

## Diabetes healthcare strategies to cope with the growing epidemic

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Globally, the spectrum of diabetes services varies from a single healthcare provider working in an isolated community setting, to small groups of primary care doctors and nurses working in health centres or district hospitals, through to highly sophisticated tertiary units in major urban areas with access to a range of specialists, nurses and other diabetes team members. In this chapter we explore how diabetes care may be best delivered at these various levels, taking into consideration political, cultural and economic environments. Not every case of diabetes can be looked after at the community level. Likewise, not every case of diabetes can be looked after at the specialist level. How to support and balance these two services to optimise healthcare delivery for the total community of people with diabetes, is one of the most important questions in organising diabetes care.

Diabetes care is becoming a priority for health systems as costs and health outcomes are being closely scrutinised. Traditional health systems are designed to provide symptom-driven responses to acute illnesses. Consequently, they are poorly configured to meet the needs of the chronically ill. Simply seeing more and more patients within the traditional model will lead to shorter consultations that can only focus on a quick review of blood glucose and providing a prescription. Models of care that are focused on outcomes and prevention of acute and chronic complications have been developed and proposed as viable alternatives to current care systems to address these problems.

Globally, the spectrum of diabetes services varies from a single healthcare provider working in an isolated community setting, to small groups of primary care doctors and nurses working in clinics, health centres or district hospitals, through to highly sophisticated tertiary units in major urban areas with access to a range of specialist physicians, nurses and other diabetes team members. In this chapter we explore how diabetes care may be best delivered at these various levels. Not every case of diabetes can be looked after at the community level. Likewise, not every case of diabetes can be looked after at the specialist

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level. How to support and balance these two extremes is one of the most important questions in organising diabetes care in Australia today. Irrespective of where diabetes care is being provided along the healthcare delivery continuum, services based on the chronic care model (CCM) [1] help healthcare systems provide more clinically effective and cost-efficient care.

### The chronic care model

The CCM provides a paradigm shift from our current model of healthcare delivery, to a system that is prevention based and focused on avoiding long-term problems, including diabetes complications [2]. Due to its multi-faceted nature, quality diabetes care requires an integration of the person with diabetes into a health system that promotes long-term management. [3]. Unlike acute illnesses, diabetes encompasses behavioural, psychosocial, psychological, environmental and clinical factors, all of which require team-based support from a variety of healthcare disciplines [4–6]. The premise of the model is that quality diabetes care is not delivered in isolation, but with community resources, delivery system design, decision support and clinical information systems working in tandem leading to productive interactions between a proactive practice team and prepared activated patient [2]. Indeed, in a recent meta-analysis by Shojania et al. [7], the strategy most effective in improving diabetes care, as measured by HbA1c (glycated haemoglobin), is multi-disciplinary team-based care, a fundamental feature of the chronic care model. Other key elements of this model include:

1. Healthcare organisation – this provides the structural foundation (philosophically and literally) upon which the remaining four components of the CCM rely. Diabetes service providers who are able to gain the support of their health system and organisation are more likely to facilitate and sustain their programs.
2. Community resources and policies – provide individuals with diabetes, their caregivers, service providers with a variety of ancillary services that provide support for self-management.
3. Decision support – uses expertise to establish evidence-based clinical practice guidelines, standards and protocols which provide a framework to assure quality and consistency.
4. Self-management – engages the patient in the active self-management of their condition.
5. Clinical information systems – are necessary for collecting and housing timely, useful data about individual patients and populations of patients, using tools such as patient registries and databases. Diabetes service providers not only need to rely on information systems for patient monitoring, but to a larger extent for tracking and reporting data for practice and system's reports and feedback.
6. Delivery system design – affords opportunities to restructure practices to facilitate team care and define team roles, and delegates tasks such as exploration of reconfiguring the delivery of care in primary care, community clinic and hospital settings.

