the extent of these asymmetries will also increase.

Frequent users of medical services may acquire enough information and knowledge to judge the relative value and appropriateness of the services they are consuming. However, in many cases, patients are infrequent users of a service and have no prior experience to call upon. In other cases, they may be too ill to act rationally or have limited time available to 'shop around'.

Indeed, the market for medical care is almost as much a market for information as it is a market for specific services. This has implications for the value of medical services in Australia that are potentially affected by information and knowledge gaps (box 3.1).

Box 3.1 Information and knowledge gaps in health

According to Pauly (1978), the bulk of medical care spending (around three-quarters) occurs in markets where patients are infrequent users and have not built up enough experience to be able to judge quality and price.

In Australia, expenditure on medical services provided by GPs and other specialist practitioners (excluding medical salaries and payments made to Visiting Medical Officers at public hospitals) amounted to \$9 billion in 1998-99, or 19 per cent of total health recurrent expenditure (AIHW 2001a).

Applying the 'infrequent users' estimate to the Australian health market suggests that, in 1998-99, services to the value of \$6.75 billion covered areas where consumers may have insufficient information and knowledge to make good choices.

Sources: AIHW (2001a) and Pauly (1978).

However, there may be dangers in over-generalising the importance of information asymmetry. It is likely to vary considerably depending on the nature and seriousness of a patient's medical condition. Moreover, many more sources of medical information are now available to patients. The printed and electronic media have played a role in narrowing the knowledge gap between health professionals and lay people and in demystifying professional expertise (Irvine 1999). As Keaney (1999, p. 698) notes:

... a greater amount of clinical knowledge is now in the public domain. Clinical practice guidelines are not a recent innovation, but have suddenly assumed a status beyond all previous recognition. These, and other data sources, are attainable from a variety of sources, including the uncensored Internet.

The principal-agent relationship

In the doctor-patient agency relationship, patients in effect delegate authority to the doctor for an ‘independent consumer evaluation’, trusting that the doctor will act in their best interest. The motive for this is that patients recognise they are, in many cases, relatively uninformed to make appropriate decisions about medical care. Thus, asymmetric information and the agency relationship are closely related (Folland, Goodman and Stano 2001).

In acting as an agent for their patients, doctors are expected to provide objective advice on the appropriate level of medical care. As noted in chapter 2, where patients take this advice into account but make their own decisions regarding medical care, this would not constitute SID. However, where a doctor not only provides advice but also determines the type and quantity of care provided, there is scope for SID to occur.

In this context, it is important to distinguish between ‘influence’ and ‘inducement’. If the doctor determines the same type and level of care as patients would have selected for themselves (presuming the patients had the same knowledge and information as the doctor) this would not constitute SID, but rather an example of an effective agency relationship. Consistent with such a relationship, a doctor may determine different levels of care for different patients even where they have the same ailment, because patients may have differing requirements for comfort and reassurance.

However, if doctors’ objectives/interests are not fully aligned with the best interests of their patients (or doctors can succeed in persuading their patients to act in a way that benefits them) this may give rise to SID.³ The potential for a conflict of interest and an imperfect agency outcome arises because the doctor (agent) often performs a dual role — the same person who provides advice about a treatment often provides and receives payment for that treatment. Hence, demand is no longer independent of supply.

³ In this context, care in the patients’ best interests corresponds to that which a fully informed patient would demand.

Clinical uncertainty

There can be considerable uncertainty for both doctors and patients associated with medical care, particularly regarding more complex medical conditions.

Wennberg (1985) suggests there are three sources of uncertainty:

- there are difficulties in classifying patients so that the probabilities of disease, extent of disease, prognosis and treatment outcomes cannot be reasonably ascertained;
- information typically does not exist on the probabilities of treatment outcomes under controlled conditions; and
- the values of the doctor who makes the decisions may not correspond to those of the patient.

It is sometimes argued that uncertainty about medical care is more pronounced for patients as consumers than for many other goods and services, since the patient often has limited scope for shopping around and learning about the service quality of rival suppliers by trial and error (Culyer 1971).

Patients also face uncertainty about whether the course of treatment recommended by the doctor is best (or even required) and the long-term consequences of treatment. In part, the uncertainty faced by patients arises because most are infrequent users of medical markets and most do not have a medical background.

Uncertainty, for both patients and doctors, also reflects the small number of medical services that have been evaluated for clinical efficacy and the associated lack of guidelines developed to support doctors in adopting evidence-based practices (box 3.2). Furthermore, the fact that a significant amount of clinical practice does not have an explicit evidence base, limits the effectiveness of those clinical practice guidelines that have been developed (DHAC 2000b).

In the absence of well defined guidelines for medically accepted practice covering many medical goods and services, the practice patterns of doctors, perhaps not surprisingly, display considerable variation. So called ‘small area variation’ studies support this assessment. These studies point to considerable variation in the use of medical procedures and treatments between small areas (see chapter 6).

Several analysts suggest that some unexplained variations in practice may be attributable to SID, maintaining that areas of clinical uncertainty provide scope for doctors to induce demand. For example, Scott and Shiell (1997a, p. 579) argue that:

For medical conditions where there is little consensus about treatment because of uncertainty, there may be more scope for income-generating behaviour compared with

the treatment of medical conditions characterised by less uncertainty. This is because where comparatively little is known about the ‘appropriate’ treatment of a condition there are more options available to the GP, including adopting a ‘wait and see’ approach that may involve a follow-up consultation.

While ‘income-generating behaviour’, as suggested by Scott and Shiell, is one reason why doctors may exploit clinical uncertainty for SID purposes, other motives may also exist (see chapter 4).

Box 3.2 Clinical uncertainty, clinical evidence and practice guidelines

The uncertainty that characterises medical decision making partially reflects a lack of clinical evidence and well defined practice guidelines.

- Oxley and MacFarlan (1995) cited a study by Weisbrod (1991) that four-fifths of medical procedures and two-thirds of medical goods have never been evaluated with respect to their effectiveness and cost. Once introduced they are sometimes inappropriately used, such that, in many cases, they may provide only very marginal benefits to patients.
- DHAC (2000b) cited an Australian study by James (1999) that in 1991 only an estimated 15 per cent of medical decisions in Australia were based on the results of rigorous evidence.
- During the 1990s, the National Health and Medical Research Council (NHMRC) developed a guidelines methodology specifically for the Australian setting. It piloted clinical guidelines in areas such as breast cancer, coronary heart disease, stroke prevention, pre-term birth, depression in young people, lower urinary tract symptoms and diabetes (NHMRC 1999).
- The Hunter Urban Division of General Practice (HUDGP 2000) has published a manual to assist Australian GPs with evidence-based best practice. It notes, however, that there is no evidence that others, either in Australia or overseas, have carried out a similar exercise (although the process outlined by the NHMRC bears a degree of similarity).
- Despite some progress in recent years, there are still very significant gaps. Of the clinical guidelines that exist in Australia, only 10 to 20 per cent are covered by any sort of published research (James 1999).

Sources: DHAC (2000b); HUDGP (2000); James (1999); NHRMC (1999); Oxley and MacFarlan (1995); Weisbrod (1991).

The market power of doctors

In the literature, doctors are usually portrayed as having some degree of market power that enables them to manipulate prices and/or the services they provide to their patients. There are several sources of this power.

- One source is regulations stipulating the qualifications and training needed for professional registration which, while doing much to promote the quality of medical care, restrict entry and limit competition.
- Another source is the control that doctors exercise over medical education, who can practice medicine, technical and ethical responsibilities, entry to the specialty fields, and the discipline of their members. For example, the division of the medical market into specialty fields, while enhancing the quality of care through specialisation, inhibits competition.
- Medical care is essentially a personal service and patients do not necessarily regard doctors as perfect substitutes. Surveys support this view (McGuire 2000). Patients are able to differentiate among doctors across a range of factors, such as a doctor's 'bed side manner', convenience of location, experience, professional reputation and billing practices. For doctors, this 'product differentiation' is a source of market power because it reduces the amount of competition they face.
- Asymmetric information and knowledge is another source. Doctors have more information and expertise than patients about the need for treatment, the quality (and other attributes) of the service they are providing, and possible alternative forms of treatment.

If SID proponents are correct, doctors would be able to harness their market power to essentially shift their patients' demand curves largely independently of variations in price (Richardson and Wallace 1983).

3.2 Assessing the significance of medical market characteristics

Clearly, some critical assumptions about the way markets are presumed to operate in theory are not met in the health sector. However, while the specific characteristics of medical markets may leave open the *possibility* for inducement-type activities to occur, they do not *guarantee* the presence of SID in medical markets.

The aim of this section is to shed further light on the existence of SID by examining whether any special significance should be attached to these characteristics. This task is approached by asking two questions.

-
- How do medical markets compare with other markets?
 - What are the implications of medical market characteristics for market outcomes?

How do medical markets compare with other real world markets?

Medical markets are different from competitive markets and have characteristics that appear conducive to SID. But what about other real world markets? Do they share characteristics similar to those of medical markets?

Distinctiveness of individual characteristics

In assessing the significance of medical market characteristics, it is noteworthy that none are unique.

- The demand for many forms of professional advice is unpredictable and irregular (for example, legal advice, financial planning and marriage counselling).
- It is not uncommon for some producers to have more information and knowledge than consumers (for example, automobile and appliance repairers).
- Information can sometimes be complex and costly to produce and acquire. It is therefore rational for consumers to engage the help of agents/intermediaries who have specialised knowledge (for example, lawyers, real estate agents and architects).
- There are other markets where consumers face uncertainty — such as the insurance market.
- In many markets, producers have a degree of market power (for example, by having a relatively small number of competitors and/or through the use of persuasive advertising).

Information and knowledge asymmetries

Information and knowledge asymmetries are often highlighted as one of the key factors that distinguish medical markets. While they also arise in other markets, they are arguably more pronounced in medical markets (see, for example, Arrow 1963).

McGuire (2000, p. 499) argues that, unlike some other markets, there may be insufficient competition in medical markets to limit the potential of doctors to exploit asymmetric information for personal gain:

Information asymmetry between buyer and seller is of course not unique to health care. The broader literature contains papers addressing the issue of “experts” consumers must rely on for advice and subsequent services. In a fashion similar to health care, experts in car repairs or legal services may have an incentive to call the consumer’s problem serious when it is really not, in order to increase demand for their services. One theme of this literature is how competition among experts (who may or may not vary in skills) limits the potential exploitation of consumers. Some price competition is part of these models. Market processes can be expected to work differently in health care, however, where experts cannot set prices because of the prevalence of fixed demand and supply prices.

Some have questioned whether too much has been made of the informational problems in medical markets. Medical care is not a homogeneous commodity. Rather it ranges from relatively simple to highly complex procedures. Some forms of medical care may be relatively routine — such as the treatment of colds and flu — and patients may have a reasonable knowledge of the level of care they can expect. In such cases, the level of information and knowledge embodied in medical care may be relatively low, as will be the need to delegate decision making to the doctor. As Folland, Goodman and Stano (2001, p. 11) argue:

A considerable amount of health care is elective, meaning that the patient has and will perceive some choice over whether and when to have the diagnosis or treatment involved. Much health care is even routine, involving problems such as upper respiratory infections, back pain, and diagnostic checkups. The patient often has prior experience with these concerns.

However, as the complexity of a patient’s medical condition increases, the cost to the patient of obtaining necessary information and knowledge is also likely to increase (as will the risks to the patient’s personal well-being of making a wrong decision).

All of this suggests that, to the extent SID exists, it may be more prevalent in certain medical sub-markets than others. In broad terms, there is likely to be more scope for doctors to induce demand in sub-markets where there is some degree of complexity, uncertainty and limited prior experience by the patient of his/her condition.

Lack of consumer sovereignty

An important pillar of standard economic analysis, the notion of consumer sovereignty, rests on the proposition that the individual consumer is best placed to choose a pattern of consumption that maximises his or her utility (or satisfaction). When consumer sovereignty holds, demand is said to be independent of supply. That is, the demand for a good or service reflects the self-interested choices of consumers. However, where consumer sovereignty breaks down, supply and demand may no longer be independent.

Consumer sovereignty is strongest in perfectly competitive markets (Shackley and Ryan 1994). However, factors such as information gaps, uncertainty and market power in real world markets can erode consumer sovereignty.

There is a spectrum of views about consumer sovereignty in medical markets. At one extreme, some reject the suggestion that it breaks down to the extent that demand and supply are no longer independent. Examples include Feldman and Sloan (1988), Green (1986), Logan, Woodfield and Green (1989) and Paterson (1995). In contrast, others argue that consumer sovereignty does break down and this creates the conditions for doctors to induce demand (Evans 1991; Klarman 1965; Reinhardt 1989; Rice 1984; Richardson 1981). As Klarman (1965, p. 14) noted in describing the characteristics of medical care:

A person chooses a physician but does not himself determine how much care he will obtain. Once a patient decides to seek help, it is the physician who decides what kind of services will be rendered and how often, and it is the physician who prescribes the other goods and services, such as drugs and hospital care, that should supplement or replace his own services.

Combination of characteristics

Proponents of SID acknowledge that none of the characteristics ascribed to medical markets are unique. Rather, it is the *combination* of these characteristics and the *extent* to which they influence market outcomes that sets medical markets apart. As Mooney (1992, p. 31) argues:

It is clear, however, that while no single feature or characteristic of health care is unique to health care, there are few if any goods that have *all* the characteristics of uncertainty, irrationality, unpredictability, large monopoly elements, paternalism and important externalities. To those who doubt that health care is different the question must be posed of why it is that it gets *treated* differently from lawnmowers, transport, education, books, and so on (emphasis in original).

And Williams (1998, p. 54) uses a platypus analogy to emphasise that the *combined* impact of these characteristics in health is distinctive:

What is peculiar about the duck-billed platypus? ... many birds have duck-type bills, and lots of animals have furry bodies, and as for laying eggs, this is common among birds and reptiles, and all mammals suckle their young, therefore the duck-billed platypus would appear to have no characteristics which differentiate it.

Implications for market outcomes

If medical markets operate like most other markets, outcomes are determined by the self-interested behaviour of consumers and producers. If they do not, the

preferences and decisions of doctors exert an independent influence on a patient's demand for medical care (box 3.3).

Box 3.3 Medical market outcomes

In order to illustrate different market outcomes, it is assumed that the underlying determinants of the demand for medical care remain constant. For example, there is no change in patient incomes, the price of medical care relative to the prices of other goods and services, and patient perceptions of, and attitudes towards, medical care.

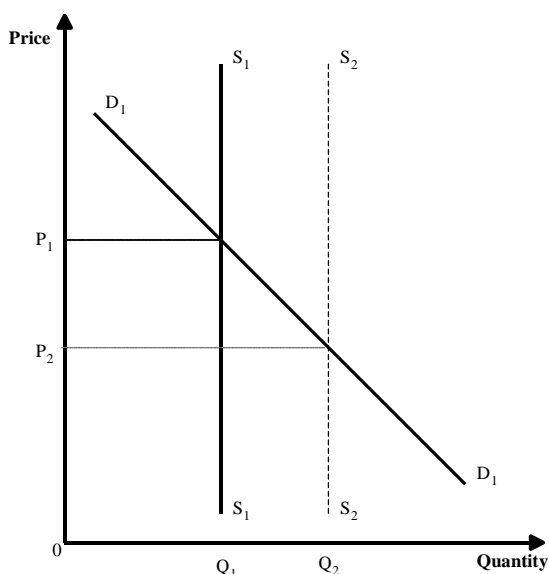


Figure 1
No demand shifting

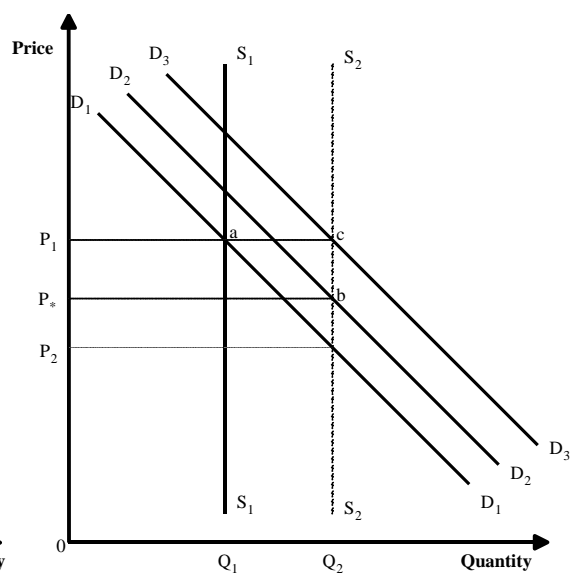


Figure 2
Demand shifting

In Figure 1, medical markets are assumed to work like most other markets. Doctors cannot shift the demand curve for their services in response to, for example, financial pressures. In this example, the increased financial pressure on doctors takes the form of an increase in the number of doctors in the market. Assuming everything else remains constant, this would result in an increase in the doctor-to-population ratio. The supply curve shifts out to the right from S_1S_1 to S_2S_2 . As doctors cannot determine the demand for their services, the demand curve is assumed to be stable at D_1D_1 . In such a scenario, standard economic theory would predict an increase in the quantity of medical care provided (Q_1 to Q_2) and a fall in the price of medical care (P_1 to P_2).

