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Type 2 diabetes and overcoming clinical inertia

About the Reviewer



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This article discusses clinical inertia in the treatment of patients with type 2 diabetes mellitus (T2DM) and provides practical advice on overcoming barriers to achieve better glycaemic control and outcomes. This review is supported by an educational grant from Sanofi.

Introduction

Obesogenic environments, a sedentary lifestyle, energy dense diets, and an ageing population have contributed to the global prevalence of T2DM dramatically increasing over recent decades.¹ In New Zealand (NZ), the prevalence of T2DM in 2016/2017 was estimated to be 6.2% — an estimated 197,000 individuals.² The prevalence was higher for Maori (8.0%), Pacific ethnicities (11.0%), individuals aged over 55 years (55-64 years [10.2%], 65-74 [12.4%], and >75 years [13.3%]).² The rising tide of T2DM in children, adolescents and young adults is a concern, as this early presentation is associated with an aggressive phenotype, significantly higher rates of complications, higher morbidity and mortality than T2DM diagnosed at any age group or T2DM diagnosed in older age groups.³⁻⁶ Special efforts are required to target this often difficult to reach population.

1. The prevalence and incidence of T2DM is rising
2. T2DM in adolescents and young adults is increasing and has significantly worse outcomes
3. There is a growing cost associated with management of patients with T2DM
4. It is important to have effective, evidence-based strategies to help patients with T2DM improve their self-care and to reduce diabetes-related complications

Treatment of type 2 diabetes mellitus Treatment guidelines

Achieving good glycaemic control has a clear benefit on microvascular outcomes and if started early enough, on long-term macrovascular outcomes.⁷⁻¹¹ In NZ, a glycated haemoglobin (HbA1c) target of 50–55 mmol/mol (6.7–7.2%), or as individually agreed, is recommended.⁷ HbA1c targets should consider diabetes duration, the presence of co-morbidities, life expectancy, social circumstances, and the personal beliefs and priorities of the patient.⁷ Any HbA1c target should take into account the benefits and harms of attempting to reach this target, in particular hypoglycaemia and weight gain.⁷ The glycaemic targets should be negotiated with individual patients using a shared decision making approach and documented in a patient-held care-plan.⁷

In people with long-standing diabetes and multiple co-morbidities such as renal impairment, neuropathy, and ischaemic heart disease, intensive blood glucose control can be harmful and can increase mortality¹¹ or may present with unusual symptoms (e.g. unrecognized hypoglycaemia causing acute confusion in an elderly person). HbA1c targets need to be reviewed and adjusted when circumstances change (e.g. pregnancy, new or worsening co-morbidities, and admission to a rest-home).^{7, 12, 13}

- Results from the 10-year follow-up to the UK Prospective Diabetes Study indicated that the benefits of earlier intensive glycaemic control in reducing diabetic complications persisted in the long-term.¹¹
- In the international, multicentre ADVANCE study in 11,140 patients with T2DM, therapeutic intensification with addition of an oral glucose-lowering agent doubled the chance of achieving effective glycaemic control, while intensification with insulin increased the odds 2.5-fold.¹⁴

To enable early diagnosis, timely commencement, and intensification of treatment, primary care is generally considered 'the medical home' for people with diabetes.^{15, 16} Improving glycaemic control is only one of several requirements, and targets for blood pressure (<130/80 mm Hg) and lipid levels (triglycerides <1.7 mmol/L; total cholesterol <4.0 mmol/L) have also been set.^{7, 15, 17, 18} but this review will focus on those for HbA1c.⁷

In order to achieve HbA1c targets, guidelines in NZ recommend initially utilising lifestyle interventions (e.g. exercise, dietary changes), followed by pharmacological therapies.⁷

Several antidiabetic agents are registered and funded in NZ (Table 1).⁷ The local NZ guidelines recommend metformin as a first-line antidiabetic agent, followed by the addition of a sulfonylurea if required, and finally insulin.⁷

Both NZ and US/European guidelines recommend that treatment should be escalated every 3 months if patients are not achieving their target HbA1c.^{7, 17, 19} However, many patients, fail to achieve glycaemic control after the initial diagnosis of T2DM and do not receive timely treatment intensification when it is needed.²⁰⁻²⁴ This is an issue for NZ patients with T2DM, particular those of Pacific Island and Maori ethnicity.^{2, 25-28}