## Diabetes in primary care

Primary care in the community forms an integral part of healthcare and is the first level of contact for the majority of people with diabetes. The sheer number of people with diabetes would dictate this to be a necessity. How we improve diabetes care at this level is therefore a matter of great importance.

Worldwide, primary care is usually provided by a doctor, acting alone and almost invariably also treating many other diseases. In many ways, diabetes is just a condition that the patient 'happens to have' and its management can be surreptitiously relegated to a lesser role than the clinical problem of the day. Various attempts have been made to overcome these issues and it is beyond the scope of this chapter to outline them all, but some examples will be mentioned here. In the UK, a 'mini-diabetes clinic' has been promoted within the auspices of general practice. Doctors are rewarded if the percentage of their diabetic patients reaching a target HbA1c level exceeds a predefined requirement.

In Australia, general practice is the mainstream of the primary care system, and is supported by a single government-controlled universal health insurance fund, Medicare. Together with the public hospital system and community health centres, the Medicare program provides non-user-pays access to medical services for all residents. Under this program the majority of medical practitioner services are funded on a Medicare fee-for-service basis and access to most specialist services is dependent on referral from a general practitioner. As such, general practitioners have always played an important role in managing people with chronic disease such as diabetes. A novel study in the late 1990s, which used Medicare data to look at health service utilisation for the population of New South Wales (NSW), showed that people with diabetes saw their general practitioners nearly twice as often as their non-diabetes counterparts [8].

Regardless of where care is provided, effective management of diabetes requires scheduled and regular patient visits for monitoring diabetes, detecting complications, adjusting medications, negotiating lifestyle changes and providing ongoing support; such visits are a critical element to successful outcomes. Until recently this level of care was not supported by general practitioner funding arrangements. There were also issues in relation to accessing non-medical healthcare professionals, who are well recognised as integral to diabetes healthcare teams. Access to a multidisciplinary team was only offered by hospitals, funded by state governments, and services provided by nursing and allied health professionals outside this setting were not covered by Medicare. As such, funding supported one-to-one medical service provision rather than multidisciplinary care.

However, in the last decade, Australian healthcare reform has seen a plethora of new Medicare benefits to support chronic disease management at the primary care level. In terms of diabetes, this reform provided funding to support general practitioners complete a diabetes annual cycle of care (DACC). As outlined in Table 1, the DACC encompasses routine measurement of glycaemic control and macrovascular risk factor parameters, assessment for diabetes-related eye, kidney and foot disease, and lifestyle education. It also includes medication review. In general, completion of the DACC requires the person with

diabetes to attend multiple appointments with their general practitioner as well as, where indicated, appointments with specialists, diabetes educators, allied health professionals and laboratories. This can be inconvenient to the patient, so there is a risk that not all activities within the DACC are completed. To lessen this risk Medicare offers additional funding, as a service incentive payment, for each diabetic patient within a general practice who has completed the full cycle of care within a 13-month time frame [8]. This is further supplemented by an outcomes payment based on the proportion of patients with diabetes within a practice reaching general target levels of care each year [9]. These incentives, while welcomed, put increased pressure on general practitioners to ensure the delivery of effective primary care. To relieve this pressure, many practices have turned to nurses working in the general practice environment to help coordinate and complete the DACC. Today it appears these nurses have been accepted unequivocally by the Australian medical profession as a viable option to augment the services of general practitioners, with well over half of general practices in Australia now employing at least one practice nurse, thereby expanding the primary care team. Further to this, the federal government realised that better planned and coordinated care that looked beyond individual episodes of care to a more broad view was required, so Medicare funding of care plans was introduced in 1999.

In 2005 Medicare went a step further and provided a funding basis for team care arrangements, designed to enable general practitioners to shift from episodic fragmented care to whole person care that is integrated with other healthcare providers [10]. Under this initiative reduced fee allied health services (eg podiatry, dietetics, psychological counselling, etc) are available to patients for whom a care plan and team care arrangements have been written.