(Continued on next page)

Box 3.3 (continued)

In Figure 2, it is assumed that supply and demand are no longer independent and consumer sovereignty breaks down. The increase in the number of doctors (the shift in the supply curve from S_1S_1 to S_2S_2) puts downward pressure on prices. In response, the inducement hypothesis postulates that doctors induce demand which shifts the demand curve for their services to the right. Depending on the extent to which doctors can increase demand (a shift in the demand curve from D_1D_1 to D_2D_2 or D_3D_3 respectively), the downward pressure on prices can be partially or completely offset. Although the quantity of medical care provided has increased from Q_1 to Q_2 , the price of medical services may only have fallen partially to P^* , or not fallen at all, depending on the extent of inducement.

The difference in market outcomes between the two scenarios has important implications for the formulation of health policy. If doctors are able to shift their own demand curves, adjusting prices may not be an effective measure to contain increases in health care costs. Furthermore, an increase in the number of doctors may lead to higher health care expenditure.

Figure 2 clearly shows that demand shifting can lead to an increase in health expenditure. At the initial market equilibrium, health expenditure is equal to the area of the rectangle OP_1aQ_1 . If doctors induce demand, shifting the demand curve out to D_2D_2 or D_3D_3 —health expenditure increases to OP^*bQ_2 or OP_1cQ_2 respectively.

3.3 Summing up

The notion of SID in medical markets has a strong intuitive appeal. Doctors usually have more information and knowledge than their patients and are often in the position of both advising patients on their need for medical care and supplying health services.

However, the possibility of SID is not unique to medical markets. To some degree, scope for SID arises in any ‘specialty’ market where consumers have significantly less information and knowledge than producers.

Nevertheless, it would appear that medical markets may have a combination of characteristics and a breakdown in consumer sovereignty that distinguish them from many other markets (and potentially produce quite different outcomes). On the face of it, these characteristics appear to create conditions conducive to SID — but do not guarantee its presence. Even the strongest proponents of SID do not suggest that the nature of medical markets ensures that all, or even the majority of, doctors induce demand.

Furthermore, other important influences require examination before attempting to draw broad conclusions about SID in the health sector.

- There is a behavioural element at the individual doctor and patient level that is important in clarifying the circumstances under which SID might occur. This is taken up in chapter 4.
- The potential for SID to arise is significantly influenced by institutional and regulatory arrangements. Their influence is addressed in chapter 5.

4 Influences on doctor and patient behaviour

To understand how SID might arise — and characterise medical practices — we need to identify the broader determinants of doctor behaviour and examine the various incentives and disincentives these provide.

While a study of SID naturally suggests an emphasis on understanding doctor behaviour, the interactive nature of the agency relationship means that patient behaviour is also important. The scope for doctors to engage in SID, for example, can potentially be ‘checked’ or, alternatively, ‘encouraged’ by the attitudes and preferences of their patients.

This chapter examines key influences on doctor and patient decision making. The first two sections examine doctor and patient behaviour respectively, while the final section draws together insights provided by this examination.

4.1 A framework for exploring doctor behaviour

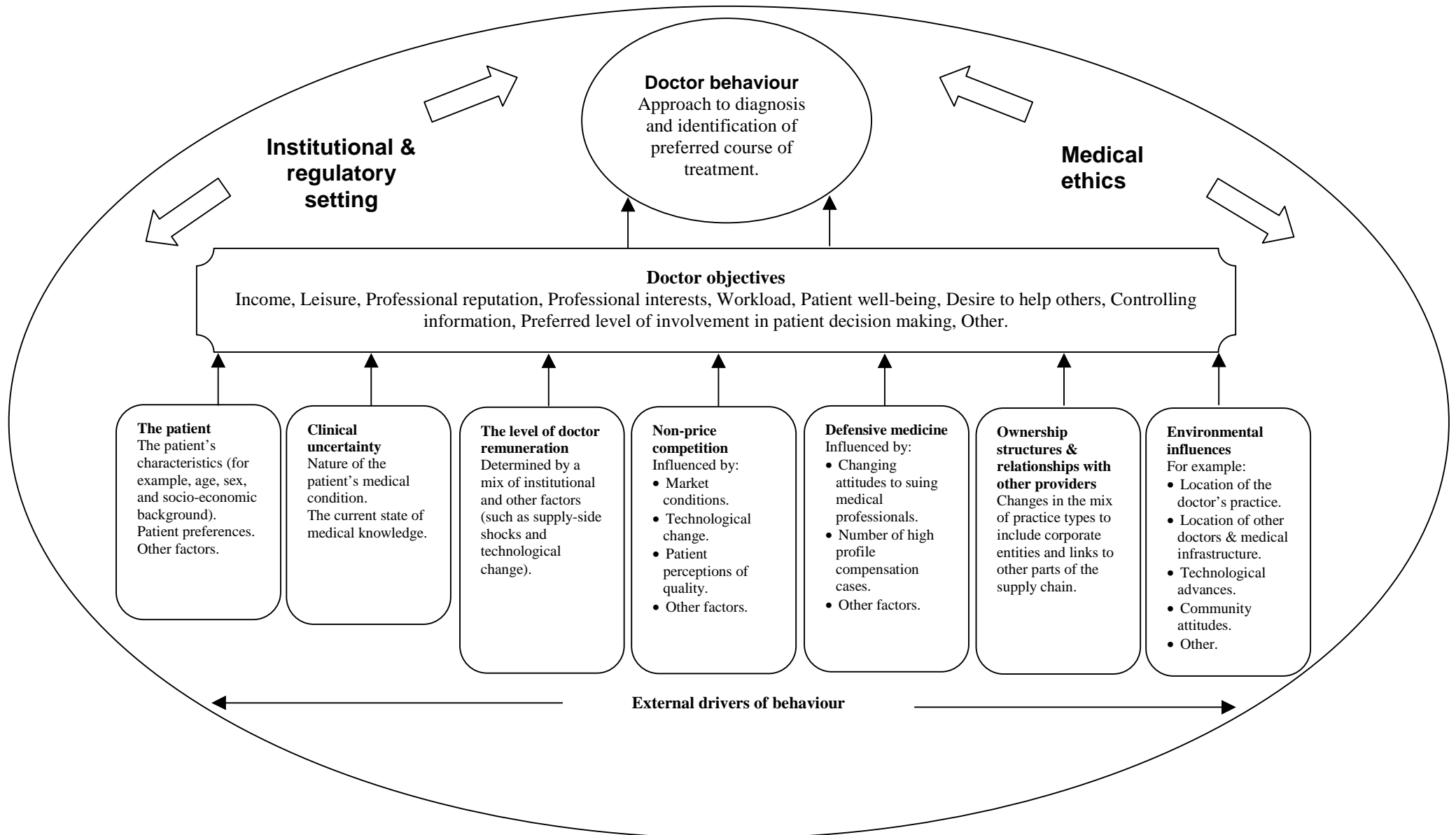
In medical markets, the social norm is for doctors to enjoy considerable autonomy in decision making in exchange for an understanding that they act in the best interests of their patients (Arrow 1963). However, there is much we do not know about how doctors actually behave. As Mooney (1992, p. 1) notes:

How do doctors make their decisions? What influences their behaviour? Research to answer these questions is growing but remains thin on the ground. What we do know, however, is that there are very substantial variations in medical practice which appear to imply that doctors are doing very different things when faced with similar patients.

Figure 4.1 provides a schematic of various influences on doctor behaviour.¹

¹ While the framework of doctor behaviour developed in this section could be applied to other medical sub-markets (with some modification), the focus here is on exploring GP behaviour.

Figure 4.1 Schematic of key influences on doctor behaviour



The key elements influencing doctor behaviour are:

- the objectives of the doctor (such as in relation to income, workload/leisure and reputation);
- the external drivers of doctor behaviour (such as the patient's medical condition, clinical uncertainty and the level of doctor remuneration);
- medical ethics; and
- the wider institutional and regulatory setting.

The doctor's objectives

While relatively little is known about the objectives pursued by doctors, and how these influence their behaviour, it is still possible to make some useful observations in relation to SID.

Individual doctors attach different weights (or importance) to the different influences listed in figure 4.1 reflecting, amongst other things, differences in the doctor's age, place of education, location and type of practice. For example, a doctor just out of medical school may attach more importance to income than leisure compared with a doctor closer to retirement. This may mean that the former doctor's behaviour is more sensitive to external shocks to his or her income (such as increased competition from new practices).

Doctors who act predominantly out of self-interest will probably attach most importance to their income, preferences for leisure and work, professional interests, and avoiding being sued. At the other extreme, doctors who are primarily motivated by a concern for what is in their patients' best interests, are likely to attach the greatest weight to their patients' well-being.

Among the influences that define a doctor's overall objectives, there is potential for conflict. For example, pursuing a higher level of income may come at the expense of leisure. In terms of SID, it is the potential conflict between the interests of the doctor and those of the patient that attracts the curiosity of researchers. In some cases, a doctor's desire for a higher level of income, for example, may conflict with the patient's best interests.

A survey conducted by the Center for Studying Health System Change (Lake and St. Peter 1997) sought to examine potential conflicts between financial incentives and clinical decision making that benefits doctors' patients. It asked doctors if they believed they could make clinical decisions in the best interests of their patients without the possibility of reducing their income. While around 70 per cent of

doctors believed this to be the case — thus dispelling SID notions — 10 per cent strongly disagreed and 15 per cent disagreed somewhat with the hypothesis.

There are other possible constraints on doctors' willingness to induce demand to meet their own objectives:

- doctors may want to avoid acting in a way that detracts from their patients' well-being; and
- doctors may be concerned for their professional reputation.

Many analysts maintain that further research is required to identify doctor objectives in order to assist policy makers design incentive structures that encourage them to act as effective agents for their patients (see, for example, Mooney and Ryan 1993).

External drivers of doctor behaviour

A number of external drivers influence doctor behaviour (figure 4.1). In practice, their impact will depend on doctors' objectives, the nature of the institutional and regulatory setting in which they operate and ethical considerations.

The patient

Key drivers of doctors' behaviour are likely to relate to the particular attributes of the patient in question — that is, the patient's medical condition, personal characteristics (such as age, sex and socioeconomic background) and preferences.

A patient's medical condition can range from relatively minor to highly complex. Generally, doctors will have less scope to induce demand if their patient's medical problem is minor because the extent of the asymmetry of information and knowledge between the doctor and patient will not be as significant (see chapter 3).

There is also some evidence to suggest that doctors' behaviour is influenced by the personal characteristics of their patients. For example, Ryan (1994, p. 214), commenting on studies into this influence, notes:

These studies all suggest that patients are stereotyped as to their ability to understand information, and their desire to acquire it. These stereotypes appear to be based on social class, with doctors believing that those patients from higher social classes desire more information, and are more able to understand it.

Thus, the information a doctor gives a patient may, in part, depend on how the doctor perceives the patient. Two patients with the same medical condition, but

different socioeconomic backgrounds, may be given different levels of information. This has a bearing on the extent of the information asymmetry between the doctor and the patient, and the scope for the doctor to induce demand.

There is also evidence that patient characteristics influence the likelihood of patients being sent for diagnostic tests or receiving medication. For example, Scott, Shiell and King (1996) found that patients of high socioeconomic status are more likely than patients of low socioeconomic status to be referred for diagnostic tests, but less likely to receive a prescription. They also found that women are more likely to be tested and to receive a prescription than men.

If patients prefer doctors to make decisions on their behalf, then there is more scope for doctors to induce demand. According to Richardson (1980, p.5), there is, in fact, a significant willingness on the part of patients to devolve decision making to doctors:

There is considerable casual evidence to suggest that in the provision of health care, patients actually want to trust the doctor and that consequently they will hand over decision making even when some consumer input might be possible.

Contributing to this willingness is the fact that patients may bear non-monetary costs from being 'forced' to make decisions about their medical care. These costs are likely to include anxiety, the fear of making a wrong decision and having to bear responsibility for an incorrect decision.

Clinical uncertainty

As noted in chapter 3, doctors' behaviour in treating a patient is likely to be influenced by the extent of the clinical uncertainty they face. Amongst other things, this will reflect the state of medical knowledge in relation to the patient's condition and the type and magnitude of the risks involved.

Clinical uncertainty in medical markets may provide scope for SID to occur for doctor self-interest motives such as income maintenance. However, some analysts maintain that doctors' responses to clinical uncertainty give rise to inducement that is fully consistent with the patient's interests. For example, Richardson and Peacock (1999, p. 9) observe that:

In view of medical uncertainty, the increased use of diagnostic services can easily be rationalised. Similarly, and like most of the population, doctors have been socialised to believe that aggressive treatment is superior to a more conservative approach. From this perspective, SID is nothing more than the use of capacity to its limit; something doctors have been trained to do, expect to do and believe is ethically appropriate.

Similarly, Wennberg (1985) proposes that differences in the utilisation of the same service are more accurately characterised as the effect on consumption of different beliefs that are held by individual doctors, rather than as demand originating in patients or as self-serving behaviour of doctors acting in narrow economic self-interest.

Doctor remuneration

A change in the level and/or form of remuneration for doctors creates financial incentives that may influence their behaviour. Proponents of SID argue that, if doctors find their income level threatened, there is a financial incentive for them to induce demand.

The immediate determinants of the income levels of doctors include:

- the basis on which they are paid for their services;
- the price they can obtain for their services — determined, in part, by institutional arrangements in conjunction with wider market conditions and doctors' assessment of the appropriate value of their services; and
- the number and type of patients the doctor treats (that is, the doctor's workload).

In addition, there are indirect influences. Technological change, for example, can sometimes give a doctor a choice between a traditional treatment mode and a more high-technology solution — the latter of which may sometimes be the more financially attractive option.

In looking at this issue of financial incentives, the SID literature has focused mainly on three aspects — the method by which doctors are paid, changes in the rates of reimbursement paid by third-party insurers and the effects of an increase in the doctor-to-population ratio.²

Non-price competition

Although price competition amongst doctors tends to be muted somewhat by institutional arrangements, doctors may still face non-price competition, particularly in over-supplied markets. For example, general practitioners compete for patient custom through, amongst other things, the amount and quality of information they provide and the quality of their inter-personal skills.

² The implications of different financing and payment methods for doctors' services, along with other institutional factors, are discussed in chapter 5. A discussion of empirical studies relating to changes in reimbursement rates and doctor-to-population ratios is contained in chapter 6.

Non-price competition could act as a constraint on doctors providing inappropriate treatment by creating incentives for them to be good agents and to provide more sensitive care and attention to their patients. However, non-price competition may also create incentives for doctors to induce demand. For example, in circumstances where patients have expectations they will be referred for diagnostic tests, doctors may concur in order to demonstrate their diligence and satisfy their patients — even though such referrals may not be ‘clinical best practice’.

As the Department of Health and Aged Care (DHAC 2001, p. 12) observes:

Doctors in an oversupplied market may be more inclined to comply with any patient expectations of referrals, prescriptions and other health services, in order to reduce the likelihood of patients going to another practitioner.

Defensive medicine

In Australia, as in many other countries, patients injured as a result of a doctor’s negligence can sue the doctor (or the doctor’s employer). Accordingly, doctors (and/or their employers) take out medical indemnity insurance to protect themselves from malpractice claims.

Medical indemnity arrangements and increases in the perceived risk of being sued can have a significant influence on the behaviour of doctors and their approach to treating patients.³ This particularly applies to those doctors involved in higher risk areas of the profession — obstetricians, gynaecologists and other specialists such as neurosurgeons.

The fear of litigation in some countries has led to some doctors adopting ‘defensive medical practices’ to prevent or defend against the possibility of malpractice litigation. These practices may involve avoidance behaviours (such as avoiding high-risk procedures or actions where the benefits to the patient are uncertain). Additionally, they may also involve SID-type behaviour — such as increased levels of servicing (ordering more diagnostic tests, undertaking more follow-up visits and making more referrals to specialists and hospitals).⁴

According to McGuire (2000, p. 516) ‘an economically pure instance of defensive medicine would be when a procedure provides no benefit to a patient or involves risk to the patient, but the physician recommends the procedure anyway for selfish reasons.’ However, some defensive practices may, in fact, have beneficial effects on patients and lead to improved quality of care. As noted by Hancock (1993, p. xi):

³ See chapter 5 for a discussion of medical indemnity arrangements in Australia.

⁴ Some empirical evidence on defensive medical practices is included in chapter 6.

Not all of these [defensive medical practices] would appear to have a negative effect from the patient's perspective. For example, improved record keeping, better disclosure of risks and monitoring patients more closely may well be highly desirable and lead to improved quality of care.

Ownership structure and corporate medicine

The way in which GPs approach some treatment options might vary according to the ownership structure of their practice (for example, whether doctors are sole traders, partners or employees of a corporate entity). If they are sole practitioners, they have only their own objectives and values to take into account when considering appropriate forms of treatment. On the other hand, if they are operating as part of a group practice, the objectives of their partners and the practice as a whole may influence their behaviour. This may be particularly relevant, for example, with respect to financial objectives.

Australia and a number of other countries are currently experiencing an increase in the number of large corporatised general practices (often characterised as 'corporate medicine'). These corporatised entities typically provide a wider range of medical services over different parts of the medical supply chain — for example general practice, pathology, diagnostic imaging and private hospitals.

It is considered by some that the application of commercial imperatives to general practice provides incentives for doctors to maximise group revenue — and that this may give rise to a 'new' form of SID. For example, Collyer and White (2001, p. v) note that:

Corporate medicine is fundamentally self-interested medicine. The interests of the patients and doctors no longer converge as doctors are increasingly becoming part of a corporate enterprise. In so doing they lose their capacity to make independent decisions about what is in the best interests of their patients. To maintain their incomes, they are pressured to see more patients, to see patients for only one problem per visit, to prescribe minimum quantities of drugs to ensure return visits, to increase the number of diagnostic tests and the use of high technology medicine, and to refer patients to services owned by the corporation itself.