A 2003 study conducted in South and West Auckland in found that the percentage of patients with T2DM (n=5917) who had an HbA1c >64 mmol/mol (>8%) was 50%, 56% and 23% for Maori, Pacific and European patients, respectively.²⁷



Table 1. Registered and funded antidiabetic medication (May 2018)

Registered with Medsafe	Funded by Pharmac
<ul style="list-style-type: none"> • Metformin • Sulphonylureas <ul style="list-style-type: none"> - Gliclazide - Glipizide - Glibenclamide • Thiazolidinediones <ul style="list-style-type: none"> - Pioglitazone • Alpha glucosidase inhibitor <ul style="list-style-type: none"> - Acarbose • DPP4 inhibitors <ul style="list-style-type: none"> - Sitagliptin (+metformin) - Saxagliptin (+metformin) - Vildagliptin - Alogliptin - Linagliptin • SGLT2 inhibitors <ul style="list-style-type: none"> - Dapagliflozin (+metformin) - Canagliflozin - Empagliflozin • GLP1 analogues/agonists <ul style="list-style-type: none"> - Exenatide (immediate release and modified release) - Lixisenatide - Liraglutide • Insulins <ul style="list-style-type: none"> - Insulin isophane - Insulin neutral with insulin isophane - Insulin glargine (100 iu/mL) - Insulin lispro with insulin lispro protamine - Insulin aspart with insulin aspart protamine - Insulin aspart - Insulin lispro - Insulin glulisine - Insulin neutral - Insulin glargine (300 iu/mL) - Insulin detemir 	<ul style="list-style-type: none"> • Metformin • Sulphonylureas <ul style="list-style-type: none"> - Gliclazide - Glipizide - Glibenclamide • Thiazolidinediones <ul style="list-style-type: none"> - Pioglitazone • Alpha glucosidase inhibitor <ul style="list-style-type: none"> - Acarbose • Insulins <ul style="list-style-type: none"> - Insulin isophane - Insulin neutral with insulin isophane - Insulin glargine (100 iu/mL) - Insulin lispro with insulin lispro protamine - Insulin aspart with insulin aspart protamine - Insulin aspart - Insulin lispro - Insulin glulisine - Insulin neutral

DPP4 = dipeptidyl peptidase-4; GLP1 = glucagon-like peptide-1; SGLT2 = Sodium glucose co-transporter 2.

Clinical inertia

The failure to initiate or intensify therapy when indicated or a failure to act despite recognition of the problem has become known as 'clinical inertia'.²⁹⁻³¹

- For those recently diagnosed with T2DM, clinical inertia can be defined as a failure to start treatment at the most appropriate time (usually at diagnosis).
- For those already receiving treatment for T2DM, clinical inertia occurs when treatment is not escalated, whether by increased doses, additional tablets or initiation of insulin, at the most appropriate time (usually when blood glucose levels are above the target set by physician and patient).

Resistance to initiating or intensification therapy has been reported at each step.^{7, 19} Clinical inertia exists when adding or intensifying oral anti-hyperglycaemic agents,³² or when initiating or intensifying insulin therapy.^{22, 33} Clinical inertia appears to be particularly problematic when insulin initiation is being considered,^{34, 35} with studies indicating that few patients intensify their insulin regimen appropriately.^{36, 37}

Evidence of clinical inertia in clinical studies

- In a large retrospective study of over 80,000 T2DM patients from the UK,³⁴ the average time to intensify from one to two oral anti-hyperglycaemic agents was about 3 years in those with an HbA1c >53 mmol/mol (7%).³⁴
- A NZ study of 2441 patients enrolled in primary care in South and West Auckland (2003-2004) who were on maximal oral therapy (metformin and/or sulphonylurea) found that 46% of these patients had an HbA1c >64 mmol/mol (> 8%).²⁸ In a subsequent audit a mean 20.6 months later, 77% of these patients had not been started on insulin.