Funding of the DACC, care plans and team care arrangements are all intended to improve patient outcomes. To date, however, there is a paucity of published evidence that these initiatives have improved patient care, although some improvements in patients with diabetes have been noted [11, 12]. An audit of 230 patients by Zwar et al. in 2007 [12] found that patients were more likely to be involved in multidisciplinary care for diabetes after a care plan was written (47.8% before versus 63.5% after). Zwar also reported a statistically significant improvement in HbA<sub>1c</sub>, systolic and diastolic blood pressure, and total cholesterol in these patients. However, as admitted by the authors, some of the improvements were relatively small and may have been of limited clinical significance. Despite this, we have certainly noted the impact of these health reforms over recent years as an increasing number of patients referred to our Diabetes Centre at Royal Prince Alfred Hospital in Sydney already have a diabetes organ complication assessment performed in the primary care setting. As a result, diabetes specialist centres need to reassess their roles to avoid costly duplication of services.

Table 1. The diabetes annual cycle of care.

Activity	Frequency/description
Assess diabetes control by measuring HbA1c	At least once every cycle
Ensure that a comprehensive eye examination is carried out††	At least once every two years
Measure weight and height and calculate body mass index (BMI)†††	At least twice every cycle
Measure blood pressure	At least twice every cycle
Examine feet††††	At least twice every cycle
Measure total cholesterol, triglycerides and HDL cholesterol	At least once every cycle
Test for microalbuminuria	At least once every cycle
Provide self-care education	Patient education regarding diabetes management
Review diet	Reinforce information about appropriate dietary choices
Review levels of physical activity	Reinforce information about appropriate levels of physical activity
Check smoking status	Encourage cessation of smoking (if relevant)
Review of medication	Medication review

†† Not required if the patient is blind or does not have both eyes.

††† Initial visit: measure height and weight and calculate BMI as part of the initial assessment. Subsequent visits: measure weight.

†††† Not required if the patient does not have both feet.

Source: Department of Human Services (2011). Practice Incentives Program: Diabetes Incentive Guidelines. Australian Government [Online]. Available: [www.medicareaustralia.gov.au/provider/incentives/pip/files/2709-4-diabetes-incentive-guidelines.rtf](http://www.medicareaustralia.gov.au/provider/incentives/pip/files/2709-4-diabetes-incentive-guidelines.rtf). [Accessed 12 January 2012].

In rural and remote Australia, primary care is often delivered through a system of health centres or clinics. Appropriately supported, these centres can provide routine diabetes management to the majority of people with diabetes within a local area, but require the ability to refer more complicated cases such as patients with newly diagnosed type 1 diabetes, or those with an active foot problem. The success of this approach was evidenced by a randomised cluster trial conducted in the Torres Strait, located between Australia and Papua New Guinea and inhabited by Indigenous Australians scattered over a wide area in small communities [14]. The study aimed to implement a sustainable system of care by providing basic training in clinical diabetes care to local Indigenous health workers employed in randomly selected health centres. The study team also assisted local staff

within these centres to establish diabetes registers and recall systems, and to develop diabetes care plans. Diabetes specialist outreach services were established concurrently for all health centres within the Torres Strait, and were designed to facilitate referral and provide care to more complicated patients. It also provided a secondary benefit for local staff to learn up-to-date diabetes management principles through working alongside the diabetes specialist during visits to the health centres. It was found that diabetes care processes improved in all health centres and the intervention sites showed greatest progress, with significant improvements in weight, blood pressure and glycaemic control parameters. Moreover, people with diabetes managed by the intervention clinics were 40% less likely to be admitted to hospital for a diabetes-related condition. Over time, local service providers have assumed increasing responsibility for routine diabetes care, thus ensuring sustainability of the service. Similarly, the Royal Prince Alfred Hospital Diabetes Centre has recently established a collaborative partnership with the Maari Ma Health Aboriginal Cooperation in Far Western NSW to assist them in providing specialised team-based care within their local community to people with diabetes.