The concern is that group profit considerations will undermine clinical decisions — such as the length of consultations, the requirement for follow-up consultations and, particularly, decisions about referrals to other parts of the health chain (such as pathology and diagnostic imaging). While most concern is expressed with respect to large medical corporations, problems relating to vertical integration may also occur where GPs have links with other health care providers. Examples include where medical practitioners have financial interests in, and/or derive income from,

diagnostic facilities (such as radiology and pathology) and/or health care facilities (such as acute care hospitals and day surgeries).

A further issue with respect to doctor links is the possibility of an ongoing financial relationship with pathology or pharmaceutical companies.

- In Australia, one of the reasons identified by the Health Insurance Commission for the growth in pathology tests following the introduction of Medicare was inducements paid by pathology companies to doctors (Auditor-General 1992). These inducements typically take several forms, including profit-sharing arrangements using complex corporate structures, ‘kick-backs’ and licence and rental fees paid to GPs.
- More recently, the relationship between pharmaceutical companies and doctors in Australia has come under closer scrutiny (see, for example, Moynihan 2001b). There is a concern that financial ties between doctors and pharmaceutical companies may lead to doctors over-prescribing medication to their patients.

Environmental influences

A number of factors relating to the operating environment are likely to influence doctor behaviour.

The availability and nature of medical and health infrastructure in an area governs whether or not patients have ready access to alternative doctors or services. For example, outpatient services offered by hospitals could substitute for GP services. The distribution of health infrastructure also affects options available to doctors for diagnostic testing and referrals to other doctors/specialists.

Beyond this, advances in medical and related technologies — such as information technologies — have had a considerable impact on treatment options available by improving access to medical knowledge and expanding the services that can be provided to patients. A report by the Health and Medical Research Strategic Review (1999) attributes almost three-quarters of the projected health expenditure growth in Australia from 1996 to 2016 to increased demand for, or supply of, services — primarily reflecting the impact of the increasing application of technology to different parts of the health system.

Medical ethics

Medical ethics act as an internalised professionally-based check on the behaviour of doctors. Over time, these have become focused on individual interactions between

the doctor and the patient. In terms of doctor behaviour, medical ethics require that doctors do no harm and act in the patient's best interests (McGuire 2000).

In Australia, the Australian Medical Association (AMA) accepts responsibility for setting the standard of ethical behaviour expected of doctors. The AMA's Code of Ethics covers a wide range of matters including standards of care, responsibilities to patients, duty to inform patients, professional conduct, provisions covering contracts, advertising and duty of disclosure of financial interests, and wider responsibilities to society.

Medical ethics provide a constraint against doctors exploiting the asymmetry of information and knowledge to the detriment of their patients. In addition, Zeckhauser (cited in Mooney 1992) has suggested some other possible reasons why the medical profession has adopted an ethical code.

- To create for itself a climate in which it is allowed to operate independently of the regulating procedures traditionally imposed on restricted-entry industries/professions.
- To guide and reassure doctors facing difficult situations. In the event of an adverse outcome, the doctor can take some solace in the knowledge of having acted in accordance with established ethical norms.
- To increase demand for medical services — assuming that the quantity of care demanded will be greater where its quality and availability are ethically sound, all other things equal.

Even though medical ethics may be backed by legal and disciplinary sanctions, as in other professions, there may be some doctors who are not inclined to act ethically. Given the extent of uncertainty surrounding many forms of medical care, there are also likely to be significant 'grey areas' where the patient's 'best interests' are not clear-cut. It is in these areas that the effect of doctors' other objectives (such as maximising their income) may have an important influence on their behaviour. This seems to accord with Hillman's view (1990, p. 891):

Whereas most physicians will act in the patient's best interest when the medical decision is clear-cut, the effect of financial incentives may be more important in areas where the correct decision is not clear.

Concerns about particular aspects of the doctor-patient relationship may lead governments and their regulatory agencies to judge it appropriate to apply external monitoring arrangements as a check on ethical practices.⁵

⁵ The monitoring arrangements and activities of the Australian authorities are discussed in chapters 5 and 6.

The wider institutional and regulatory setting

A widely-recognised key determinant of doctor's behaviour is the institutional and regulatory setting in which they operate. These arrangements largely define the role and responsibilities of doctors and how they interact with other players in medical markets (such as patients, third-party payers, other health professionals and hospitals). Key elements include systems for financing, organising and paying for medical services, and government mechanisms for monitoring and reviewing the conduct of doctors.

The institutional and regulatory setting shapes the incentives underlying doctors' behaviour — including the possibility of SID type conduct. For example, institutional arrangements may influence the level of doctor remuneration by determining the basis on which they are remunerated (that is, capitation, fee for service or salary).⁶

4.2 A framework for exploring patient behaviour

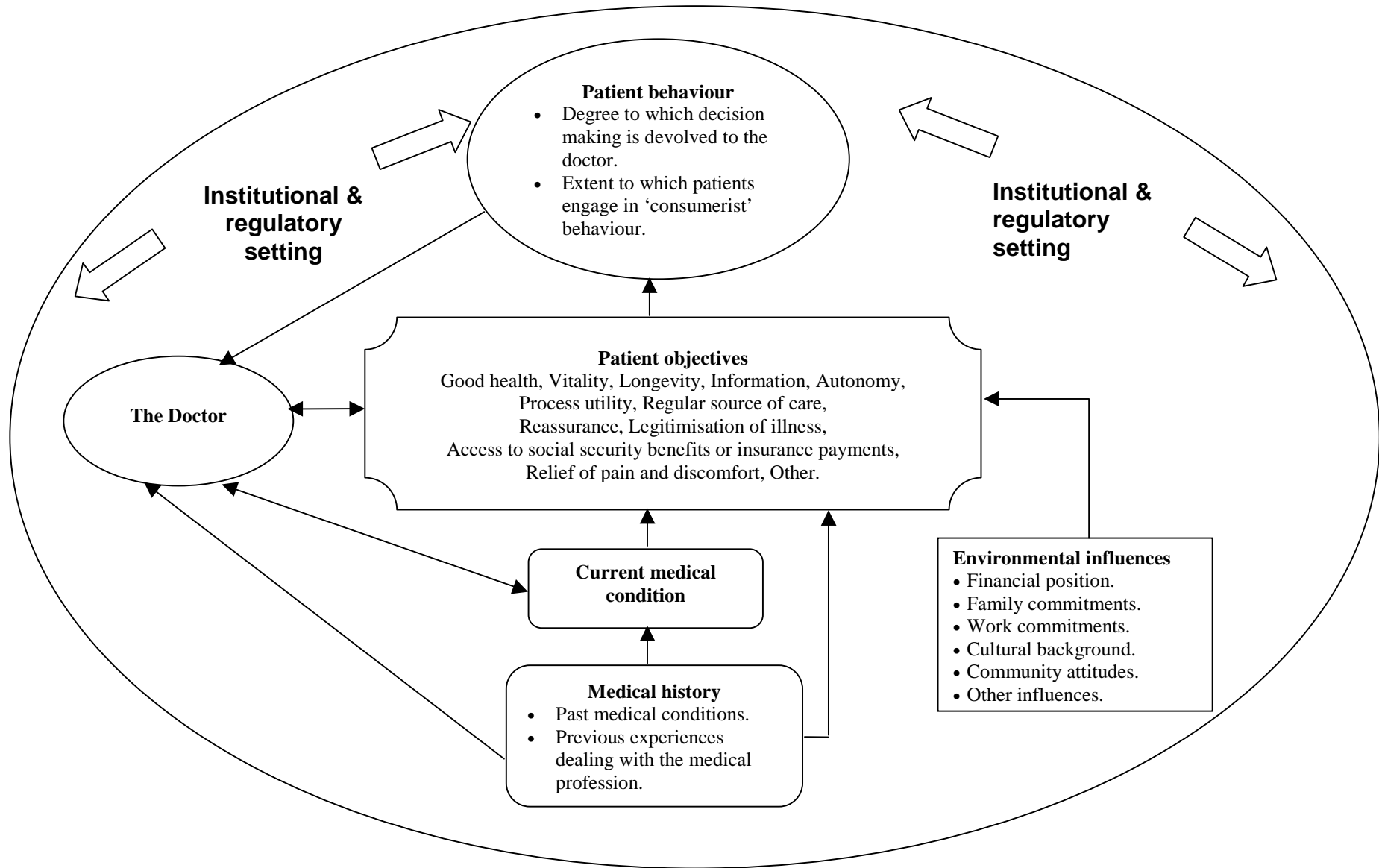
Traditionally, patients have been viewed as passive and dependent on their doctors — their role being restricted to seeking out competent medical care providers and co-operating with their doctor to get well (Brody cited by Ryan 1994). In recent years, this rather narrow view of patient behaviour has been questioned — for example, in the sociology literature. This work suggests that a patient's interaction with his or her doctor is more complex. A better understanding of patient behaviour can help improve our knowledge of SID.

This section uses a schematic to identify the main determinants of patient behaviour (figure 4.2). In terms of SID, the two key aspects of patient behaviour are:

- the reasons why, and extent to which, patients devolve decision making about their medical care to their doctor; and
- the extent to which patients engage in so called 'consumerist' behaviour (that is, are assertive, critical and prepared to 'shop-around'), which could be a significant constraint on doctors inducing demand.

⁶ Chapter 5 examines how different institutional and regulatory arrangements might influence the scope for SID.

Figure 4.2 Schematic of key influences on patient behaviour



It is important to note that the framework for reviewing patient behaviour only attempts to provide a basis for examining behaviour once patients have decided to consult a doctor. The framework does not attempt to explain what determines a patient's choice of doctor (which would reflect, amongst other things, the price of the doctor's services, the doctor's reputation and the location of the practice).

In terms of SID, it is the existing relationship of patients with their doctor that is of most interest. Nevertheless, factors influencing the patient's choice of doctor may also have a bearing on SID in some circumstances. For example, a patient may be more inclined to 'allow' SID to occur without protest if the alternative choice of doctor is unacceptable for some reason (such as not being conveniently located).

The key elements influencing patient behaviour set out in figure 4.2 are:

- the patient's objectives;
- the patient's medical condition and related history;
- environmental influences; and
- the wider institutional and regulatory setting.

The patient's objectives

As with doctors, patients are not homogeneous. Rather, a patient's own unique medical and psychological condition, medical history and set of environmental influences will shape his or her objectives — and the preferences and valuations they reveal.

The things that patients want to achieve from interaction with their doctors can be broadly characterised as pertaining to either 'outcome-related objectives' or 'process goals'.

Outcomes such as good health, vitality, longevity and relief from pain and discomfort are the ultimate objectives patients are likely to be seeking, rather than medical care as such. Thus, medical care is a 'derived demand' — it is sought to restore or retain one's health status.

However, processes are also often important. For example, patients can gain security, reassurance and improved understanding from interaction with their doctor — even where they wish to retain a fair degree of autonomy in decision making (McGuire, Henderson and Mooney 1988).

Patients commonly seek a variety of information from doctors concerning, for example, the nature and cause of their illness, treatment options, results of tests and how they are progressing. Interestingly, the value of this information to the patient

may extend beyond that which is strictly relevant to medical decision making. For example, a study of ante-natal screening in Denmark found that the average respondent allocated over one-quarter of her total willingness-to-pay to information that was not used for decision making (Lange, Norby and Mooney (1990) cited in Shackley and Ryan (1994)).

Patients may also derive satisfaction from having a regular source of care. Given the nature of the agency relationship, some patients are likely to derive satisfaction from having an ongoing relationship with a doctor, particularly those with chronic conditions. The quality of such a relationship may influence how motivated patients are to display 'consumerist' sentiments and 'shop around' for a new doctor. However, the costs to patients of 'shopping around' for additional information may exceed the perceived benefits. For example, McGuire, Henderson and Mooney (1988, p. 156) argue that:

... the search costs to the patient associated with the acquisition of information may be very high, particularly if there is an uncertain relationship between health care and health status. There may be little point in acquiring a second opinion if this only increases uncertainty.

A patient's preferences and valuations are, at least to some extent, likely to be shaped by the information provided by the doctor. For example, doctors often play a crucial role in identifying a patient's need for medical care and shaping the patient's perception of the relative merits of the different courses of treatment.

The patient's medical condition and related history

The nature and complexity of the current medical condition of patients will have an important bearing on the extent of information asymmetry between themselves and their doctors — which, in turn, influences patient behaviour. As outlined in chapter 3, asymmetry of information provides a credible explanation for patients devolving responsibility for decision making to doctors.

Even where patients have access to medical information, there is still the need to marry this information with medical knowledge and clinical expertise in order to make a diagnosis. It is also the case that the times when patients are faced with the need to make decisions about medical care are often the times when physical or mental illness may impair their ability to seek-out other sources of information and make rational decisions.

Patients' medical history will also influence their preferences and behaviour. A patient may have an ongoing experience with a particular medical condition and have built up a capacity for self-diagnosis with which to assess the advice and

behaviour of his or her doctor. Even if this is not the case, patients' previous medical conditions and their experiences dealing with the medical profession are likely to influence their current preferences.

Environmental influences

Environmental influences include the patient's own characteristics, financial position, family commitments, work commitments, cultural background and the community's attitude to the medical condition. Other environmental influences include the influence of third-party payers, organised consumer groups and advances in medical technology. These influences are likely to shape patients' assessments of the costs and benefits of alternative forms of treatment and the extent to which they are willing to trade off short-term risks for long-term benefits.

Characteristics such as their age, gender and socio-economic background, influence patients' involvement in medical decision making. For example, a study by Vick and Scott (1998) found that patients were more likely to value being involved in decision making if they possess good qualifications or are female. Older respondents and those in relatively good health, preferred their doctor to take on the decision-making role.

An Australian study by Lloyd, Lupton and Donaldson (1991) found there are some differences in consumer orientation according to socioeconomic status. People of high socioeconomic status tended to demonstrate a greater degree of 'consumerism' in their concern for the medical and interpersonal competence of their GP. Those of low socioeconomic status placed more significance on issues of accessibility, particularly those of convenience and financial burden.

Evidence about the extent to which patients engage in consumerist behaviour and the role of third-party payers and consumer groups in promoting consumer interests is both mixed and limited.

- Some third-party payers in Australia and other countries, notably the US, have taken on a 'consumerist' role in recent years stimulated, in part, by financial incentives to contain costs.
- Consumer health groups encourage patients to critically assess the care and treatment they receive and to assert their rights (which, in turn, may act as a possible constraint on doctors inducing demand). However, opinion seems to be divided about the effect of these groups on the doctor-patient relationship.
- Advances in medical treatments and breakthroughs in treating high profile illnesses combine to generate heightened expectations amongst consumers of the capacity of medical procedures to relieve suffering and improve health status.

While some factors may constrain the scope for doctors to induce demand (such as the encouragement given by consumer groups for patients to be pro-active), others may create pressures or opportunities for inducement (such as by raising patient expectations). Overall, the net impact of these influences on the potential for doctors to induce demand is unclear.

The wider institutional and regulatory setting

Institutional and regulatory arrangements largely define how a patient interacts with the health care system as a whole (in terms of access to care) and with the other players in medical markets (such as doctors, third-party payers and hospitals). They create financial incentives that influence patients' access to, and consumption of, medical care.

Arrangements that are likely to strongly influence patient behaviour include:

- rules determining access/use of medical care (for example, Scotton (1999) notes that Australian health insurance arrangements have supported the role of general practice as the point of contact with the health system — that is, as gate-keeper — and as the dominant mode for delivery of primary care);
- rules that determine how much of the cost of medical care will be borne by the patient and how much will be borne by third-party payers (such as Medicare and private health insurance funds);
- eligibility requirements for subsidised medical care (for example, those defined for pharmaceuticals); and
- restrictions on the physical capacity of the health system (for example, limits on the number of trained doctors eligible to practice).

A partial explanation for the apparent lack of strong 'consumerist' behaviour on the part of Australian patients may be due to institutional arrangements imposing little or no direct cost on patients in their consumption of medical care. When third-party organisations pay all or most of the direct cost of the service there may be little incentive for a patient to 'shop around'.

Institutional arrangements may also shape the patient's objectives. By determining access to medical care, they are likely to influence a patient's perception of what is possible.⁷

⁷ The influence of institutional and regulatory arrangements on patient behaviour (and the implications for SID) are discussed further in chapter 5.

4.3 Summing up

The doctor-patient relationship features a prominent and shared objective — enhancing a patient’s well-being. This objective is central to the motivation behind patients seeking medical advice and is reinforced by medical ethics as the core responsibility of doctors. However, doctors are also motivated by other objectives, including self-interest in a number of guises.

In general, doctors are afforded considerable autonomy in decision making, largely due to information asymmetry and a community expectation that doctors act in the best interests of their patients. There may also be a willingness on the part of patients to devolve decision making to doctors. While this provides scope for doctors to induce demand for their services, it would be incorrect to conclude that the *general* behavioural characteristics of patients means there is no constraint on doctors inducing demand. For example, patients may exert pressure on their doctors through having the *option* of seeking a second opinion.

Clearly though, the decision-making processes of doctors that determine the extent to which they may seek to induce demand are also influenced by a diverse range of factors beyond their patients’ circumstances. These include not only doctors’ broad objectives, but also other ‘external drivers’ and the wider institutional and regulatory framework within which they operate.