Impact of clinical inertia on the patient

A delay in treatment intensification exposes patients to elevations in HbA1c levels over the long-term (Figure 1), leads to avoidable complications, and impacts on the patient's quality of life, morbidity and mortality.^{22, 32}

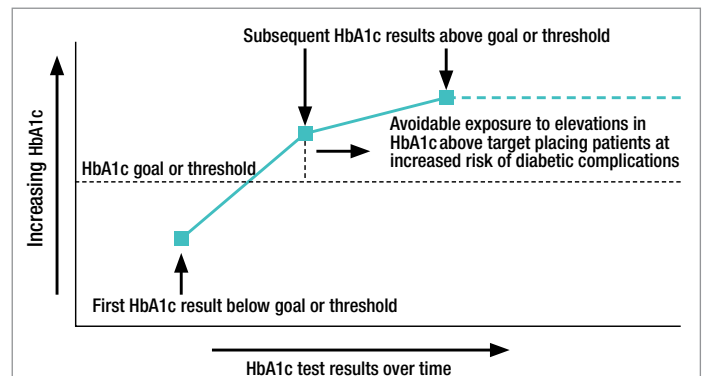


Figure 1. Exposure of patients to elevations in HbA1c over the long term. Adapted from Reach G, et al. *Diabetes Metab.* 2017;43(6):501-511.

A large retrospective study used data from the United Kingdom Clinical Practice Research Datalink and including a cohort of 105,477 patients diagnosed with T2DM from 1990 with follow-up data available until 2012.²¹ The researchers found that in patients with HbA1c ≥ 53 mmol/mol ($\geq 7\%$), compared with patients with HbA1c <53 mmol/mol (<7%), a 1-year delay in treatment intensification was associated with an increased risk of myocardial infarction, stroke, heart failure and composite cardiovascular events (Figure 2).²¹

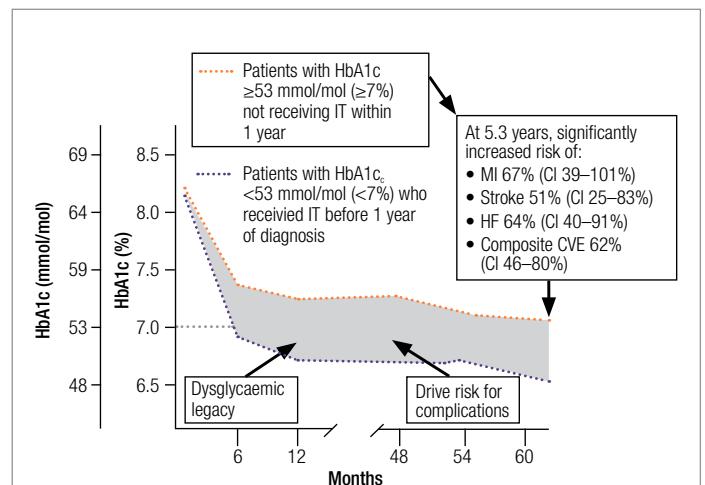


Figure 2. Consequences of delayed intensive therapy (IT) in patients with type 2 diabetes mellitus. The risk of cardiovascular events is shown for patients with HbA1c consistently above 53 mmol/mol in the 2 years following diagnosis for whom treatment intensification is delayed by at least 1 year versus that of patients with HbA1c consistently below 53 mmol/mol in the same period.

CI = confidence interval; CVE = cardiovascular event; HF = heart failure; MI = myocardial infarction. Adapted from Khunti K, Millar-Jones D. *Prim Care Diabetes.* 2017;11(1):3-12; based on data from Paul et al. *Cardiovasc Diabetol.* 2015;14:100.

Impact of clinical inertia on the healthcare system

In NZ, chronic, long-term conditions such as diabetes are contributing to rising healthcare costs,^{15,38-40} with T2DM patients increasingly requiring access to secondary and tertiary health services, especially for the treatment of diabetes-related complications.

The long-term effects of diabetes will also place a burden on society as a whole as an increasing number of people may not be able to continue working as they did prior to the onset of their diabetes. The cost of this loss of productivity has been estimated as being more than direct healthcare costs.¹⁵



- A study in the US involving a simulation model using data from the US 2009-2010 National Health and Nutritional Examination Survey found that 53% of the life-time costs of dealing with T2DM was the result of the treatment of diabetic complications.⁴¹ The researchers concluded that effective interventions that prevent or delay T2DM and diabetic complications might result in substantial long-term savings in healthcare costs.⁴¹
- A report from the NZ Burden of Diseases, Injuries and Risk Factors Study indicated that, in 2013, diabetes accounted for 2.9% of all health loss (% total disability-adjusted life years) in men and 2.6% of health loss in females.⁴²
- There is a lack of recent information relating to the cost of diabetes to the NZ tax payer. However, Diabetes New Zealand commissioned PricewaterhouseCoopers (2001) to develop an economic model to predict the costs of diabetes.^{43,44} This model estimated direct costs for T2DM of \$247 million in 2001, \$540 million in 2007 and \$600 million in 2008. If services were maintained at the 2001/02 level, the estimated annual by the year 2021 would be more than a billion dollars.