### Traditional specialist care

#### *The hospital clinic*

In many urban areas around the world the majority of diabetes care is provided by a hospital, often characterised by a large inpatient unit supported by outpatient clinics. While some hospitals have diabetes-specific outpatient services, many people with diabetes are seen within the context of a large general medical clinic. Although specialists are often notionally in charge in this setting and the clinic is considered a 'specialised diabetes clinic', much of the time the duty of actually seeing people with diabetes is delegated to junior and rotating medical staff. Typically, nursing staff undertake process tasks such as preparing medical records, measuring the patient's height and weight and testing blood glucose levels. Many of these clinics are not prepared to cope with caring for people with a chronic disease, and are entrenched with unsuitable systems, often as a result of hospital regulations. For example, providing patients only with a few week's supply of medications means that clinics are overwhelmed by people attending to have a prescription written. This ultimately leads to shorter consultation times to cope with increased throughput of clinic attendees. As a consequence, care tends not to be patient-focused nor up-to-date, resulting in poor clinical outcomes.

Whilst these clinics in all likelihood will remain the backbone of specialist diabetes treatment for many countries, simple policy changes can improve diabetes care without imposing too much of a cost penalty. An example that can improve continuity of care is to link the rotating junior doctors' clinic with that of a more permanent senior doctor. In that way, patients will see someone familiar and if, for example, they have a specific difficult diabetic problem, the junior rotating doctor can be supervised in its management by the senior consultant. A further step that can improve diabetes care within the traditional system is to allocate nurses to the specialised position of diabetes educator or diabetes specialist nurse so they can complement and enhance what the doctors provide. For

this to be successful, it is important their roles are separate from that of the clinic nurse, and not just be seen as 'an additional pair of hands' to help with routine clinic or ward duties. Rather, they should be employed to provide education regarding self-management principles to either in- or outpatients, or a combination of both. In some cases their role may be fully dedicated to educating patients; however, with further training, the specialist nurse can well provide many areas of diabetes management. These staff can be trained to make clinical decisions about the management of diabetes, including management of glycaemic control, hypertension and dyslipidaemia; provide self-management education; and coordinate team services to meet the patient's health needs. Utilising nursing staff to provide many of the routine clinical services is less expensive than using medical staff, and takes the load from the medical staff so they can concentrate on more complex cases. Indeed, a meta-analysis comparing clinical outcomes from protocol-driven, nurse-led clinics with traditional physician-led clinics has shown care is no worse in a nurse or allied health driven system [15]. However, the success of this approach may lie in the careful selection and training of staff. Recognising the advanced skills of the diabetes specialist nurse, both through a career structure and improved financial incentives, is important to ensure continuity of staff.

Traditional diabetes clinics have often been considered to be antiquated. However, they can be made to work and realistically will likely remain the backbone of specialist diabetes care worldwide. However, for them to be effective, there are organisational and system issues to which the senior doctor in the clinic must pay attention, rather than limiting his/her role to a medical one.

#### *Medical specialist diabetes care provided in private practice*

In Australia a system of private specialist diabetes care exists to offer choice and to reduce some of the burden on publicly funded services. Subsidy or insurance of private health services is available. However, patients may be faced with a co-payment if their diabetes practitioner charges above the subsidised fee. These costs are a major barrier to many patients receiving the level and type of care they require, particularly when multiple specialists are involved. In the majority of cases private services are run by solo practitioners and access to support services provided by allied health professionals can be difficult and also costly. In many ways similar to their primary care counterparts, the private specialists face the same difficulty of providing multidisciplinary care required by some diabetic patients.