Some of these influences can give rise to patients with broadly similar conditions being provided with different patterns of treatment. However, in practice, it is inherently difficult to identify this as SID because the ‘appropriate level of care benchmark’ is not unambiguously clear.

The focus in this chapter has been on the micro-environment of the doctor-patient relationship while acknowledging the relevance of the wider institutional/regulatory framework within which doctors and patients operate. The next chapter seeks to explore this wider framework.

5 The institutional and regulatory environment

Most countries share similar objectives in their health care policies — for example, providing efficient and effective services, providing equitable access to those services and ensuring quality outcomes. In contrast, there is considerable diversity between countries in the nature of the institutional and regulatory framework applying to their health sectors.

In essence, the institutional and regulatory framework is the system of arrangements that govern the operation of medical markets — including the provision of medical services, payments for medical services and the activities of third-party insurers. The framework affects both the supply and demand sides of the market for health services. More specifically, it influences the incentives, and hence behaviour, of both doctors and patients — including the scope for SID to occur.

This chapter describes the institutional and regulatory elements of health care systems in general — and the current framework in Australia — and examines how different arrangements might influence the scope for SID.

- The major institutional elements of the framework — the systems for financing, organising and paying for medical services — are a principal focus of the chapter (sections 5.1 – 5.3).
- As well, other institutional elements and variations in government regulation have an influence on medical markets and SID (section 5.4).
- Finally, the current institutional and regulatory framework in Australia is described and assessed (section 5.5).

The approach adopted here uses an OECD framework to describe health care systems, but with the emphasis on GPs and their services rather than complete health systems.¹ Thus, institutional elements relating to the hospital sector are only of peripheral interest.

¹ The description of different forms of institutional and regulatory frameworks in this chapter draws on OECD (1992 and 1994). The OECD approach itself is based on models suggested by Evans (1981).

5.1 Some preliminaries

There are two broad components to the institutional and regulatory framework affecting medical markets:

- the systems for financing, organising and paying for medical services; and
- other institutional and regulatory factors that influence the operation of these markets.

Systems for financing, organising and paying for medical services

The methods by which medical services are financed, organised and paid for form the core of the institutional framework surrounding health care delivery. The key elements are sources of finance, availability of insurance, relationships between third-party insurers and doctors, and modes of payment for doctors.

These four elements, described below, are combined in different ways across countries. The major combinations, and their significance for SID, are described in sections 5.2 and 5.3.

Sources of finance

There are two possible sources of funds to pay for medical services, public and private. Public funding is raised either through general taxation or mandatory social insurance contributions. Private funding occurs where consumers purchase medical services either through private health insurance or directly from their own pockets.

Availability of insurance

Payments to GPs can occur in two broad ways — directly, through out-of-pocket payments from patients, or indirectly via third-party payers (insurers). A mixture of these payment methods is also possible. In practice, all OECD countries feature third-party insurers as part of their funding systems. However, a significant number also require at least some patients to contribute out-of-pocket payments for GP services.

The third-party insurers are the managers of the financial flows — the intermediaries between the sources of funds and the doctors. A statutory third-party insurer is required in the case of public funding, while voluntary insurers (such as private health funds) perform the third-party payer role in privately-funded systems.

Relationships between third-party insurers and doctors

Third-party insurers arrange the ways in which payments are provided to doctors. The nature of this relationship varies significantly across health systems. In general there are three broad types of relationships:

- a reimbursement approach, with no formal relationship between the two parties;
- a contractual approach, with a contract between the two parties concerning the method and level of payments; and
- an integrated approach, where medical practitioners are employed by insurers.

Modes of payment for doctors

The principal types of payments used to fund GPs are:

- *Fee-for-service* — payments for each service provided to patients.
- *Capitation* — payments for each registered or enrolled patient per period of time, usually with adjustments for factors such as age and sex of patients.
- *Salaries* — payments for each period of time, with adjustments for individual GPs sometimes possible to allow for experience, location or other considerations.

Some countries use a mixture of these payment modes.

Other institutional and regulatory factors

Other institutional factors may have an indirect influence on the operation of medical markets and doctor behaviour (including the scope for SID). Three such factors are systems for monitoring the conduct of medical practitioners, medical indemnity arrangements, and arrangements governing the relationship between doctors and other health care providers.

The delivery of medical services is also affected by the regulation of medical markets, including laws and policies aimed at regulating the medical profession or activities undertaken by doctors.

These factors are discussed in section 5.4.

5.2 The role of funding sources and insurance

The majority of OECD countries finance their health systems *mainly* through public funding — with the number of countries fairly evenly divided between taxation sources and social insurance contributions. Only the US and Switzerland rely primarily on private sources of finance. In many cases, some mix of public and private funding occurs — although the mix varies considerably between countries.

The balance between public and private finance may have some influence on consumer incentives with respect to demand. However, the principal factor affecting patient behaviour is the amount paid directly out of patients' own pockets.

- When complete, or near complete, insurance is available — whether public (taxation, social insurance) or private (voluntary insurance) — there is little incentive for patients to restrain demand (moral hazard). In these circumstances, patients may demand services that provide a small benefit relative to the costs borne by the insurer.
- On the other hand, out-of-pocket payments for doctors' consultations are likely to act as a constraint on the amount of services demanded by patients and make it more difficult for doctors to induce demand. Faced with the prospect of a significant payment, patients may be less willing to accept the doctor's advice to arrange a follow-up consultation or to undertake additional diagnostic tests (particularly for relatively minor ailments).

Given this, the substantial proportion of medical services with only a small out-of-pocket payment applying in most OECD countries is likely to result in patients visiting their doctors more regularly than they otherwise would. These arrangements may also provide incentives for medical practitioners to induce demand as doctors know that their patients will have only minor payment concerns.

5.3 The significance of different organisational and payment methods

Differences between the three principal approaches for organising and delivering medical services — the reimbursement, contract and integrated approaches — have significant implications for the form SID may take and the extent to which it may arise.²

² In all cases, compulsory or voluntary financing arrangements are possible. Given the predominance of public sources of finance in these types of arrangements, we shall for the most part concentrate on the public models. However, there is generally no difference with respect to SID implications.

In broad terms, the three approaches differ with respect to:

- the nature of the working relationship between third-party insurers and doctors;
- the relative importance of third-party insurers and patients in determining the distribution of payments to doctors; and
- the methods by which doctors are paid by third-party insurers.

In practice, there are many variations from these three ‘pure’ models. Indeed, in reviewing the health systems of OECD countries, Oxley and MacFarlan (1995, p. 19) observe:

No country fits neatly into one category; indeed, many countries have elements of all three [approaches].

Reimbursement approach

Under this approach, third-party insurers receive contributions from the community and use these to reimburse patients for services rendered by GPs (figure 5.1). A variation of this approach is for GPs to directly bill the insurers for their services.

Important features of this approach are:

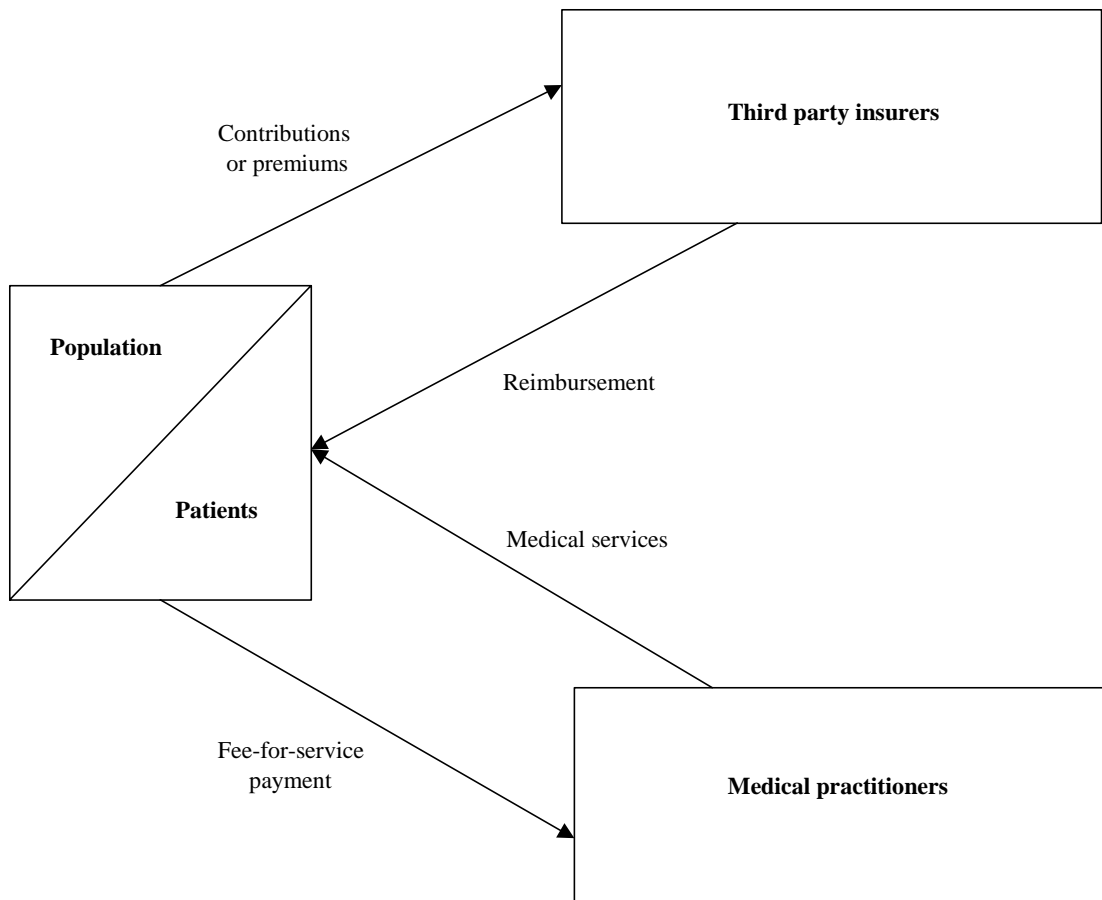
- an arm’s length relationship (no contracts or employment relationship) between third-party insurers and doctors;
- consumers have freedom to choose their GP; and
- payment arrangements are usually on a fee-for-service basis.

The public reimbursement approach, with a single third-party payer and fee-for-service, is the template for the current Australian Medicare system for medical practitioners. However, some variations exist from the ‘pure’ model presented here (see section 5.5).

The reimbursement approach has some important implications for doctor behaviour and SID. By its nature it creates opportunities for doctors to provide additional (and possibly inappropriate) services in order to boost their incomes and/or market share. The extent to which doctors seek to exploit these opportunities will depend upon the relative weight they attach to self-interest and medical ethics.

One opportunity to induce demand arises from the manner by which GPs compete for patients’ custom under the reimbursement model. Because the choice of GP made by patients has an important influence on the distribution of funds between GPs, there is a strong incentive for doctors to attract and retain patients.

Figure 5.1 Reimbursement of patients by third-party insurers



Source: Adapted from OECD (1992).

There are many ways GPs may do this, not least by having a reputation for being skilled and competent. Two indicators of quality from some patient’s perspective may be doctor-initiated follow-up visits and diagnostic tests. In situations where doctors are likely to be influenced by such expectations — for example, in competitive urban markets — this may create the potential for SID.

Competitive market conditions, along with other behavioural motivators such as, for example, target incomes, may also create a more direct incentive for doctors to increase their service activity. The fact that the more services doctors provide the more they earn, is a strong incentive for them to initiate or recommend additional services.

These possibilities for inducing demand in the reimbursement model are, of course, only achievable in practice due to the method of fee-for-service by which doctors are paid. Fee-for-service gives doctors a financial incentive to increase the volume (and possibly the price) of the services they provide. As Rice (1998, p. 122) notes:

...physicians' ability to induce patient demand does not, by itself, mean that more services will be provided. A necessary corollary is that physicians are also paid more for providing more services — which is what happens when they are reimbursed on a fee-for-service basis.

Moreover, fee-for-service allows doctors full discretion over the level and mix of services and treatment options. Importantly too, from a SID perspective, it provides incentives to undertake more 'in-house' services even where there could be advantages in using other suppliers (Oxley and MacFarlan 1995).

The use of the fee-for-service method of payment in reimbursement models is widely accepted as being associated with SID. For example, a World Bank report (Barnum, Kutzin and Saxenian 1995) observes that fee-for-service reimbursement has led to rapid cost escalation due to the incentives created for SID. Similarly, a World Health Organisation report (Saltman and Figueras 1997) concludes that SID is a major drawback of fee-for-service systems.³

Contract approach

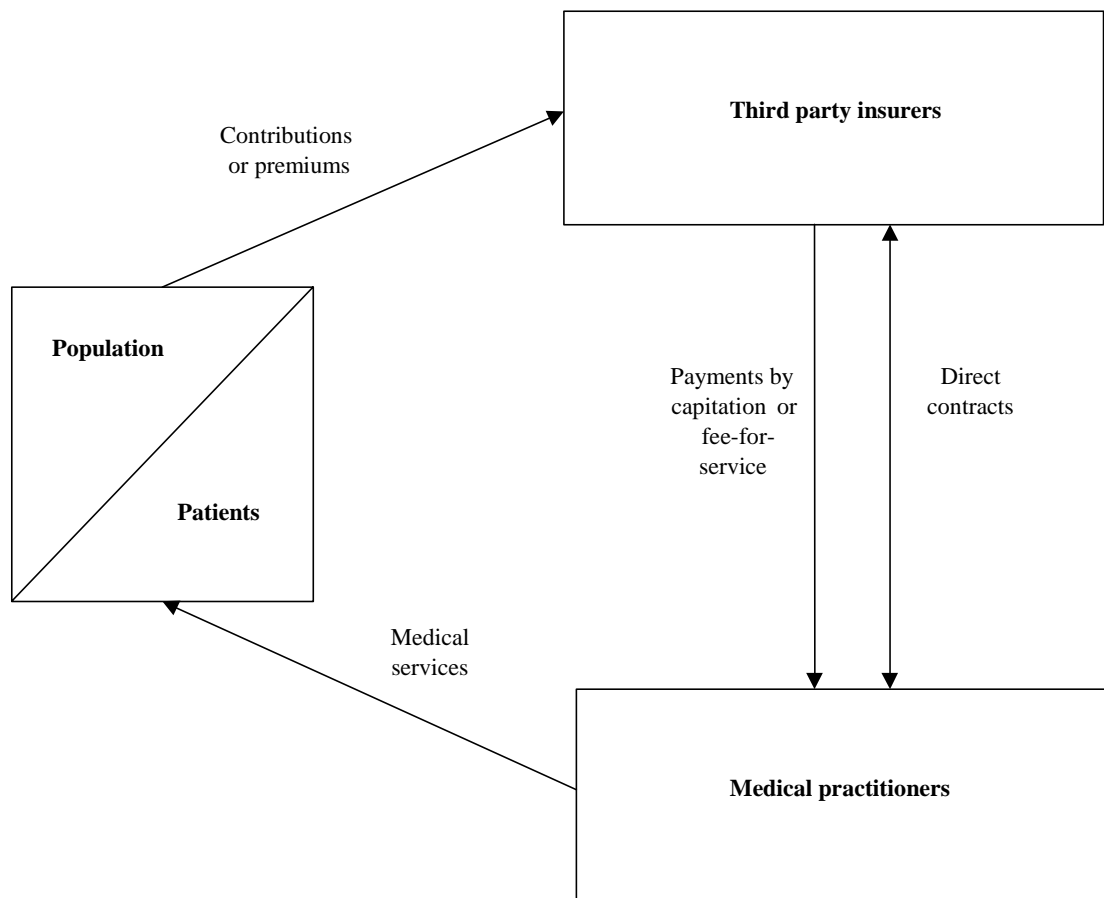
Under this approach, third-party insurers receive contributions from the community and contract with GPs to make payments for services rendered to patients (figure 5.2). The contracts establish the terms and conditions for the provision and payment of medical services and provide payers with greater control over funding and its distribution relative to the reimbursement approach.

Important features of this approach are:

- direct agreements between third-party insurers and GPs, who retain a large degree of independence;
- consumers are free to choose their GP in the public model, but they are generally restricted to contracted providers in the private insurance model; and
- payment arrangements are usually on a capitation (fixed payment) or fee-for-service basis, although a salary system can also be used.

³ In addition, numerous academics have noted the link between fee-for-service and SID (see, for example, Blaug 1997; Evans 1991; Labelle, Stoddart and Rice 1994; Reinhardt 1985).

Figure 5.2 **Contractual relationship between third-party insurers and medical practitioners**



Source: Adapted from OECD (1992).

The public contract system is popular for primary care, playing a part in the UK, Germany, Ireland, France, the Netherlands and Belgium. Voluntary private contract relationships were the forerunners of HMOs in the US and used to be common in Europe — but had all but disappeared by the early 1990s (OECD 1992).

The capitation payment method often used under the contract model is based on the principle of ‘the money following the patient’. Accordingly there are some built-in incentives for doctors to treat more patients as a means of increasing their incomes. General practitioners may, for example, be provided with a fixed payment — usually adjusted for age and sex — for each patient on their practice list. At the same time, consumers are given freedom of choice (under the public model) of doctor. In such situations, where GPs are competing for numbers of patients, some possibility of non-price competition may arise as a means of attracting and retaining patients.

Thus, the possibility of inducing demand with the capitation model relates to financial incentives for medical practitioners to increase *patient numbers* — there is no direct financial incentive to increase the number of *services per patient*. Blaug (1997), for example, believes that SID barely exists under the United Kingdom capitation system. He observes that, although the British method of paying doctors does not entirely prevent SID, it nevertheless does not systematically induce doctors to encourage demand.