The NZ Ministry of Health (MOH)'s "Living well with diabetes" strategy objectives are to:¹⁵

- reduce the personal burden of disease for people with diabetes by providing integrated services along with the tools and support people need to manage their own health;
- provide consistent and sustainable services across the country that improve health outcomes and equity for all New Zealanders, including through better use of health information;
- reduce the cost of diabetes on the public health system, and the broader societal impact in the longer term.

Understanding barriers to treatment and reasons for clinical inertia

The reasons for the existence of clinical inertia are multifactorial, with physician-, patient- and healthcare system-related factors all contributing (Table 2).^{17, 22, 33, 45, 46}

Table 2. Physician-, patient- and healthcare system-related factors contributing to clinical inertia^{17, 22, 33, 45, 46}

Patient-related factors	Physician/provider-related factors	Healthcare related factors
Denial of having the disease	Failure to set clear goals	No practice based diabetes registers
Denial that the disease is serious	Failure to initiate treatment	Coding of patients with diabetes insufficient or incorrect
Low health literacy	Failure to titrate treatment to achieve goals	No planned proactive care
High cost of medication	Failure to identify and manage comorbidities (e.g. depression)	No active outreach to patients
Too many medications	Patient 'highjacks' the clinical encounter	Insufficient decision support systems
Medication side-effects (e.g. weight gain)	Insufficient time	Lack of team approach to care delivery (e.g. no specialist nurses)
Fear of hypoglycaemia	Reactive rather than proactive care	Poor communication between physician and other providers
Fear of injections (insulin)	Underestimation of patient's need	People-centred health care not integrated in day-to-day business
Poor communication between physician and patient	Poor communication between physician and patient	Limited data sharing arrangements
Lack of trust in physician	Using insulin therapy as a threat to get patients to comply with oral therapy	Non-sustained care improvement initiatives cause disengagement
Depression or substance abuse	Concern about side effects of intensification (weight gain, hypoglycaemia)	Funding arrangements do not encourage best clinical care
Fear medication will impact lifestyle	Unaware that clinical inertia is an issue	Lack of access to best evidence based treatments
Absence of symptoms	Reluctance to discuss insulin until absolutely required	No mentorship and educational support structures in place
Nonadherence to medication	Lack of time or resource to stay up-to-date with new developments	Lack of modern information technology (e.g. patient portals)
Psychological resistance to insulin initiation	Conflicting demands on clinical staff	Social determinants of health (no integration with other social services)
Seeing insulin therapy as a sign of personal failure		
Seeing insulin initiation as a sign that their disease has become worse and more serious		

To understand patient-related barriers, it is important to refer to the health-belief model.^{47, 48} Health-related decisions are generally made by weighing up beliefs for and against a treatment. These beliefs are based on various personal and community experiences, the cultural context and individual resources. It is important to emphasise that patients act rationally and in their best interest, based on their belief system, even if these decisions may appear irrational to the healthcare provider.

Understanding this gulf between what healthcare providers perceive as important, and what the patient sees as important is vital to overcome treatment rejections.^{47, 48} In this context, it is important to appreciate that patients balance the perceived necessity for a treatment against concerns about risks and possible side effects. Only if the necessities outweigh the concerns will the clinical recommendations be accepted and integrated in a person's life.

To help with this it is important to provide sufficient and easy understandable information about the condition and the proposed treatment, combined with a high degree of empathy and understanding of the individual. This activity is time and resource intensive, and systems need to support practitioners accordingly, as too often multiple system constraints prevent this vital step in patient engagement and relationship building.