#### Specialist team-based integrated care

Specialist diabetes care can also be provided in a more integrated and multidisciplinary manner, addressing not only glucose control but also complications and comorbidities of diabetes, involving doctors as well as allied health professionals. Such integrated care is often conveniently provided at a 'diabetes centre', an entity which is distinct from the diabetes clinic. To appreciate the full potential of such a diabetes centre, it is worthwhile noting its heterogeneous nature. Although many facilities may function under the same generic name, they can differ quite considerably if one scratches below the surface. Initially, the role of such diabetes centres in Australia was to provide diabetes education. For many

this remains their primary function and hence 'diabetes education centre' is perhaps a more appropriate name. These education centres have generally been developed to support large diabetes clinics and are usually located separately from where medical consultations are made. In this model, clinical care is provided by physicians and patient self-management education and support is conducted by other diabetes team members. It is a system of care repeated in many countries around the world, and can be highly successful in meeting the clinical, educational and psychological needs of the person with diabetes and their family.

Toward the other end of the spectrum, a diabetes centre can incorporate clinical activities. In this manner the duties of doctors and other health professionals become more integrated, co-located and co-dependent. This is the model we have relied on extensively at Royal Prince Alfred Hospital in Sydney for the last three decades. Initially, a prime motive of such initiatives was initiation of insulin therapy and stabilisation of diabetes without the need for hospitalisation; in this system duties are largely provided by diabetes nurses but with the backing of doctors. Over the years more specialised clinical services, such as screening and management of diabetes complications, diabetic foot disease, diabetes in pregnancy, neuropathic pain and use of insulin pump treatment have been progressively added to the service provided by our Diabetes Centre. In many of these activities, the nursing and allied health professionals play such a specialised role that the doctor's function can become a supporting, as well as a supervisory, one. We have found nursing and allied health professionals to be better in these roles than rotating doctors, if for nothing else because patients appreciate more continuity. Conceptually, there is no reason why one single good doctor cannot provide all these services to his/her patients and we have indeed witnessed some who were able to do so, but in our experience it is logistically difficult. In many ways, in our system there are many specialists that make up the team but not all of them are doctors. This concept of, for example, a nurse being more 'specialised' in a clinical area of diabetes management than a doctor is sometime difficult for a traditionalist to understand or with which to feel comfortable.

Obviously to provide such specialised services, diabetes centre staff members require ongoing training which is at one time more specialised and yet also broader in scope, identical philosophically to that required by their medical counterparts undergoing specialist training.

By its very 'Rolls Royce' nature, this type of integrated specialist diabetes care is more resource hungry than diabetes in primary care. By creating such 'super centres' there will be constant ambivalence between balancing 'state of the art' services with providing day-to-day diabetes care to a large number of people. Due to resource constraints, this will always be a problem and it is even worse for a unit which is dependent on throughput for its funding. This dilemma will necessitate a rational debate of who needs specialist care.

#### Linking diabetes care between community care and specialist care

Many cases of diabetes management can be capably provided at the community level. It therefore makes sense for the majority of patients without complications or comorbidities of diabetes to be managed within the community. On the other hand, patients with more

complicated disease warrant referral to the specialists, depending on their individual need. Whilst conceptually sound and obvious, a seamless delivery for such a division of labour is not easy to achieve.

Medicare Locals are a key part of the Labor government's national health reform measures in Australia. They will be primary healthcare organisations working to make it easier for patients to access the services they need by better linking local general practitioners, nursing and other health professionals, hospitals and aged care, and maintaining up-to-date local service directories.

Medicare Locals are designed to:

- Improve the patient journey through developing integrated and coordinated services
- Provide support to clinicians and service providers to improve patient care
- Identify the health needs of local areas and develop locally focused and responsive services
- Successfully implement primary healthcare initiatives and programs
- Be efficient and accountable with strong governance and effective management systems.