In fact, the contract model with capitation is perhaps more commonly viewed as providing doctors with incentives to under-service rather than over-service. If doctors are paid on a per patient basis, there is an incentive to attract patients to their practice, but to minimise the number of consultations per patient. Indeed, a common criticism of the capitation method is that doctors may be inclined to refer patients to other providers with undue haste (see, for example, Oxley and MacFarlan 1995).

The propensity of a fee-for-service contract system to be conducive to SID will depend, to a large extent, on the nature of the insurers and the type of relationship they have with doctors. If, as was often the case in the US before HMOs, the insurers are controlled by doctors or other providers, there may be incentives to over-service patients. However, if the insurers are independent, the agreements relating to the terms and conditions of payment for medical services are more likely to adopt a stricter attitude to the monitoring and control of doctor service patterns.

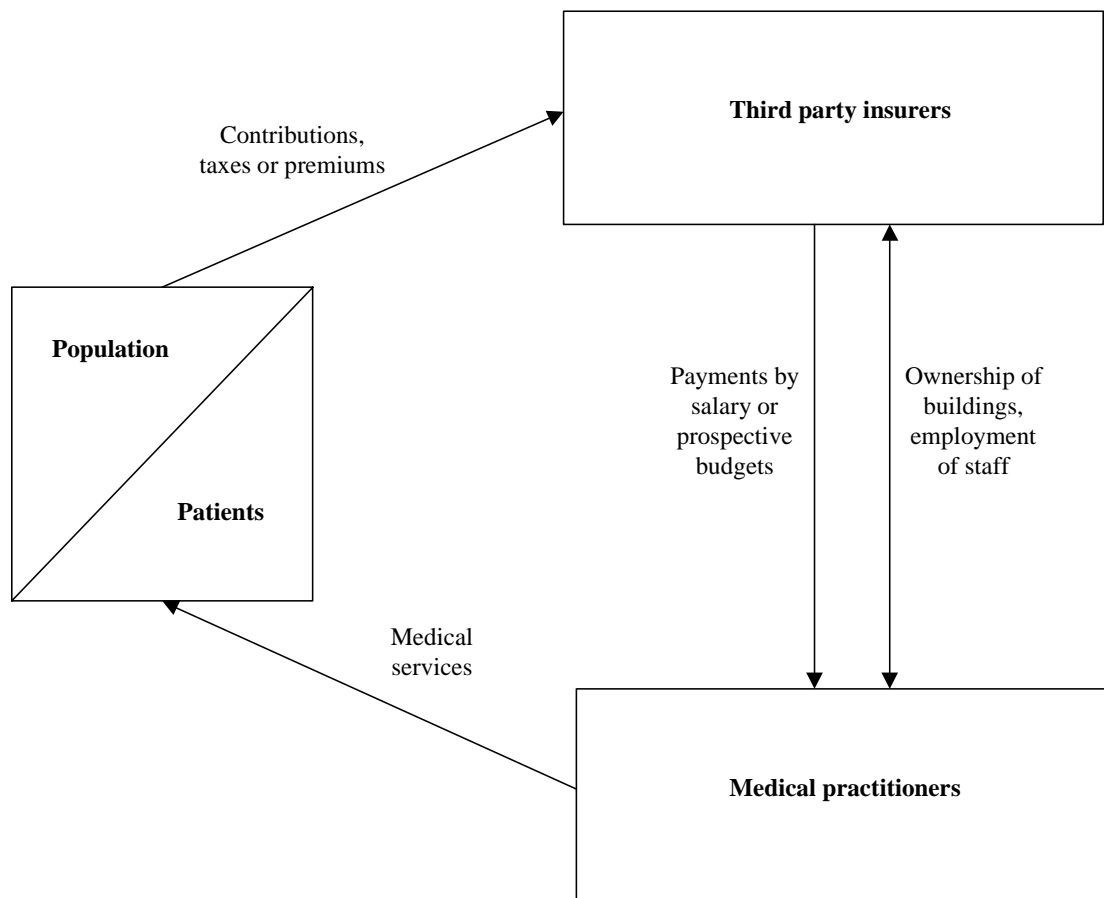
Integrated system

Under this approach, the insurance and delivery aspects of medical care are combined. Third-party insurers receive contributions from the community and use these to fund the ownership of primary care premises and to employ medical practitioners (figure 5.3).

Important features of this approach are:

- the third-party payers are both insurers and providers within an integrated organisation;
- consumers' choice of GP in the voluntary private insurance model is likely to be limited and/or restricted by their choice of insurer; and
- payment arrangements for doctors are usually on a salary basis, although often with the provision for bonuses or productivity payments.

Figure 5.3 Integration between third-party insurers and the provision of medical services



Source: Adapted from OECD (1992).

Both the public and voluntary private forms have found only limited favour in the OECD. In the public model, which is dominant in Spain and formerly used in the United Kingdom, the government is both the major insurer and provider. The voluntary private integrated system, on the other hand, features numerous private insurers and forms the basis of the current US ‘managed care’ system (based originally on HMOs, but now with a variety of forms).

Most of the working age population in the US is now enrolled in either HMOs or their equivalents (Rice 2002). Under this model, HMOs receive a fixed amount from the population (often employers) for providing services to enrolled patients — with the payment unrelated to how much the HMO actually spends. While patients are covered by their insurance they will usually pay a co-payment each time they visit their doctor.

In integrated health systems, doctors are employed by the insurers and generally practice in facilities provided by the insurers. Because they are usually pre-paid on a

salary basis, doctors have no financial incentive to over-service patients — either quantitatively or qualitatively. On the contrary, there are incentives for doctors to under-service patients and operate in a cost-conscious manner for the benefit of their employers.

That is, in situations where patients are fully insured (or even where small co-payments are involved), the payer arm of the integrated organisation has an incentive to ‘instruct’ the provider arm to reduce patient utilisation as much as possible. This would certainly be the case in the public integrated model. However, in a competitive private model, the doctor may have to balance any under-servicing tendencies with the need to attract and retain patients.

The nature of the contractual arrangements between medical practitioners and their employers in an integrated model may provide further disincentives for SID. As observed by Oxley and MacFarlan (1995, p. 28):

The purchaser can also use its monopsonistic powers to obtain increased information from providers, initiate studies on the desirability and effectiveness of alternative treatment strategies, and put pressure on providers through contestability and yardstick competition.... Purchasers may also be in a stronger position to limit unnecessary care, although distinguishing between unnecessary and necessary care can be difficult in practice.

Overall, the potential for SID in both the public and private integrated systems seems very limited. Rice (1998, p. 115) confirms this with respect to the latter, by suggesting that the increased penetration of HMOs in the US has resulted in SID becoming a less pressing issue and, consequently, of less policy concern.

5.4 Other institutional factors and regulatory arrangements

Other key factors in the wider institutional framework that may influence SID are:

- systems for monitoring and reviewing the conduct of medical practitioners;
- medical indemnity arrangements; and
- arrangements governing the relationships between doctors and other health care providers.

In addition, variations in government regulation have an influence on medical markets and possible SID.

Monitoring and reviewing the conduct of medical practitioners

There is a tendency for governments to allow doctors to adopt and maintain professional standards through various mechanisms, such as peer-review arrangements. However, governments often use additional mechanisms such as accreditation, education and training initiatives to promote practice improvement. They also monitor the services provided by doctors to identify inappropriate practices — such as a high number of services per patient and the inappropriate prescribing of drugs and/or diagnostic tests. Sanctions apply if doctors are found to have engaged in inappropriate practice.

If the system in place is known to be effective in both identifying and dealing with errant doctors, it may serve as a reasonable deterrent to SID. On the other hand, a system perceived to be weak (in either area) might allow doctors to contemplate SID with a sense of relative impunity.

Medical indemnity arrangements

The medical indemnity arrangements in some countries has led to some doctors adopting ‘defensive medical practices’ in fear of the threat of litigation. A number of studies assert that the incidence of malpractice claims has increased in countries such as the US, Canada, UK and Australia.

Medical indemnity arrangements vary across countries — for example, limitations on legal action, the nature and size of compensation and the extent to which governments provide public insurance for doctors. Differences in these arrangements will have a bearing on the perceived need for doctors to apply ‘defensive medical practices’ that are not strictly necessary on health grounds alone. Some of these practices may involve SID-type behaviour.

Relationships between doctors and other health care providers

Medical markets change over time. In this regard, a major structural change currently occurring in many countries, including Australia, is the rise of ‘corporate medicine’.

In the face of this changing landscape, most countries have initially relied on medical ethics to ensure that doctors make independent decisions in the best interests of their patients. However, if that is seen to be inadequate, the freedom with which doctors can potentially take advantage of ownership links can be regulated — either through some form of self-regulation (for example, a voluntary

code of conduct) or by governments. In the US, for example, federal laws have been enacted governing financial relationships between doctors and health care corporations. These include restrictions on the rights of doctors with respect to referral destinations.⁴ Interestingly, it has been claimed that an absence of common ownership restrictions in Japan has been associated with SID with respect to prescriptions (Scherer 2000).

Regulatory arrangements

The delivery of medical services is also affected by the regulation of medical markets.

At a broad level, governments have two regulatory options. They can take a fairly liberal approach by allowing markets to operate as freely as possible and rely on self-regulation. Alternatively, they can adopt a more interventionist approach to exercise authority over market forces and institutions (OECD 1992).

The approach adopted by governments could be expected to be influenced by the type of organisational system that is dominant in their countries. For example, a less interventionist regulatory approach might be seen as more in keeping with a medical system based on voluntary private insurance and competitive insurers, than one based on public funding. Governments are also more likely to adopt a liberal approach in public contract systems, where purchasers and providers are separated and act as a countervailing power on each other.

On the other hand, a more interventionist approach might be viewed as necessary in a country with a predominantly public reimbursement system — where a mix of doctor independence and fee-for-service, if left unchecked, could result in a large, and costly, expansion in medical services. A World Bank study by Barnum, Kutzin and Saxenian (1995, p. 17) supports this view:

There is one payment method to be avoided; unregulated fee-for-service reimbursement. This is because of the cost-escalating incentives it generates for providers to produce excess services and the difficulty of addressing this problem through other measures.

Notwithstanding these organisational influences, there has been significant debate about achieving the appropriate balance between self-regulation and additional government-imposed regulatory tiers. In practice, however, the strong desire of governments to contain health care costs has resulted in a more interventionist approach being favoured by many OECD countries.

⁴ *Ethics in Patient Referrals Act* 1989, HR 939 SC, The Stark II Law (42 USC 1395nn).

There is a wide variety of laws designed to either regulate the profession or to regulate activities undertaken by doctors. For our purposes, interest centres on those measures that influence supply and demand in medical markets. While the nature of the associated regulations vary, they primarily focus on the supply side of medical markets and include, for example:

- the planning and control of medical service capacity (such as hospitals and doctor/specialist numbers);
- controls on the quantity of services provided (such as budget caps); and
- controls to hold down doctors' fees (OECD 1992, 1994).

These regulatory arrangements, while directed at general supply-side cost containment, may also serve to contain SID-type impacts. For example, as observed in other chapters, SID is closely connected with factors such as the number of competing doctors and fee-setting arrangements.

5.5 Institutional and regulatory arrangements in Australia

The system of finance, organisation and payments

On the surface, Australia's system of finance, organisation and payments appears to provide the conditions conducive to SID. As the Commonwealth Department of Health and Aged Care (DHAC 1999a, p. 5) has pointed out:

Where a third party (generally either government or an insurer) is paying for a service, moral hazard can lead providers and consumers, together and individually, to instigate more services than would otherwise be demanded. Income considerations and concerns about the legal consequences of not covering all possible bases (defensive medicine) can lead providers to instigate additional services. Consumers seeking the best possible care and not faced with the costs of those services have little incentive to question their necessity.

The current Australian institutional approach to medical services (general practice) represents a mixed system, but one closely resembling the public reimbursement model described in section 5.3 and depicted in figure 5.1.⁵ Its distinguishing features are:

- the system is primarily publicly financed;

⁵ In common with the rest of this chapter, this section focuses on issues relevant to SID. For a more complete description of arrangements in Australia, see, for example, *General Practice in Australia: 2000* (DHAC 2000a).

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- medical services are provided privately by independent doctors;
 - doctors can set their own fees;
 - fees for services rendered (according to a fixed schedule) are reimbursed by a single third-party public insurer (Medicare);
 - patients pay a co-payment for services unless doctors claim for direct reimbursement through Medicare by ‘bulk-billing’ their fees;
 - there is an arm’s length relationship between Medicare and doctors; and
 - consumers are free to choose their own doctor.

In addition to fee-for-service payments, funds are provided to GPs through programs such as the Practice Incentives Program (PIP). The PIP is intended to compensate doctors who are more focused on quality and take additional time to look after the ongoing health needs of their patients. Unlike Medicare rebates, PIP payments are dependent on practice size as measured by the number of different patients seen, as distinct from the number of consultations. As such, PIP reduces the pressure on practices to see more patients, more quickly, in order to maximise their incomes (Hynes 2000). However, in common with general capitation payment methods, the incentives PIP provides to increase practice size may eventually result in forms of non-price competition on the part of doctors in order to attract and retain patients.

Although government funding for GP programs has increased in recent years, the vast majority of GP income is derived on a fee-for-service basis — 96 per cent in 1997-98 (Power and Aloizos 2000). Like all publicly-funded systems with third-party payers, this presents moral hazard concerns. Those patients that are fully insured under Medicare (bulk-billed) face no direct financial disincentive to visit GPs and limit their consumption of medical services.

The freedom of Australian consumers to pick and choose a GP to their liking, coupled with the independence of GPs from any third-party insurer contract, could potentially influence doctors to provide extra services as a means of attracting or retaining patients. This may apply particularly to GPs who bulk-bill all, or most, of their patients. This group is probably more often than not pressured into this situation by the existence of competitive conditions in their local medical market. Unable to compete any further on price (the bulk-billing price sets the floor), these GPs have an incentive to attract and retain patients through other means — which may include aspects of SID.

The features of the Australian health system, including the public reimbursement approach, have combined to place pressure on health spending and the need for cost

containment. As the authors of a Commonwealth Department of Health and Aged Care Occasional Paper (Podger and Hagan 1999, p. 17) note:

Increasing numbers of general practitioners and specialists, new medical technologies, and expanding health insurance in combination with fee-for-service payments are a potent combination — with the potential to generate a rapidly growing demand for ever more costly tests, procedures and treatments. Containing health costs within affordable limits is therefore a continuous challenge for Australian governments.

To counteract these features, and to provide incentives to restrain demand, the Australian framework involves cost sharing between the third-party insurer and most patients.

According to a survey of 1000 GPs conducted by the AMA in March 2001 (AMA 2001), most doctors expect the majority of their patients to contribute to the costs of their treatment:

- around 12 per cent of GPs do not bulk-bill *any* of their patients (ie co-payments are required for all patients);
- 70 per cent of GPs bulk-bill some of their patients (ie co-payments are required for some patients); and
- the remaining 18 per cent of GPs bulk-bill *all* of their patients (ie no co-payments are required for any patients).

However, the cost-sharing picture differs somewhat when considered from the perspective of GP consultations. Medicare data reveal that only around 30 per cent of standard consultations in 2000-01 involved co-payments — the remainder were bulk-billed (HIC 2002).

Other institutional elements

Monitoring and reviewing the conduct of medical practitioners

In addition to self-regulatory mechanisms, such as professional codes of practice, Australia has a Professional Services Review Scheme to deal with the conduct of health professionals. It was established by the *Health Insurance Act 1973* in 1994, but was significantly modified in 1997 and again in 1999.

As part of the scheme, the HIC monitors the claiming patterns of all general practitioners and identifies those with behaviour that is atypical (around 10 per cent of the total). The vast majority of these provide sufficient additional information to the HIC to show that their practice patterns are appropriate, or they agree to modify their behaviour. Only about one-third of the practitioners identified as being of

concern are counselled (Review Committee of the Professional Services Review Scheme 1999).

If, however, medical practitioners fail to respond to counselling and do not modify their behaviour, they are referred by the HIC to the Professional Services Review (PSR) agency for investigation.⁶ This body may then decide to establish a committee of peers — a Professional Services Review Committee (PSRC) — to review a doctor's conduct.

Between the review scheme being established in 1994-95 and 2000-01, the PSR agency dealt with 213 referrals from the HIC (Professional Services Review 2001). Of these referrals:

- 64 were dismissed because it was considered unlikely that a PSRC would make a finding of 'inappropriate practice';
- 21 resulted in 'negotiated agreements' acknowledging 'inappropriate conduct' and the imposition of a penalty consisting of one or more of: a reprimand, repayment of Medicare benefits and disqualification for up to three years;
- 5 were withdrawn or lapsed; and
- 123 PSRCs were established.

Between 1994-95 and 2000-01, PSRCs had made judgements on 84 cases of inappropriate behaviour referred by the HIC. Adverse findings of inappropriate practice were made in 70 cases.

Some empirical evidence on aspects of SID in Australia, based on HIC monitoring and counselling information, is included in chapter 6.

Medical indemnity arrangements

As noted, 'defensive medicine' is likely to be an important driver of doctor behaviour — including SID. Its extent is likely to be affected, in part, by Australia's medical indemnity arrangements.