Focus on reasons for clinical inertia related to insulin initiation

Since clinical inertia is most pronounced when intensification of therapy with insulin is required,³³ this subsection will focus on the complex reasons for the inertia associated with initiating insulin therapy — often termed psychological resistance to insulin.^{49, 50}

Patients may have a fear of injections (e.g. insulin injection may be painful, leave bruises and the needles might be large) and the fear of the restrictions in lifestyle resulting from having to inject themselves, or they may be concerned about the need to titrate or adjust insulin doses.^{49, 51-53} Past experiences of family members and social shame can be contributing to the rejection of insulin. The side effects of insulin therapy, such as hypoglycaemia and weight gain, may also concern patients.⁴⁹ For many patients with T2DM, the initiation of insulin treatment is viewed as a sign that their disease has progressed, and that they are more likely to experience diabetic complications.⁵² For Māori and Pacific people with diabetes, particularly older people, a common misconception is that starting insulin therapy means that they will die soon.¹⁷ The start of insulin therapy may also be perceived by some patients that they have failed and that they have not taken sufficient steps to control their disease.^{52, 54} This may occur especially if their doctor has threatened to prescribe insulin if they do not lose weight or make behavioural changes.⁵²

Different reasons may exist for doctors delaying insulin therapy including their concerns about the difficulties associated with discussing and educating patients about insulin — why it is needed, the techniques required to inject and manage insulin doses and glucose levels.⁵⁵ The time required for educating patients about insulin is also a concern of many primary care providers.⁵⁵ Doctors may avoid discussing insulin initiation out of fear of alienating their patient or that the patient may resist insulin initiation.⁵² The potential risk of hypoglycaemia in patients treated with insulin is also of concern, with physicians citing it as a barrier in both initiating and intensifying insulin therapy.⁵⁶ Patients with multiple comorbidities pose a major challenge in terms of balancing the benefit of lowering blood glucose against the risk of adverse side effects.³³

System-related barriers include time and resource constraints, lack of incentives, organisation, support structures and appropriate system level measures to enable the provision of high quality, patient-centred healthcare.

Overcoming clinical inertia

Given the broad range of reasons behind clinical inertia, a multifaceted approach to overcoming it is needed.⁵⁷ Figure 3 illustrates an example of a multifaceted approach to initiating insulin therapy in the face numerous barriers associated with its use.³⁵

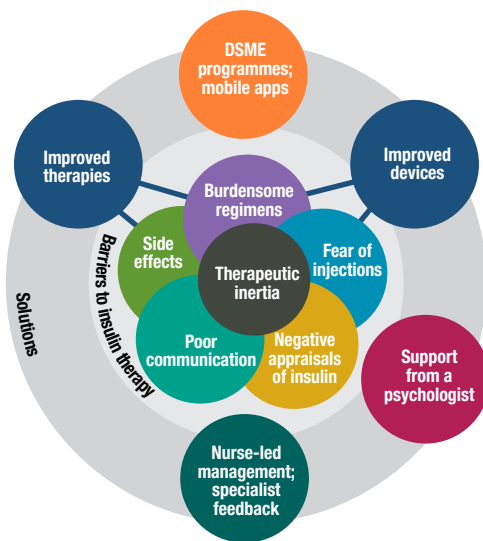


Figure 3. Barriers and solutions to clinical inertia to insulin therapy. Floating spheres can be considered as a general solution to all named barriers.

DSME = diabetes self-management education.

Adapted from Russell-Jones D, et al. *Diabetes Obes Metab.* 2018;20(3):488-496.

Understanding concerns and emphasising importance of insulin

It is important that patients are aware that T2DM is a progressive disease and that they are likely to require insulin as future treatment.⁷ This fact should be communicated well in advance of the patient requiring insulin.⁷ It is important that healthcare workers present the benefits of insulin to patients and emphasise that insulin can improve health and make them feel better.⁷ It is generally good to use analogies that relate to every day experiences (e.g. lock and key analogy). During this process, it is important to acknowledge and address patient's fears and concerns before proceeding, and to show empathy and understanding in order to reach a joint decision that can be enacted and flowed through.

People-centred health service provision and shared decision-making

One of the aims of the MOH's plan for people at high risk of or living with diabetes (2015–2020) is that people-centred services, including for family and whānau are provided when appropriate.¹⁵ This is an essential start to ensuring clinical inertia is overcome. A person-centred approach can enable:

1. shared decision-making;
2. shared care planning with goal setting;
3. coordination of multidisciplinary teams.