Over time, Medicare Locals will be provided with more flexible funding to target services to meet their local community's specific needs. This could mean, for example, supporting local diabetes care or anti-smoking activities. Exactly how this will be done and what an integrated system of care between Medicare Locals and other health service providers will look like is yet to be determined. Nevertheless it is clear that hospital-based diabetes services will need to be more community focused in their outlook. In response to healthcare reform they will need to develop and implement communication systems that enhance discussion between primary care and the hospital and offer complementary services to ensure that the individualised needs of the person with diabetes, their family and their healthcare providers are met, services are not duplicated and the gaps are filled.

How could we improve synergism between primary and specialist care?

A possible solution is the system we have used at the Diabetes Centre of Royal Prince Alfred Hospital in Sydney. We rely on a Shared Care System to partition responsibilities between primary care doctors and ourselves and in 1986 we established a Complication Assessment Service [16] to underpin such a sharing arrangement. A recent study comparing outcomes of patients cared for under our model with those of patients attending traditional specialist services found that the adherence to management guidelines in our shared care model was superior to traditional specialist care. Moreover, a significantly higher proportion of patients managed under the shared care model achieved an HbA1c within 1% of normal range, and/or a blood pressure at target [17]. This would suggest that the majority of patients with the most common form of diabetes known as type 2 diabetes, do not need to see a specialist service in the traditional three to four monthly cycle to receive a similar quality of care.

Apart from achieving good endpoints of glycaemic control and complication detection, this system is more cost-effective because specialists services to ophthalmologist, nephrologist, etc are generally only sought when recommended by a diabetes specialist.

It is worth noting a certain approaches can make such a system maximally effective. The specialist multidisciplinary team which examined the patients and reported to the primary care doctor at the Diabetes Centre must have good clinical skills and judgement in the various diabetes complications. This will allow the diabetes specialist to provide more precise recommendations about the timing of referrals to other specialists or indeed to provide appropriate treatment of some complications. For example, ability of the diabetes specialist to recognise not only retinopathy in a particular patient but also be confident that it is not vision threatening for the foreseeable future, may appropriately delay the referral until later. Another example is the ability to identify the occasional patient with non diabetes-related neuropathic pain may save many other patients with typical diabetes neuropathic pain from unnecessary referral to neurologists.

There are many other approaches to facilitate complementary primary and specialist diabetes care. For example, we have used telemedicine to make advice of our foot clinic staff more readily available to communities in rural and remote Australia [18].

What aspects of diabetes need specialist care?

One concern of diabetes healthcare professionals is that the current focus on funding diabetes care at the general practice level may be to the detriment of specialist care, particularly specialist and tertiary services. As discussed earlier, there are patients who, due to the nature or severity of their disease, need specialist care. People with type 1 diabetes are a case in point. Both national and international guidelines emphasise the critical importance of regular access to a specialist multidisciplinary team for people affected by this type of diabetes, particularly so for children and adolescents. Australia has the sixth highest rate of type 1 diabetes in children and adolescents in the world. Approximately 1000 children aged 14 years and younger are diagnosed in Australia each year and this continues to increase. There is evidence to suggest that this rise is already straining hospital resources and that increased caseloads on diabetes teams is placing young people in jeopardy of not receiving the recommended level of diabetes care. For example, a recent three-year longitudinal study by Hatherly et al. [19] found that the care provided to a sample of young people with type 1 diabetes living in the Australian Capital Territory and NSW fell significantly below recommended levels. Previous Australian research had identified that less than 25% of young people with type 1 diabetes living in the same area had achieved an HbA1c less than the recommended 7.5% [20, 21]. Results from the Hatherly study suggest that the number of young people achieving the target HbA1c had fallen even lower.

The study also showed that the attendance to healthcare professionals fell below what is recommended and declined over the three-year study period. Interestingly, where declines were seen, services were mainly provided in the public hospital setting. The authors suggested a number of possible contributing factors for this, including under-resourcing of

these services. Their hypothesis was supported by the qualitative phase of Hatherly's study, where participants reported difficulties in making appointments especially for nursing and allied health services due to insufficient staff.