Over the last decade — and particularly in the last few years — widespread claims of deficiencies in these arrangements have surfaced. These include:

- sizeable increases in indemnity insurance premiums and related concerns about the impact of these increases on the availability and affordability of health services;

⁶ Only 5 to 10 per cent of practitioners that are counselled are referred to the Professional Services Review agency (Review Committee of the Professional Services Review Scheme (1999, p. 12).

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- the growth of defensive medical practices;
 - various deficiencies and inequities in the common law system; and
 - weaknesses in linkages between this system and quality assurance mechanisms designed to reduce the incidence of patient injuries.

In response to concerns about medical indemnity arrangements in Australia, there have been a number of related reviews and inquiries over the past decade or so. The recommendations of the Australian reviews have, on the whole, not been implemented.

However, in April 2002 the Commonwealth Government convened a national medical indemnity forum of state/territory health ministers, doctors, insurers and other medical groups in an attempt to resolve the growing problems with the current framework. Subsequently, in May 2002, the Prime Minister announced a package of measures to address some of the problems with medical indemnity insurance (Howard 2002). Some of these measures — such as the intention to cap compensation payments — are likely to reduce the escalation in GPs' insurance costs. In turn, this could reduce the incentives to engage in defensive medicine.

Relationships between doctors and other health care providers

In common with other parts of the world, there has been increasing concern expressed in Australia about the potential for conflicts of interest for doctors employed by large health care corporations (see, for example, AMA 2000). This is despite the assurances of such corporations that their doctors retain their clinical independence and are under no contractual obligation to refer patients to company-owned services.⁷

Doctors suspected of placing commercial interests ahead of patient care can be forced to appear before their State Medical Practitioners Boards, which can revoke or restrict a doctor's registration. But the growing corporate involvement in the health sector has resulted in legislative options for dealing with errant doctors also being sought.

The NSW Government has passed legislation — the *Medical Practice Amendment Act 2000* — which includes offences for incitement of employee medical practitioners to engage in over-servicing or professional misconduct. According to Fitzgerald (2001), the Act contains two initiatives that can potentially restrict the scope for SID within large corporations, namely:

⁷ See, for example, remarks made by Endeavour Health Care reported in *The Age* (Elias 2001).

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- Doctors are prohibited from offering or accepting pecuniary benefits for patient referrals (including within corporations providing medical services).
 - Non-medical directors of corporations providing medical services can be fined or disqualified if they are party to unsatisfactory professional conduct or professional misconduct by medical practitioners. These provisions also extend to the provision of excessive or unnecessary medical services.

In March 2002, the Victorian Government outlined proposed new laws to parliament dealing with the relationships between doctors and health care providers. The Victorian Health Minister is reported (Costa 2002, p. 3) to have said in relation to the proposed new laws:

There is the potential for corporatised practices to unduly influence a doctor's referral patterns, set unacceptable consultation targets or adversely influence clinical decisions on ordering diagnostic tests or prescribing drugs.

Medical practices and companies would be fined up to \$40 000 the first time they are found guilty of pressurising a doctor to act unprofessionally by 'putting profits ahead of health care'. Individuals inciting a doctor to act unprofessionally face fines of up to \$20 000. In both cases, penalties for subsequent offences would be double. Also under the proposed changes, the Medical Practitioners Board would be given increased powers to consider complaints about doctors' performance against accepted benchmarks.

Other states are also reviewing their relevant medical practitioner legislation.⁸

At the national level, the ACCC (2001) has called for doctors to be required to disclose their financial interests in any treatment or service to which they refer patients. In addition, the HIC has indicated that work has commenced on developing a risk management system to monitor corporate practice in health.

The Commonwealth Government's approach has been to encourage corporate medical service providers to self-regulate their involvement in general practice. In November 2001, the then Federal Minister for Health launched a voluntary, self-regulatory code of conduct covering the relationship between owners of medical corporations and doctors (Moynihan 2001a). The code was drawn up by doctors' groups and three of the largest medical corporations. Under the code, the companies agree they will not influence doctors to direct patient referrals and will ensure their medical independence and autonomy.

⁸ For a summary of developments in state jurisdictions, see DHS (2001).

Regulatory arrangements

Australian governments have responded to health care cost and spending challenges with a number of regulatory measures. The regulatory arrangements directly affecting doctors mainly feature supply-side measures aimed at restricting capacity and controlling fees, including:

- regulating the supply of general practitioners;
- the setting of approved fees for Medicare rebates; and
- capping the supply of some services.

On the efficacy of capping, the Department of Health and Aged Care has reported mixed results (DHAC 1999b). While capped funding agreements with some professional provider groups may have created incentives for appropriate service provision, other government capping strategies to limit supply (and SID) have had only limited success.

5.6 Summing up

While considerable diversity in institutional and regulatory arrangements exists across OECD health systems, the vast majority have two things in common:

- they rely primarily on public (compulsory) sources of finance to fund GP related services; and
- they all have some form of insurance to cover GP-patient interactions, requiring zero or limited direct out-of-pocket payments by patients.

The protection afforded by insurance (and limited co-payments) provides patients with little disincentive to restrain their demand for medical services. This is fertile ground for possible SID. However, the likelihood of SID being pervasive in any particular country would seem to depend upon the institutional framework for the financing and delivery of health services.

It would seem that SID is more likely to be prevalent in countries where:

- consumers are free to choose their doctor;
- there is no contractual or employment relationship between insurers and doctors; and
- the method of payment is fee-for-service.

However, no two countries have exactly the same type of medical market or accompanying institutional framework. It is important, therefore, to look closely at

the particular characteristics of individual countries and the exact nature of the relationships that exist between the key players.

The regulatory arrangements existing in individual countries could play a vital role. Some of these may have been introduced precisely to counteract potential supply-side (including SID) effects. Australia would seem to be a case in point. It possesses an institutional framework with some elements that are likely to provide doctors with incentives to engage in SID. But, against this, it has a regulatory environment that should limit the potential for SID.

6 Empirical assessment of supplier-induced demand

Empirical investigation and analysis of SID is a challenging and controversial exercise. This is due to the complex nature of the health market and the range of opinions about what constitutes inducement. Further, the SID hypothesis relates to an effect on demand that is not directly measurable. This has forced researchers to explore SID indirectly and, in doing so, develop a variety of conceptual models and empirical tests that display varying degrees of sophistication and support for the hypothesis.

Despite these obstacles, considerable empirical work has been undertaken — the majority originating from overseas. The variation in health systems between countries has enabled the accumulation of SID evidence over a range of institutional and financial settings.

This chapter does not seek to provide a detailed review of the many empirical studies undertaken on SID.¹ Instead, its objectives are to provide a broad overview of the main *approaches* taken to measure SID, to present the main empirical evidence and to highlight the challenges and problems facing analysts.²

6.1 A profile of key studies

While SID has been studied for around thirty years, it still lacks a definitive test, or even agreement, on its likely extent and significance. The main reason for this is that SID can only be estimated indirectly — it is simply not possible to know if patients would have chosen the same level of medical service if they had the same information and knowledge as their doctors. This has resulted in researchers trying to measure SID at the margin, often by examining whether doctor treatment patterns

¹ Useful reviews can be found in Folland, Goodman and Stano (2001), McGuire (2000) and Phelps (1986).

² This chapter examines the SID literature in relation to general practitioners and specialists. There are, however, a number of studies which have examined the issue of SID for other suppliers within the health sector such as dentists and physiotherapists (see, for example, Birch 1988; Chryssides 1997; Van Doorslaer and Geurts 1987).

are affected by financial incentives. As De Jaegher and Jegers (2000, p. 232) observe:

Testing for *absolute* SID involves the impossible task of observing a perfectly informed patient (Mooney 1994). Therefore, it has been *marginal* SID, ie inducement upon entry or upon a change in fee, which has been tested for, involving the additional assumption that physicians induce more as their income gets under pressure.

An added complication is that the observed treatment patterns of doctors are likely to be influenced by regulatory measures applying to the market for medical services, such as monitoring arrangements and utilisation reviews.

In this context, an observation by Phelps (1986) as part of a review of the empirical evidence remains valid today — namely, that empirical studies have probably reached the limit of their ability to inform policy makers on the issue of the extent of SID.

Interestingly, despite problems with evidence, there is considerable belief in the SID phenomenon. Fuchs (1996) surveyed 46 leading figures in American health economics, 44 economic theorists and 42 practising doctors. Around two-thirds of the health economists and practising doctors and three-quarters of the economic theorists agreed with the statement that: ‘Doctors have the power to influence their patients utilisation of services (that is, shift the demand curve), and their propensity to induce utilisation varies inversely with the level of demand’ (Fuchs 1996, p. 8). The majority of respondents agreed that doctors do induce demand and that this does not reflect a simple profit or income maximisation objective.

A wide variety of approaches have been employed in the literature to empirically test the inducement hypothesis.³ Most of these have focused on the utilisation and cost implications of SID, rather than on whether the services provided by doctors have had a favourable (or otherwise) effect on the health status of patients. This section looks at the findings of a selection of studies covering some of these approaches and highlights some of the difficulties in testing for SID.⁴ The approaches covered include those that:

- measure the effect of doctor supply on the volume of services provided and fee levels (doctor/population ratio studies);
- measure the effect of doctor supply on doctor-initiated visits;
- assess the impacts of different remuneration structures and fee changes on service patterns;

³ See Labelle, Stoddart and Rice (1994) for a comprehensive listing of approaches.

⁴ The profile of the different approaches in this section is largely based on Monday (2002).

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- assess the effect of medical knowledge on service utilisation;
 - measure the impacts of changes in market conditions on financial incentives facing doctors; and
 - measure variations in utilisation between small areas.

Most of the studies profiled here are based on overseas evidence, although relevant Australian studies are also included.

Doctor/population ratio studies

This approach represents the most commonly used test for SID. It involves examining how the utilisation or price of medical services changes in response to changes in the number of doctors in an area. The hypothesis underlying the test is that, in response to an increase in the doctor/population ratio (reflecting greater competition from other doctors) exerting downward pressure on their incomes, doctors will seek to induce demand or raise their fees so as to maintain their incomes.

A large number of studies using aggregate data have examined this hypothesis — some have found evidence in support of inducement, while others have not.

An early Australian study (Richardson 1981), based on the framework used by Fuchs and Kramer (1972) for the United States, can be used to characterise those studies providing supporting evidence of SID. The study looked at the market for GPs and specialists in 1976 — finding that inducement was greater for the latter. Specifically,

- a 10 per cent increase in the supply of GPs was associated with an increase in services of between 4.6 to 5.1 per cent; and
- a 10 per cent increase in the supply of specialists was associated with an increase in services of between 7.6 to 11.9 per cent.

The higher inducement outcome for specialists was expected, as a smaller proportion of their visits are initiated by patients and the complexity of their services is generally greater, making patients more dependent on their advice. The author acknowledged that while the impact of supply changes on time costs — notably queuing time — and service quality had not been fully addressed, the results were unlikely to be materially affected. A more recent study by Richardson and Peacock (1999), using 1996 data, and updated in Richardson (2001), found a slightly lower inducement elasticity for GP services — around 0.4.

In a review of this latest study, Freebairn (2001) argues that the type of model used by Richardson and others adopting this approach almost certainly overestimates the magnitude of demand inducement for four main reasons.

- First, there is the possibility of mis-specification of the demand equation, because arguably the inclusion of hospital density and state dummy variables would yield a better specification. Hospital and outpatient services are, for example, a substitute for GP services and state dummy variables could be used as broad proxies for a variety of health status and taste variables.
- Second, while accepting that information asymmetry applies to some patients, its extent can be overstated and it would be desirable to extend the model to explore links between patient characteristics, the nature of medical services and the extent of asymmetry. It would also be useful to explore links between doctor time per patient and patient welfare.
- Third, interactions between demand and supply need to be carefully investigated, including the impact of increases in doctor supply on queuing, waiting and travel times. Such changes act to lower the effective price of medical services.
- Finally, quality seems to be held constant — even though an increase in doctor supply could be expected to facilitate an improvement in quality (that is, enable doctors to spend more time with patients).

In general, evidence of increases in the utilisation of medical services linked to increases in doctor numbers is insufficient to demonstrate the existence of SID. Many other factors such as technical advances in health treatments and rising expectations on the part of patients contribute to increases in the rate of usage of medical services. Hence, a mere association between increases in the supply of doctors and increases in the usage of their services does not demonstrate causality. For example, the fact that communities respond to an increase in doctor numbers by increasing their use of medical services may simply reflect the improved availability of, and access to, doctors.

Studies of doctor-initiated visits

Another technique used for testing for SID is to examine the effect of changes in doctor supply on doctor-initiated visits (rather than patient-initiated visits). The SID hypothesis is that increases in doctor numbers would lead to an increase in doctor-initiated visits (for example, so that doctors can maintain their incomes).

Wilensky and Rossiter (1981) used individual patient data for 1977 from the National Medical Care Expenditure Survey (covering health care use and payments

for the US) to examine the extent of doctor-induced demand. They found that the majority of visits to doctors in that year were initiated by patients (54 per cent). However, nearly 40 per cent were doctor-initiated. From this they concluded that, while there is a role for traditional demand analysis in explaining the use of medical services, the concept of SID — defined in terms of doctor-initiated visits — is also relevant.

The authors found that increases in the doctor to population ratio were associated with increases in doctor-initiated visits, although the magnitude of the change was relatively small — less than 2 percentage points for a 23 per cent increase in the doctor to population ratio. The study also found that the probability of doctor-initiated visits increased with declines in the out-of-pocket price to the patient. It is also interesting to note that a similarly structured study by Tussing and Wojtowycz (1986) covering Ireland — which also has a fee-for-service system — found a stronger positive relationship between areas with high doctor numbers and the proportion of return visits.

Two potential problems arise with the Wilensky and Rossiter methodology.

- First, doctor-initiated visits do not provide an adequate proxy for doctor-induced visits (that is, visits that although suggested by the doctor were not medically necessary).
- Second, visits per se are unlikely to be the main method by which SID occurs — what happens *during* a visit may be more important, including length of consultation and whether referrals are made for further tests and diagnosis.

An Australian study by Scott and Shiell (1997a) examined the effect of competition on the behaviour of GPs — in effect they tested the hypothesis that GPs in areas of high competition (high GP to population ratio areas) are more likely to recommend a follow-up consultation compared to GPs in an area of low competition. In undertaking the study, the authors sought to improve on past studies by, amongst other things, including data on GP and practice characteristics and using data disaggregated by medical condition.

The authors concluded that their results lend some support to the SID hypothesis, but only for certain medical conditions. They identified various influences on the follow-up decision of a GP, including the age of the patient, the age of the GP, the medical condition, the size of the practice and whether a diagnostic test or medication was prescribed during the initial consultation. However, they cautioned that the results were unable to provide much guidance on the extent of SID, if it is strictly defined as whether the patient would have chosen a follow-up visit if they had the same information as the GP. They also noted that the results said little about

the effect of follow-up visits on the health status of the patient, observing that (Scott and Shiell 1997a, p. 587):

This of course, does not imply that such behaviour is in any way inappropriate. It is perfectly feasible that a follow-up consultation is 'appropriate' and that the effect of competition is to encourage more appropriate care. (If this was the case, then it may be that inappropriate care was being provided in areas of low competition because of high workloads.)

Remuneration structure and fee change studies

Analysis of doctors' payments is argued by Rice (1998) as being the most accurate test of SID because it is the most direct way of measuring the impact of changes in financial incentives on service patterns.

Considerable SID research has analysed the effect of doctors' payments on utilisation based on two main approaches, namely:

- whether remuneration methods affect doctors' service patterns; or
- how fee changes affect utilisation.

Type of remuneration

These studies tend to test the proposition that doctors paid on a fee-for-service basis would have higher utilisation rates than doctors paid by salary or capitation.

A Danish paper by Krasnik et al. (1990) compared the service patterns of a group of GPs whose payment method changed from capitation to a mixed fee-for-service and capitation system, with a control group whose payment was unchanged. While there was little difference in the number of patient contacts between the two groups, use of curative and diagnostic services by the fee-for-service group increased markedly. In order to increase use of these services, the fee-for-service GPs had an offsetting fall in referrals to specialists and hospitals.

In a series of papers, Kristiansen and Hjortdahl (1992), Kristiansen and Holtedahl (1993) and Kristiansen and Mooney (1993) compared the behaviour of Norwegian GPs paid on a fee-for-service basis with a group paid by salary or capitation. Their studies found that the former group used more home visits and diagnostic tests and had longer, more numerous consultations than their salaried colleagues. Despite this, financial incentives were found to have a limited influence (less than 10 per cent in the 1992 study) on variation in service use.

An Australian study by Scott and Shiell (1997b) looked at GP utilisation when consultation fees were changed from being time-based to content-based. This change was found to have no significant impact on utilisation.

Fee changes

These studies tend to test the proposition that a decline in fees would encourage a greater volume of service provision.

Rice (1983) analysed the impact of fee changes in Colorado. The study investigated how a doctor's 'practice style' was affected by new fee-setting arrangements introduced in 1977. Under the new arrangement, fees were set to the state average, which lowered fees for higher paid urban GPs and raised them for others. A one per cent decrease in fees resulted in a 0.6 per cent volume increase for medical services and a 0.15 per cent increase for surgical services.

Yip (1998) and Nguyen and Derrick (1997) both studied a fee reduction by Medicare in the US in 1990. Fees were reduced, for budgetary reasons, on services deemed to be 'over-priced'. Both studies found that volume increased most for the doctors who faced the largest fee reductions. The latter study found a one per cent reduction in fees led to a 0.4 per cent increase in volume.