Any HbA1c target could reflect an agreement between patient and doctor.^{19, 58} HbA1c targets and glucose-lowering therapies should therefore be individualised, taking into consideration where possible the patient's preferences, needs, cultural background and values. Patients and their doctors can formally agree upon a target for HbA1c that is safe, realistic and as close to the gold-standard of 50-55 mmol/mol as is achievable. Both patients and their healthcare professional(s) should consistently work toward this target within an agreed time frame.⁵⁸ The progress can be affirmed by having HbA1c results visible during follow-up appointments.⁵⁸ Shared decision-making has been shown to improve adherence to healthcare recommendations and glycaemic control.⁵⁹

Good communication with patients is essential to overcoming patient's fears and concerns relating to various aspects of T2DM treatment,²² especially when a disconnect exists between healthcare professionals' and patients' perceptions relating to treatment and and/or the nature of T2DM.⁶⁰ Communication may involve not only the patient but also their family and friends and wider community groups and should be culturally appropriate.^{15, 61}

- For example, a study of 386 healthcare professionals and 318 patients with T2DM highlighted differences of perceptions around insulin titration.⁶⁰ Healthcare professionals regarded fear of hypoglycaemia, failure to titrate in the absence of symptoms, and low patient motivation as important titration barriers. In contrast, patients identified weight gain, the perception that titration meant worsening disease, frustration over the time to reach HbA1c goals and fear of hypoglycaemia as major barriers to insulin titration.

It is important to individualise treatment choices and to focus on the patient's own short-term and long-term life-goals when recommending diabetes-related treatment decisions, and to use concrete and achievable actions plans embedded in daily routines (e.g. phone/text/email reminders, or electronic or paper diaries).¹⁵

Patient education and structured self-management

People with diabetes should receive high-quality, structured self-management education that is tailored to their individual and cultural needs.^{15, 18, 61, 62} Patients and their families/whānau should be informed of, and provided with, support services and resources that are appropriate and locally available. Patients can be directed to further self-help, evidence-based websites such as the Diabetes New Zealand website.

Important topics for patient education include the side effects of intensive therapy (e.g. weight gain, hypoglycaemia), managing injections and insulin dose adjustments.²² In particular, it is important that patients are helped to understand their insulin regimen and are encouraged to take an active role during the initiation of insulin.^{7, 18}

- A recent study among 7597 patients with T2DM treated with insulin from eight European studies found that education was among a number of factors that resulted in greater treatment satisfaction.⁶³ The researchers noted that diabetes education is more than solely the transmission of knowledge; it is also about providing patients with the ability and skills that are necessary for proper diabetes management.
- A group-based diabetes self-management education designed specifically for the NZ population was effective at improving aspects of diabetes care at six months.⁶²

Education and mentorship models within the healthcare system

Understanding and addressing healthcare provider's reluctance to intensify treatment and to initiate insulin, as well as identifying opportunities within healthcare systems, are vital if clinicians' inertia is to be overcome. Primary-care providers are usually limited in the time they can spend with patients.⁶⁴ However, time is needed to educate patients about their diabetes treatment and its effect on glycaemic control.¹⁵

A chronic care model with a specialist nurse at the centre of diabetes care provision has proven to be successful in several countries,⁶⁵⁻⁶⁹ and is a preferred model in NZ.⁷⁰⁻⁷⁴ Nurses are the largest health workforce and play an important role in diabetes care and education.⁷³ The National Diabetes Nursing Knowledge and Skills Framework 2018 articulates the knowledge and skill required for nurses at varying levels of practice depending on the complexity of the health needs of their population group.⁷³ In particular, it provides a platform for nurses to develop and then evidence their competence in diabetes nursing practice. The diabetes specialty specific accreditation process offered by the Aotearoa College of Diabetes Nurses (ACDN) New Zealand Nursing Organisation⁷³ has resulted in an increasing number of diabetes specialist nurses with prescribing rights for anti-hyperglycaemic medications (insulin, sulphonylureas, metformin) and treatments for diabetes-related conditions (e.g. blood pressure, hyper-cholesterolaemia).^{75, 76} These nurses support primary care practices using a mentorship model to intensify treatment and initiate insulin. Specialist nurses can encourage patients in the self-management of their diabetes by having slightly longer appointment times, proactively following up the patient, linking patients to peer support groups and assessing and responding to people's mental health needs.^{15, 73}