Issues were also raised in relation to accessing specialist care for those people living in rural areas. In Australia, as with most countries, specialist diabetes services are predominantly located within major urban centres. To address the issue of access, outreach services have been developed to help complement care provided by rural and regional healthcare providers. Under this 'shared care' model, endocrinologists from urban centres travel to regional sites around Australia. People are only seen by these specialists once or twice a year, if lucky, and all other diabetes care is provided by local medical professionals such as general practitioners, paediatricians or general physicians. Despite the widespread use of this shared-care approach to service delivery, there is a dearth of systematic evidence on its impact on diabetes outcomes. A recent study in young people found no differences with respect to the short-term impact of specialist versus shared care on glycaemic control [22]. However data are lacking on the development of diabetes complications and non-glycaemic risk factors. Despite this, the results of this study suggest that even minimal involvement of a specialist may play a role in improving health outcomes, an important finding given Australia's widely dispersed population.

To rationalise diabetes care, there are many areas which will need decisions about who is to do what and at which level. There is no single correct answer to this as the local situation will influence the decision, but some pertinent examples and relevant points can be raised.

For example, emotion would often dictate that the management of gestational diabetes should be at the specialist level. However, the large numbers of woman with this diagnosis now overwhelm diabetes pregnancy clinics. This places increased pressure on staff and means that women with pre-existing type 1 and type 2 diabetes may not get the level of care they need. The morbidity of gestational diabetes is relatively low in comparison with the type 1 and type 2 diabetes. A better use of resources would be to provide the care for woman with gestational diabetes in the community combined with appropriate protocols and guidelines to ensure referral to specialist services as required.

Treatment of diabetic foot disease is another example of how care between the community and the specialist services needs to be carefully partitioned, depending on the person's degree of risk. Guidelines often suggest that all people with diabetes should have their feet assessed and managed by podiatrists. This will place great stress on availability of podiatrists when their service is better directed to high-risk individuals, notably those with active foot lesions. It is better to assign the level of care depending on whether a patient has risk factors of foot ulceration such as impaired sensation or peripheral circulation and whether there are active foot lesions. This would allow patients with foot ulceration, severe foot infection and Charcot arthropathy to receive specialised attention that they need.

The care of people with type 1 diabetes is challenging for anyone. They need more multidisciplinary care and support such as dietary counselling of carbohydrate counting or intensive teaching for use of insulin infusion pumps. These skills are not readily available

in the community. The lower prevalence of type 1 diabetes also means that most primary care doctors do not have enough exposure to this group of patients to gain experience. Therefore this group of individuals as adults are probably better managed at the specialist level and when in child or adolescent years, regularly by a specialist paediatrician skilled in diabetes care – usually a paediatric endocrinologist.

There is also the broader (and economically most important) question of who should look after the glycaemic control for the majority of people with type 2 diabetes. To date, there is a great deal of uncertainty about the optimal line of division between primary care and specialist care, both from medical and economical points of view.

The future: the way forward

The challenge ahead is to organise high-quality diabetes care that is accessible and affordable to an increasing number of people with diabetes. We need to document what we do and report outcomes so that effective models, specific to diabetes care in Australia, can be implemented widely. The evidence that team-based care provides the best outcomes needs to be embraced broadly, underpinned by expanding the roles of all health disciplines. If diabetes care is to achieve the healthcare benefits that the diabetes research described in this book has made possible, it must be tackled at both the community and specialist levels. In this regard, the complementarity between primary and specialist care plays a pivotal role, and a balanced approach is required by healthcare planners.

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The multifaceted approach to prevent the spread of HIV and care for those who are affected is the focus of this article. Government commitment at the highest levels and willingness to alter policies and programmes are highlighted as major contributors to the positive experience in Thailand. The evolution of the policy is described in three phases: confrontation with the new epidemic; creation of unified alliances; and alleviation of the consequences of HIV/AIDS. As understanding of the social, economic and cultural roots of the epidemic grew, each sector of society came to play a role in the r