Rochaix (1993) studied both income caps and fee freezes for GPs in Quebec. Financial incentives were found to work both ways, as volume increased in response to freezes and GPs reduced medical activity in response to quarterly income caps.

Hughes and Yule (1992) studied British GPs, measuring the impact of fee changes on behaviour from 1966–89. They found there was no systematic response in service volumes to changes in fees. A notable finding was that salaried GPs responded to fee-for-service style bonuses for public health measures — such as immunisation and pap smears — by increasing their patients use of such services.

Scott and Hall (1995) reviewed eighteen studies based on changes in GP remuneration structures and fees. In the majority of studies that found inducement (only three of the eighteen studies showed no evidence of inducement), the impact on service usage was limited. The authors also noted that, on the whole, the statistical techniques used were inadequate. Problems included the lack of a control group, unrepresentative samples and poor use of explanatory variables.

Medical knowledge and utilisation studies

A few studies have been conducted to test the proposition that SID arises from an imperfect agency relationship related to information asymmetry between doctors and their patients.

For example, Hay and Leahy (1982) undertook a study to identify whether doctors and their families use more or fewer medical services than other patients. A finding consistent with SID would point to doctors and their families making less use of medical services than for other patients. However, the authors found that doctors and their families were as likely, if not more likely, to use medical services after controlling for factors such as access to care, ability to pay and perceived health status.

A similar study by Bunker and Brown (1974), looking at surgery rates between doctors and their spouses and non-health professionals and their spouses, yielded a similar result.

However, according to Rice (1998), there are at least two problems with such studies. One is the difficulty of accounting for the fact that doctors and their families are often able to secure medical services at more favourable prices. Another is that health professionals may demand more services in an attempt to minimise the impact of medical uncertainty on their treatment.

Changes in market conditions

A study by Gruber and Owings (1996) looked at how changes in market conditions alter financial incentives facing doctors. Specifically, they analysed the effect of falling fertility on the use of caesareans relative to traditional deliveries by obstetricians and gynaecologists. The hypothesis was that these doctors would attempt to bolster their falling incomes by encouraging use of the more financially-rewarding caesareans instead of allowing traditional births. The authors tested this using data from states in the US across which the fertility decline varied. They found use of caesareans was systematically influenced by falling fertility, with a 10 per cent fall leading to a 0.6 per cent increase in the probability of caesarean use.

This study was cited by Fuchs (1996) as reigniting the SID debate, as its results provided unambiguous evidence of SID. However, an alternative interpretation could be that falling fertility was related to a societal change whereby more women were having children at an older age, thereby increasing the likelihood of caesarean use.

Small area variation studies

A number of studies have identified substantial variations in rates of medical procedures and surgery across small areas (that is, regions within a country or state). Some analysts maintain that unexplained variations may be attributable to demand inducement by doctors.

Richardson and Peacock (1999), for example, report the results of a comparison of variations in rates for 15 medical procedures covering statistical local areas in Victoria. They identify substantial differences between these areas when the variation predicted by the age/sex composition of each area is compared with the actual variation. For example, the actual variation exceeds its predicted variation by a minimum of 110 per cent for a total hip replacement and by 2000 per cent for a colonoscopy. In their assessment, Richardson and Peacock (1999, p. 6) note that:

The inescapable conclusion appears to be that the dominant factor in allocating these services is the clinical judgement of doctors. It is simply not credible that, with the removal of significant income and price barriers, such variation could arise from differences in individual patient preferences.

Some small area variation studies have been criticised on methodological grounds for failing to control adequately for possible explanatory variables such as differences between areas in the age, sex and medical condition of patients, as well as institutional variables such as differences in insurance coverage. Further, relatively large differences in usage rates can arise from chance alone. As noted by Diehr (1984), if usage rates are normally distributed, the highest and lowest rates will, on average, differ by 2.3 standard deviations for comparisons involving five small areas, even if the underlying rate is the same in all areas.

Within the literature, the underlying reasons for small area variations and their policy implications have generated controversy. While some see SID as a part explainer for the variations, others have suggested that a doctor's practice style (linked to their beliefs, habits and practice patterns) is likely to be a distinct and important contributor (see, for example, Folland, Goodman and Stano 2001). McPherson et al. (1981) note that broadly similar patterns of variability are observed across countries, including those where physicians have no or only limited real financial incentives to induce demand.

Nevertheless, for Richardson and Peacock, as well as others (see, for example, Wennberg 1988), these studies highlight an important point — actual medical decision making is characterised by extensive uncertainty in relation to 'appropriate' medical practice. Further, these small area variations need not imply a breakdown in the agency relationship. As noted by Feldman and Sloan (1988, p. 252):

Decisions made with imperfect information and uncertainty may characterise both patient and physician behaviour in most medical markets, even though the physician acts according to his perception of the patient's best interests.

At a policy level, small area variations have provoked debate about whether they point to large and potentially avoidable social costs due to 'inappropriate care' (that is, over-use, under-use and misuse of medical procedures in relation to patient needs). If so, there could be scope for improving the quality as well as the efficiency of medical care. One practical development arising from this debate has been a growing interest in evidence-based medicine, including initiatives to promote evaluations of medical procedures and develop clinical guidelines.

6.2 Other empirical evidence

The previous section focused on some of the approaches typically used to test for SID over the past three decades. However, there are also three contemporary examples of where SID has become an issue and where a limited amount of evidence is available.

McGuire (2000) refers to two of these examples supposedly supporting SID — defensive medicine and referrals related to the emergence of corporate medicine. Both examples are quite topical against the backdrop of recent developments in Australia's health policy debate.

Information from the monitoring activities of the HIC in Australia also provides some evidence of 'over-servicing' that could be linked to SID.

Defensive medical practices

Over the last decade or so, claims of a deficient medical indemnity system in Australia have surfaced. As a consequence, some surveys indicate that doctors are adopting defensive medical practices for fear of malpractice litigation. Some of these practices may involve SID-type behaviour — such as increased levels of servicing (ordering more diagnostic tests, undertaking more follow-up visits and making more referrals to specialists).

A key Australian study is a research paper on professional indemnity arrangements (Hancock 1993). A survey undertaken as part of the study found that fear of litigation appeared to have led a significant proportion of doctors to adopt defensive medical practices.

According to the survey results — summarised in table 6.1 — between 38–85 per cent of doctors often or occasionally adopt defensive practices, with the incidence of these practices amongst GPs being more prevalent than specialists ‘across the board’. Foremost amongst the practices adopted by GPs are more detailed note taking, referrals for non-invasive diagnostic procedures (such as blood tests and X-rays) and follow-up consultations. Furthermore, these types of defensive practices had increased significantly over the previous five years (Hancock 1993).

Table 6.1 Proportion of doctors adopting certain practices because of the threat of litigation, 1992^a

Per cent

<i>Practices adopted</i>	<i>All doctors</i>	<i>GPs</i>	<i>Specialists</i>
Follow-up consultation	72	76	64
Referral for a second opinion	59	65	49
Referral for invasive diagnostic procedures	52	58	40
Referral for non-invasive diagnostic procedures	72	78	62
Referral for investigative procedures with a known element of risk	38	42	31
Arranging tests which are unlikely to influence patient management	53	58	44
Avoiding high risk procedures	54	63	39
Avoiding prescribing certain drugs or devices	61	70	44
More detailed note taking	85	88	79

^a Percentage of doctors reporting that they ‘often’ or ‘occasionally’ adopt these practices — the latter being the most predominant. Between 1064 and 1123 doctors responded to the survey.

Source: Hancock (1993).

There is also support for the view that some of the costs associated with defensive medical practices may be avoidable through reform to malpractice liability arrangements. For example, Kessler and McClellan (1996) concluded that reforms to malpractice arrangements in the US, which reduced the fear of litigation, would cause reductions in medical expenditures of 5–9 per cent.

Corporate medicine

The growth of corporate medicine has given rise to concerns about the possibility of conflicts of interest between doctors and patients and, allied to this, the possibility of SID.

McGuire (2000) cites three overseas studies suggesting that doctors with financial interests in diagnostic testing and therapy facilities refer patients to these facilities

more often and provide more services per patient (see Hillman et al. 1990, Hillman, Welch and Pauly 1992, and Mitchell and Sass 1995).

Evidence of the possible influence of ownership characteristics on some GP treatment practices in Australia is provided in a recent study published by the Australian Institute of Health and Welfare (AIHW 2001b). An analysis of X-rays ordered by Australian GPs finds a ‘definite trend of increased order rates with increased size of practice’ (table 6.2). Doctors working in the larger general practices are ordering more diagnostic imaging tests than are sole practitioners and other small practices. Many of these large practices may be owned by the same health care corporations that own the imaging facilities.

Table 6.2 Diagnostic imaging order rates by GPs, Australia, 1999-00^a

<i>Type of practice</i>	<i>Proportion of total imaging orders</i>	<i>Imaging order rate per 100 encounters</i>
	Per cent	
Sole practitioner	16.7	6.4
2-4 practitioners	34.8	7.5
5-10 practitioners	39.2	8.0
11+ practitioners	7.6	8.6
All practitioners	100.0	6.9

^a Random sample of 1047 GPs over a one-year period in 1999-00. The data for sole practitioners and 5–10 practitioners were found to be statistically significant (95 per cent confidence).

Source: AIHW (2001b).

The higher rates of service where co-ownership of primary care and imaging facilities is involved may suggest some form of ‘interference’ with doctor referrals. That is, doctors working for a corporation may face pressure to act, in part, as an agent of the corporation (Fitzgerald 2001). However, it may also indicate other motives on the part of doctors, such as access and convenience. As White (reported in Hart 2001, p.3) observes:

It is not so much doctors are being told to refer to in-house facilities, but they are not being as selective as they should. The referral pad is on the table and the facility is next door.

Monitoring activities of the Health Insurance Commission

The monitoring and utilisation review activities of the HIC provides information relevant to assessing the extent of SID in Australia linked to ‘over-servicing’.

The HIC monitors the claiming patterns of all medical practitioners and identifies those with behaviour that is ‘atypical’. Atypical behaviour covers a variety of

practices. The most relevant for SID purposes cover particular identifiable types of conduct such as:

- a high number of services per patient;
- an unusual incidence of specific types of services;
- inappropriate prescribing;
- inappropriate ordering of diagnostic imaging and pathology; and
- inappropriate use of Medicare item numbers when making claims.

The bulk of medical practitioners that attract attention for ‘atypical’ claiming patterns are GPs. According to the Review Committee of the Professional Services Review Scheme (1999), the HIC identified 7307 instances between 1994-95 and 1997-98 where the practice patterns of GPs varied significantly from that of their peers.⁵ Of these, the HIC opted to meet with 1865 GPs to counsel them about their behaviour.

These counselling activities appear to have encouraged positive changes in the behaviour of the relevant practitioners. Data provided by the HIC to the Review Committee of the Professional Services Review Scheme show significant reductions in the average annual cost per practitioner in the two years after counselling (table 6.3).

Table 6.3 Financial impact of counselling medical practitioners by HIC medical advisers, 1994-95 to 1997-98^a

<i>Type of medical service</i>	<i>Average annual saving per practitioner in the 2 years after counselling</i>
	\$
Medicare	34 930
- Diagnostic imaging initiated	9 159
- Pathology initiated	7 251
- Other medical services	18 520

^a Includes GPs and specialists. However, GPs accounted for 92 per cent of all practitioners counselled.

Source: Review Committee of the Professional Services Review Scheme (1999, p. 12).

The HIC estimates of annual savings per medical practitioner can be aggregated to provide a broad indication of the extent of SID-type activity by doctors in Australia. In 1997-98, 779 doctors (666 GPs and 113 specialists) were counselled by the HIC

⁵ Approximately 10 per cent of GPs are identified with ‘atypical’ behaviour in any particular year. In 1997-98, the 1890 GPs identified accounted for 9.1 per cent of Australia’s total GP workforce.

for atypical behaviour. If we assume that each generated ‘excessive’ services to the value of \$34 930 per annum (that is, equal to the average saving reported in table 6.3), then this would have totalled \$27.2 million in that year. This would have represented around 0.32 per cent of the \$8529 million spent on medical services in Australia in 1997-98, or about 0.39 per cent of the \$6970 million in services funded by Medicare.⁶

These figures shed some light on the extent of ‘observable’ SID-type behaviour in Australia. However, they must be treated with considerable caution as estimates of the true extent of SID. For example, there may be a problem in denoting the observed practice variations as evidence of ‘unnecessary’ or ‘wasteful’ care when the benchmark — ‘appropriate’ care — is often itself subject to debate and hence not clear. The HIC approach defines the ‘normal’ pattern of doctor behaviour as that which is practiced by the bulk of doctors (ie excluding the outliers). However, the actual practice pattern of those doctors constituting the ‘norm’ may not necessarily represent clinical best practice — particularly when a significant amount of clinical practice does not have an explicit evidence base (see chapter 3).

6.3 Difficulties associated with quantifying SID

Some of the criticisms and problems associated with specific SID studies were included in the previous section. The purpose of this section is to draw these together and to discuss some of the difficulties associated with measuring SID and why they occur. More detailed treatments of the empirical problems relating to SID can be found in McGuire (2000) and Folland, Goodman and Stano (2001).

While the use of marginal or indirect testing of SID has been necessary, it has further complicated the task of measuring inducement. The accuracy of indirect tests often depends on complicated relationships between factors. For example, to be able to use the relationship between an increase in the supply of doctors (that is, competition) and service utilisation as a ‘test’ for SID, a number of assumptions are required:

- that the increase in doctor supply causes additional demand rather than being a market response to a rise in demand;
- that the increase in doctor supply lowers doctor income and creates the incentive to induce; and
- that inducement by doctors, and not some other influence, causes the increase in utilisation.

⁶ The data for expenditure on medical services were obtained from AIHW (2001a).

The disagreement within the literature over these studies has been caused by a failure to ensure that it is only SID which drives results, reflecting both methodological and data problems.

Methodological issues

Model rigour

A common criticism of SID research has been the absence of rigorous behavioural models to back up empirical analysis. It is a fundamental difficulty that leads to downstream deficiencies in testing. For example, Labelle, Stoddart and Rice (1994) suggest that it is a source of counterfactual errors and omitted variable bias. Related to this, they criticise the common ‘target-income hypothesis’ as incomplete because it does not specify how targets are set and allows continuous revision of those targets. These faults make the models’ predictions ambiguous and, as a consequence, reduce the relevance of the associated results.

Freebairn (2001, 2002) maintains that more sophisticated models are required to represent SID comprehensively, arguing that further empirical work should start with detailed a priori models of the underlying rationale for such behaviour. He points out that influences that go beyond individual doctor and patient motivations — such as government price and quantity restrictions — are often omitted in simple models. Accordingly, Freebairn argues that (2002, p. 297):

A more structural model based analysis is likely to have stronger claims for plausibility, defence against criticism, and policy implications than the cruder reduced form model studies found in the literature.

However, he also recognises that (2002, p. 297):

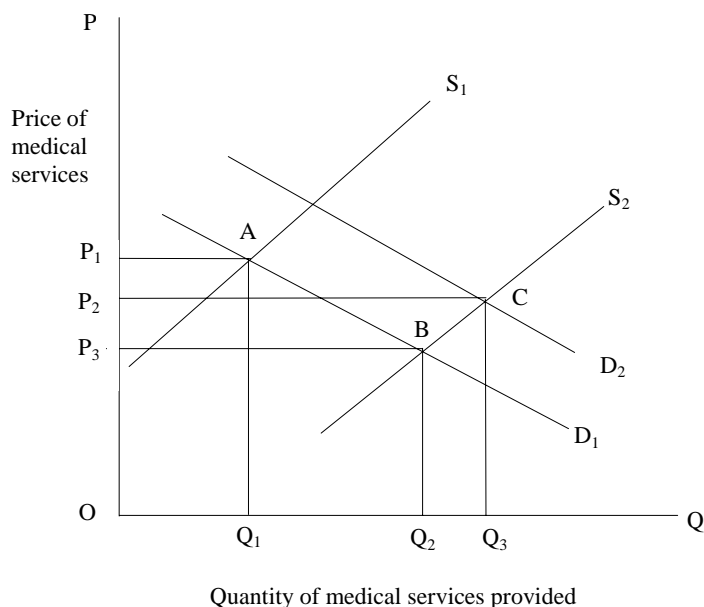
...my request for formal structural models and recognition of extensive price and quantity regulations in the health care industry is a big and challenging order. Whether the cost is warranted remains an interesting question itself.

Counterfactual

A counterfactual problem occurs when a hypothesis’ prediction is consistent with that of its counter-hypothesis — making it impossible to tell the difference between the two. Confusing SID with a standard market hypothesis has occurred in most studies of inducement. Typically, this has happened because the SID result is identical to what the market hypothesis would predict, or because the SID hypothesis has multiple or ambiguous predictions. Box 6.1 illustrates a number of these problems for competition-based studies.

Box 6.1 The effects of an increase in doctor supply in a local area

A commonly used model to explain SID is summarised below.



D_1 and S_1 are the initial demand and supply curves yielding a price for medical services of OP_1 and quantity OQ_1 . A move in the initial supply curve (S_1) to S_2 reflects the effect of an increase in the doctor-population ratio for a given area. Presuming that doctors are able to induce demand in response to this change — effectively an increase in competition — D_2 represents the new demand curve and the new price for medical services is OP_2 with quantity OQ_3 .