Co-ordination between members of the healthcare profession

The coordination between primary and secondary care, and between doctors and nursing staff and other healthcare professionals is important for achieving increased intensification of therapy, especially when insulin is to be initiated.^{15, 22, 70}

- A cross-sectional survey of randomly sampled primary healthcare nurses in Auckland concluded that there was room for improvement in the communication and organisational systems that allowed district nurses to work across both primary and secondary health services.⁷⁰

In particular, improved access to patient data across healthcare professionals, combined with data sharing agreements, may facilitate timely intensification by primary care providers and, therefore, improved glycaemic control in T2DM patients.^{18, 77} Technical, legal, cultural and practical challenges will need to be overcome before this is fully a reality. The MoH is currently investigating the viability of a national electronic health record which would give consumers, healthcare providers, and policy and service planners' better access to health information.⁷⁸



Well organised medical practices and integration of new technologies

A well organised primary care practice with a dedicated focus on chronic disease management can not only reduce clinical inertia in starting and intensifying treatments, and improve clinical outcomes, but it may also enhance patient satisfaction and ensure practice efficiency and revenues.¹⁷ This would also allow for 'planned care' for diabetes case management, and would reduce the need for opportunistic or delayed interventions.

In Auckland, a joint initiative between primary and secondary care DHBs and primary health organisations (PHOs) is currently engaging practices with high-needs populations to provide structured coaching and mentorship for practice nurses and GPs. The aim of this co-designed initiative is to achieve closer cooperation between patients and their different healthcare providers, and for improved business processes and systems.

Electronic shared care records with patients having access to results and clinical notes can improve patient-centred care and help ensure that recommended tests and disease interventions are carried out at appropriate intervals according to national guidelines.⁷⁹⁻⁸¹ These new technologies also offer opportunities for making self-management and the achievement of HbA1c goals easier for patients and practitioners.¹⁵ These technologies may enable both patients and practitioners initiate or intensify therapy in a timely manner. Examples of new technologies include the use of smart phone apps, shared patient portals, and tools for real-time remote monitoring and consultation services.⁸²⁻⁸⁴ The use of such technology may enable providers and patients to communicate beyond the 15-minute primary care appointment. Automated technology may also allow healthcare providers send patients reminders and education to support self-management, and can also collect information from patients on self-care activities and other self-assessments. New delivery devices and tools, such as insulin pens with special memory functions, and refined, shorter needles, are easier to use, limit pain and help to overcome many of the barriers to injections.^{85, 86}

System/Community level measures

System-level barriers affect all stages of diabetic healthcare and contribute to clinical inertia. Changes to the way that systems are funded, organised and managed can have an impact on physician and patient inertia and consequently patient outcomes.⁸⁷⁻⁸⁹

- In 2003, the UK National Health Service (NHS) renegotiated the primary care general practitioners' contract to include a "pay-per-performance" scheme which provided a pecuniary reward for achieving targets including those related to diabetes.^{31, 90} This financial incentivisation of better metabolic control was accompanied by only a marginal increase in the median practice-specific proportion achieving the HbA1c target of ≤ 58 mmol/mol (7.5%) from 59.1% in 2004–2005 to 66.7% in 2007–2008.⁸⁷
- The NZ "Get checked" health target had included a cardiovascular risk assessment (CVDRA) and a blood and urine test for diabetes delivered in primary care settings.⁸⁸ The budget included a one-off bonus and an on-going incentive scheme to promote health sector compliance with the Ministry's CVDRA goals. However, this programme was discontinued due to lack of effectiveness in improving diabetes-related outcomes.
- The "Get checked" programme has been replaced by the "Diabetes Care Improvement Package (DCIP)" which enables DHBs to formulate local diabetes services according to the needs of its community.⁸⁹ The DCIP is a community- and primary care-based programme which may deliver its services through nurse-led services such as practice clinics, patient group education or community outreach.

Table 3. Examples of overcoming clinical inertia

Understanding concerns and emphasising importance of insulin

- Healthcare professionals present the benefits of insulin to patients and emphasise that insulin can improve health using analogies⁷

People-centred health service provision and shared decision-making

- Shared decision-making^{15, 19, 58}
- Shared care planning with goal setting¹⁵
 - Patients and their doctors can formally agree upon an individualised target for HbA1c^{19, 58}
 - Use of culturally appropriate approaches
 - Agree on concrete and achievable actions plans embedded in daily routines (e.g. phone/text/ email reminders, mobile app reminders, electronic or paper diaries)¹⁵

Patient education and structured self-care

- Patients use self-help, evidence-based websites such as the Diabetes New Zealand website: www.diabetes.org.nz.
- Patients attend self-management education programs⁶²
- Education by GP and or specialist nurse practitioner during primary care visits^{19, 58}

Education of healthcare professionals

- Involvement of specialist diabetic nurses to support primary care practices using a mentorship model⁷⁰⁻⁷⁴
- Education and up-skilling of primary care teams^{22, 91}

Co-ordination between members of the healthcare profession

- Improved communication and sharing of patient information between healthcare providers^{18, 77}
- Increased use of technology to improve data sharing⁷⁸
- Data sharing agreements

Well organized medical practices and integration of new technologies

- Use of technology to provide access to patient data across the practice⁷⁹⁻⁸¹
- Potential for real-time remote monitoring and consultation services using new technologies such as smart phone apps, shared patient portals, and tools for real-time remote monitoring^{15, 82, 83}

System/Community level measures

- Diabetes Care Improvement Package which enables DHBs to formulate local diabetes services according community needs⁸⁹
- Improved use of existing funding to drive better and measurable outcomes (e.g. funding for additional primary care nurses with specialist interest and knowledge)

CONCLUSIONS

Despite clear guidelines being available that set out specific therapeutic targets and timelines for intensifying therapy, clinical inertia is a continuing and significant problem. Achieving tight glycaemic control early in the trajectory of T2DM is important for optimising clinical outcomes, yet many patients and clinicians are reluctant to intensify therapy. Given the varied reasons behind clinical inertia, a multifaceted approach to overcoming it is needed. However, any attempt to overcome clinical inertia must be tailored to the individual patient, and be mindful of their diabetes duration, the presence of co-morbidities, life expectancy, social circumstances, and their personal beliefs and priorities. In this regard, further research into clinical inertia in the NZ context, especially among differing ethnic groups, is warranted.

TAKE-HOME MESSAGES

- **Clinical inertia is an important barrier to achieving treatment targets in patients with T2DM**
- **Clinical inertia delays the initiation and appropriate intensification of both oral antihyperglycaemic and insulin therapy**
- **Clinical inertia is the result of both patient and healthcare professional factors**
- **A multifaceted approach to need to overcoming clinical inertia, involving such factors as improved communication between healthcare professionals and patients, patient and healthcare professional education, the provision of high-quality, people-centred health services**
- **Further research into clinical inertia in the NZ context, especially among differing ethnic groups, is warranted.**



CLINICAL INERTIA

“Different population groups will have multi-factorial reasons that contribute to clinical inertia. When it comes to a person’s health perspective, this can be further compounded by their culture and ethnic viewpoint.

It is vital that healthcare providers strive to walk alongside the patient and attempt to understand any clinical inertia from the patient’s ethnic group’s perspective. This aids in collaborative and better outcomes.

Removing certain barriers for patients by enabling better access to treatment and healthcare is vital in bridging some of the inertia experienced. Whenever possible, healthcare workers and members of the relevant community should be engaged so barriers can be identified and overcome in a timeframe that is appropriate to that specific cultural group.”



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RESOURCES FOR PRIMARY CARE

- NZ Primary Care Handbook 2012: <https://www.health.govt.nz/system/files/documents/publications/nz-primary-care-handbook-2012.pdf>
 Guidance on the Management of Type 2 Diabetes 2011: [http://www.moh.govt.nz/notebook/nbooks.nsf/0/60306295DEC0B6CC257A4F00F0C0CB/\\$file/NZGG-management-of-type-2-diabetes-web.pdf](http://www.moh.govt.nz/notebook/nbooks.nsf/0/60306295DEC0B6CC257A4F00F0C0CB/$file/NZGG-management-of-type-2-diabetes-web.pdf)
 Living well with diabetes: a plan for people at high risk of or living with diabetes 2015–2020: <https://www.health.govt.nz/system/files/documents/publications/living-well-with-diabetes-oct15.pdf>
 Quality Standards for Diabetes Care Toolkit 2014: <https://www.health.govt.nz/publication/quality-standards-diabetes-care-toolkit-2014>
 Diabetes New Zealand website: <http://www.diabetes.org.nz>

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