However, just looking at whether the utilisation of services increases does not distinguish between the SID hypothesis and the conventional market hypothesis. This is because utilisation increases for both — from OQ_1 to OQ_3 for inducement and from OQ_1 to OQ_2 without inducement. The empirical problem is likely to be more involved. The increase in doctor numbers has an ‘availability’ or improved access effect that needs to be distinguished from any ‘inducement’ effect. Beyond this, the market for medical services is not static — factors other than the change in doctor numbers are also likely to be changing over time. Suppose that the equilibrium price and quantity move from A to C. Although such a change would be consistent with the SID hypothesis, it would also be consistent with the conventional non-inducement hypothesis, if the initial demand curve moved from D_1 to D_2 . Hence, utilisation based studies of SID are likely to produce ambiguous results.

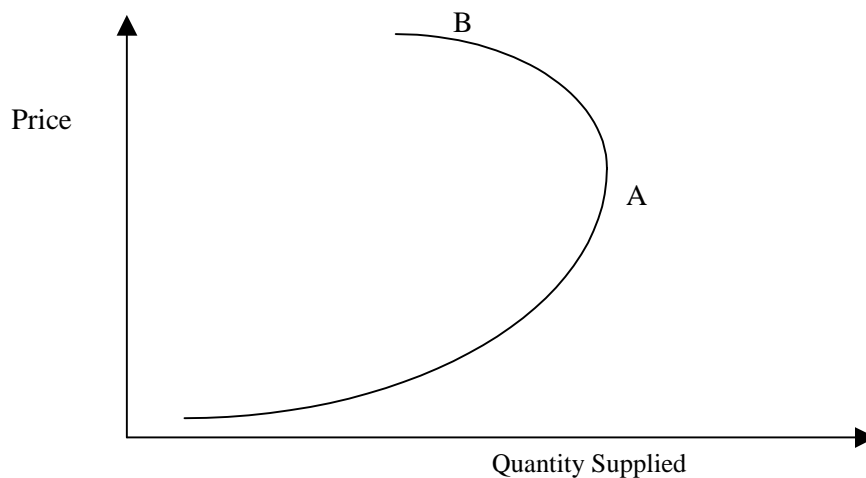
Equally, the implications for fee changes are not clear-cut. Under the non-inducement hypothesis, an increase in doctor supply (S_1 to S_2) with demand unchanged at D_1 yields a fall in price from OP_1 to OP_3 . But with inducement — demand shifts from D_1 to D_2 — the implications for fees clearly depend on the magnitude of the demand shift. Fees may fall or rise relative to their initial level OP_1 . However, an outcome yielding unequivocal support for the SID hypothesis would be a fee rise in concert with an increase in supply.

For the approach to SID based on fee changes, counterfactual problems have arisen because those studies suggest that increased service use following fee reductions is evidence of SID. However, there are several reasons why this result could follow from standard market behaviour.

First, the usage observed in this case is influenced by a combination of supply and demand impacts. So while price reductions may reduce the doctor's income, and hence, affect supply, it is also possible for them to affect the demand for health services. In health systems where patients pay for the services they consume and have some degree of autonomy, price is likely to influence their selection of treatments. In these circumstances, a standard economic model would predict that as price falls demand, and hence usage, will increase.

Second, even if demand is unaffected, the standard market hypothesis may predict an increase in supply when fees are reduced. Rice (1998) suggested that this would occur if doctors' supply curves are back-bending (figure 6.1).⁷

Figure 6.1 **Backward bending supply curve for doctors**



He argued that often the SID relationship is based on the premise that income is the sole motivator of doctor behaviour and that leisure-time is ignored. If doctors were already earning a satisfactory income (around point A in figure 6.1), a price rise would mean they lower their service provision and enjoy more leisure time. However, a reduction in price from point B would result in more services being supplied as doctor's incomes fall below their preferred levels. If this is the case, it is

⁷ A supply curve is 'back-bending' when, at some point, an increase in price causes a *reduction* in the number of services supplied. At such a point the supplier decides to sacrifice some income and have more leisure time. This effect is generally thought to occur when suppliers have high incomes.

indistinguishable from the proposed SID result. Rice also observed that this response is more likely for higher-priced services — and that these are the services that are more likely to have their prices lowered.

Omitted variable bias

Omitted variable bias has been the most common statistical criticism of SID studies. The problem occurs where a study fails to account for a relevant influence on the variable measuring SID (eg utilisation). It often arises because of the difficulty of incorporating important influences on service use — such as quality, medical uncertainty and non-dollar costs (like waiting and travel times).

Cross-sectional competition tests have often been criticised for this bias as they have to control for numerous regional differences in income, health status and health preferences. Not controlling for these factors places undue importance on the variables that are included in the study — notably competition — that do vary across regions.

‘Border-crossing’ presents another problem for cross-sectional studies. It occurs when patients seek medical treatment outside their residential area. This phenomenon is most important for specialist services, as people in rural or remote areas often need to travel to larger centres to use such services. Border crossing has the effect of raising usage in areas where medical services are in high supply and depressing usage where supply is low (and thereby exaggerating perceived SID).

Several recent competition-based studies have found no evidence of SID, despite a positive relationship existing between competition and service use. Often, the explanation for this was that a previously omitted variable was driving the relationship. For example, Escarce (1992) and Stano et al. (1995) took the availability effect into consideration and found this to be the relevant factor. Carlsen and Grytten (2000) showed that consumer satisfaction increased with competition and suggested higher quality of service caused the relationship.

Endogenous variables

An endogenous variable is one which is determined by interaction with other variables. In a complex market such as health many important variables are endogenous — for example, price, usage, competition and quality. As variables interact within a system, endogeneity makes it difficult to isolate the relative importance of the differing variables.

This has proved especially problematic for competition studies. One issue is that competition tends to lower price and raise usage — as illustrated in box 6.1. This relationship between price and competition means it is unclear which variable is driving the results.

Another endogeneity problem facing competition studies is that the competition (doctor/population) variable itself is determined by doctors' choice of location. Doctors are likely to choose to practice in an area having regard to a number of factors including its general amenity for living and for their ability to earn a reasonable income in that location. The latter is likely to be affected by factors such as the price of medical services and the income and health preferences of local residents. In other words, doctors are likely to be attracted to an area that already has high demand for health care, creating a relationship between competition and usage that is not caused by inducement.

A study by Dranove and Wehner (1994) illustrates this cause and effect problem. They studied the behaviour of obstetricians and gynaecologists using techniques similar to those used by proponents of SID (such as Cromwell and Mitchell 1986) to account for this problem. The approach found that obstetricians and gynaecologists could induce their patients to have more children — a SID result that is obviously incorrect. The authors suggested the erroneous result was due to the technique failing to distinguish inducement from the availability effect.

Data limitations and gaps

Many of the problems described above can be attributed to the absence of data or their poor quality. A major influence on the quality and availability of data is the level at which the study is conducted. Generally, a trade-off exists between the coverage of a dataset and the detail it conveys.

Larger studies at regional or national levels have often had to rely on data collected by health departments or insurers. One problem with such sources is that the initial reason for collecting the data was for administrative, rather than research, purposes. This has often meant that the impact of important variables (such as patient health, patient socioeconomic status or doctors' experience) on usage has not been measured — because the data have not been recorded.

Another problem facing regional analysis is that aggregation of information has been required to compare the regions, or simply to manage the size of the dataset. This results in the loss of individual information and reduces the relevance of the studies.

In contrast, some recent SID studies have used survey-driven data to increase the level of detail. These have allowed analysis of specific ailments or types of service. Evidence from survey data has supported early contentions that SID does not have a uniform affect, though it is more likely to influence discretionary services. However, because these studies are expensive to run, they have often been localised or used small samples, leaving their results open to the charge of being unrepresentative.

No matter what the quality or size of the study, some variables can never be measured. It is, for example, extremely difficult to quantify factors such as clinical uncertainty and defensive medical practices. Inevitably this leaves a lot of ‘noise’ in the data that interferes with a clear identification of the likely magnitude and policy significance of SID. This indicates that some omitted variable bias problems can never be adequately overcome.

A final, though important, problem is that data are always tainted by the system from which they are collected. As noted by Freebairn (2002, p. 295):

The prevalence of government intervention in the pricing and supply of health and medical services means great care and caution is required in using recorded data on prices and quantities for the econometric estimation of health demand and supply functions, including testing for SID. Observations may be on either the demand or supply curve but not both, or some likely prices and quantities recorded are for disequilibrium positions inside demand and supply.

6.4 Summing up

As the preceding discussion has demonstrated, attempts at trying to test empirically for SID are fraught with difficulties. A key problem is that we are unable to identify how a patient with the same information and knowledge as a doctor would have performed.

Beyond this, medical uncertainty that precludes identification of a clear set of medically acceptable practices complicates assessments of the clinical effectiveness of the care provided by doctors. However, to date, no studies seem to have sought to examine this side of SID.

So what can we conclude from the empirical studies briefly examined here and the wider evidence on SID? First, there are different findings — some studies find support for SID while others do not. However, while opinions differ, there is arguably sufficient evidence to accept that SID can occur. Second, there does not appear to be any robust and reliable evidence on the likely magnitude of SID, although most existing studies suggest that, where SID arises, it is small both in

absolute terms and relative to other influences on the provision of medical services. Third, it is likely that this absence of definitive evidence on SID's importance will remain as there are a number of significant methodological and data problems that cannot be resolved.

7 Concluding comments

It is clear from the discussion in the earlier chapters that the conceptual and empirical work on SID raises several challenging policy issues. This chapter briefly outlines a number of these issues.

7.1 Challenges in responding to SID

Critical challenges in developing appropriate policy responses relate to problems with identifying SID, the fact that SID comes in different forms and doubts about the extent of SID.

Problems with identifying SID

Difficulties in distinguishing between induced and non-induced demand may arise at both the macro and micro levels.

At the macro level, the institutional and regulatory framework in most OECD countries (including Australia) comprises measures that exist, in part, because of concerns by governments about the rising costs of health care and the perception that SID is a contributing factor. For example, the regulation of doctor numbers partially reflects the view that a greater number of doctors results in an increased utilisation of medical services and a corresponding higher level of health expenditure.

However, correlation between an increasing supply of doctors and increased utilisation of medical services does not necessarily imply that doctors are responsible for inducing the additional utilisation. Indeed, the question arises as to whether the correlation is really evidence of SID, or rather evidence of doctors simply fulfilling an unmet need for medical services (the latent demand issue).

Cost containment can be achieved by restricting supply, restricting demand or some combination of the two. In this context, a clear understanding of the drivers of cost pressures is important to the design of well-targeted policies to promote cost-effective outcomes.

At the micro level, the multifaceted nature of medical decision making and the heterogenous nature of doctors and patients makes it very difficult to distinguish between SID-type behaviour and other forms of behaviour that influence the level and mix of medical services. This is most readily apparent in the case of referrals for diagnostic imaging or pathology, where GPs might treat a particular type of patient in exactly the same way but for a variety of reasons (that might include both SID and non-SID motives).

The identification of SID is also complicated by the absence of an unambiguous definition of ‘appropriate care’. SID arising from self-interest motives on the part of the doctor is usually viewed negatively, since the induced demand is seen as giving rise to the provision of services of questionable value. However, where the interests of the patient are foremost in the doctor’s decision making, what may appear to be over-servicing may, in fact, be necessary care and appropriate for the circumstances and needs of the particular patient. Furthermore, given that various illnesses may give rise to ‘spillover costs’ on other members of the community, the optimal level of inducement will not be zero.

SID can take a variety of forms

The difficulty of addressing SID from a policy perspective is compounded by the fact that it can arise for various reasons — for example, because doctors seek to increase their income or because they do not fully understand patients’ preferences. However, basic utilisation data covering doctor service patterns does not allow the identification of these different forms or their drivers. This makes it difficult to determine the most appropriate regulatory response.

Related to this, a number of analysts have expressed concerns about two recent developments of relevance to SID — the apparent growth of defensive medicine and the emergence of corporate medicine.

- If the risk of being sued for negligence is driving some doctors to engage in the use of defensive medical practices of questionable value (in terms of patient health outcomes), it may not be appropriate to rely only on broad measures to try and restrict utilisation. In this context, recent initiatives by Australian governments to consider reforms to medical indemnity and malpractice arrangements are relevant.
- Similarly, integration between different segments of the market for medical services — via corporate medicine — may give rise to new incentives for demand inducement. While general policy measures for addressing SID may have a role to play, specific measures that take into account the ownership characteristics of GP practices may be required.

Doubts about the extent of SID

If SID — or a particular form of SID — is most likely a fairly marginal phenomenon, a ‘heavy-handed’ regulatory approach to containing perceived negative impacts would seem hard to justify. The benefits would be either small or uncertain and may be exceeded by the costs. In this context, Bradford and Martin (1995, p. 491) sound a useful warning:

Clearly, some physicians induce demand, just as some automobile mechanics make unnecessary repairs. The important question for public policy is whether the representative physician engages in SID. In other words, how significant is SID empirically? If public policy is based, falsely on the presumption that the representative physician induces demand, it can reduce social welfare significantly.

While the empirical work on SID is inconclusive and incomplete, it does suggest that it is likely to be relatively small (see chapter 6).

7.2 Measures for addressing SID

The health policy frameworks of many OECD countries include measures directed at influencing supply and demand conditions in medical markets. A number of these measures have direct relevance for SID.¹

Supply-side measures

Supply-side measures are essentially aimed at either affecting market supply or directly controlling the provision of services by individual doctors. Examples include fee controls, utilisation reviews, technology controls, capping of services, limiting the supply of doctors and clinical practice guidelines.

It is important to recognise that most supply-side measures are *not* predicated on the proven presence of SID and the need for specific actions to contain inducement. Many support other health policy objectives — such as cost containment, improving allocative efficiency and quality control — irrespective of the existence or extent of SID.

Nevertheless, they may also assist in managing SID — by influencing the conditions of supply, they reduce the scope for, and incidence of, demand inducement. Generally speaking, supply-side measures are more likely to be

¹ For a contemporary discussion of supply- and demand-side strategies for addressing health care cost pressures, including those arising from SID, see Rice (2002).

effective in addressing the forms of SID that are driven by income maintenance considerations or non-price competition.

Two supply-side measures of particular relevance to SID are utilisation reviews and the use of clinical guidelines.

- If monitoring and review arrangements work effectively, they should contain or limit SID. In Australia, for example, the monitoring, review and counselling activities of the HIC are relevant in this regard.
- Better information for doctors in the form of guidelines or protocols can reduce clinical uncertainty. The existence of relevant guidelines makes it more difficult for doctors to justify ‘inappropriate’ treatment to patients and regulatory authorities.

As noted above, two forms of SID that may require (and in some cases have given rise to) specific supply-side responses are related to defensive and corporate medicine. However, for Australia, there is at present very limited data or analysis of the SID implications of developments in these two areas.

Demand-side measures

There are limited policy tools on the demand side, with probably only two broad measures relevant to SID — the use of co-payments for medical services, and empowering patients with information to inform choice.

Co-payments are aimed at dampening demand by changing consumer incentives to use medical services — that is, by making the users of services more sensitive to price. In general, they are not seen as being particularly helpful or relevant in dealing with demand that is induced by doctors. Cutler and Zeckhauser (1999), for example, note that co-payments are a crude control mechanism and do not influence the incentives of doctors (who are responsible for most expenditure decisions).

Patients do not always have enough information to make well-informed choices (see chapter 3). The extent and nature of information gaps and asymmetries between doctors and patients may have significant implications for demand inducement. If patients can gain access to more or better information about medical conditions, there will be less scope for doctors to propose ‘inappropriate’ treatments.

But there are also opportunities created by advances in information technology — such as Internet services — for improving patients’ access to health information. In a number of areas, such as prices, quality and the availability of doctors’ services, governments can help improve the information available to consumers. As with supply-side measures, empowering the patient with information assists in lessening

the incidence of SID, but it is not a ‘SID-specific’ policy as such. Whether SID is pervasive or not, there is a role for governments in pursuing policies to address information-based market failures. Indeed, well-informed consumers, making rational choices, will assist in making medical markets work more effectively.

Some general observations

SID is a complex and multifaceted phenomenon. It is difficult to identify, can take a variety of forms and may yield beneficial as well as adverse outcomes for patients. Furthermore, there is significant uncertainty about the determinants of SID and its pervasiveness. These features of SID and our understanding of the phenomenon appear to have several important implications.

In general terms, the many gaps in our knowledge about SID, its drivers and its net impacts point to the need for a cautious approach to assessing proposals for government intervention to influence SID.

Related to this, ‘broad brush’ measures directed at containing SID without a careful assessment of the likely benefits and costs carry the risk of producing unwelcome repercussions within the health care system without offsetting benefits.

There may, however, be scope to target particular forms of SID directly (such as those that may arise through some defensive medical and corporate ownership-related medical practices). However, the design of appropriate responses in such areas is complicated by data deficiencies and the difficulties in assessing the relevant benefits and costs.

While recognising the inherent difficulty in confirming the existence and policy significance of SID, a number of associated research questions could usefully be addressed to inform future health policy. Some examples, include:

- whether information gaps between doctors and patients have increased over time and, if so, how they could be addressed;
- whether there are practical ways of lessening the extent of clinical uncertainty to promote quality care as well as efficient health outcomes;
- the implications of the growth in corporate medicine for service provision;
- the potential for reforming medical indemnity and malpractice arrangements to lessen the use of ‘defensive medical practices’ of questionable value; and
- examining service monitoring and review arrangements, such as those of the HIC, to assess their overall effectiveness, including their value in deterring ‘inappropriate medical practices’.

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