

Diabetes care therapeutic inertia in doctors and patients

One of the major barriers to best practice diabetes care is therapeutic inertia – failure to increase therapy when goals are unmet. An ‘active’ approach to routine diabetes care can greatly help in the control of complication risk factors and diabetic complications.

PAT PHILLIPS

MB BS, MA(Oxon), FRACP,
MRACMA, GradDipHealthEcon(UNE)

Dr Phillips is Senior Director, Endocrinology, North Western Adelaide Health Service, The Queen Elizabeth Hospital, Woodville, SA.

The next decade could see major improvements in diabetes care. New knowledge, new medications, new tests and new procedures give renewed hope for a cure. At the present time, however, the major goals in managing a person with type 2 diabetes – that is, the ABCss of diabetic care (controlling glycosylated haemoglobin A_{1c}, blood pressure and cholesterol levels [ABC], quitting smoking [s] and taking salicylates [s]) – are not being achieved. In fact, most people are missing most therapeutic targets; less than 1% are on target for all of them (Table 1).¹² This is despite current best practice in diabetes care being evidence-based,¹ with the interventions to improve complication risk factors and the medications used to achieve therapeutic targets having been demonstrated to be of value by large,

appropriately designed and well-managed clinical trials (Table 2).³⁻¹¹

This article explores one of the major barriers to best practice diabetes care and treating to target – therapeutic inertia in doctors and patients.

Therapeutic inertia – doctors

The definition for therapeutic inertia of ‘failure to increase therapy when treatment goals are unmet’ was proposed in a study of why blood pressure targets were not met.¹² This study identified that doctors were reluctant to increase antihypertensive medication. Predictors of therapeutic inertia in the study included older age, total number of medications and co-morbidities such as cardiovascular disease, diabetes and dyslipidaemia.¹² All

IN SUMMARY

- **Therapeutic inertia – the failure to increase therapy when goals are unmet – is a major barrier to best practice diabetes care and treating to target in patients with type 2 diabetes.**
- **Most patients with type 2 diabetes are not achieving the targets of diabetes management (the ABCss – controlling glycosylated haemoglobin, blood pressure and cholesterol levels [ABC], quitting smoking [s] and taking salicylates [s]). Moving closer on all these targets has a dramatic therapeutic effect.**
- **Doctors should be active and insistent about achieving and maintaining target values of the main risk factors of diabetic complications, detecting problems early and intervening promptly.**
- **Patients should be informed about their diabetes and the required self-care and medical care, including adopting a healthy lifestyle, practising preventive care and, like doctors, being active and insistent about achieving and maintaining target values.**

these predictors apply to diabetes care so it is probably no surprise that the ABCs targets are being missed.

Perhaps doctors experience therapeutic inertia because the goal posts keep moving. For example, the target blood pressure has been reduced from 140/90 mmHg to 130/80 mmHg and is likely to go down further. Another example is the glycosylated haemoglobin (A_{1c}) target. However, although a lower A_{1c} level may be better for microvascular complications, the recent Action to Control Cardiovascular Risk in Diabetes (ACCORD) Trial assessing the potential benefits of targeting blood sugar to near-normal levels (that is, the use of intensive therapy targeting A_{1c} to below 6% versus standard therapy targeting a level from 6 to 7%) was stopped because of excess mortality in the more intensively treated group.¹³ Additionally, new medications may offer the promise of improvement but pose the practical problem of choosing between them on the basis of potential benefit and side effects.

Actually providing the care is also getting harder. The Medicare maze of acronyms (PIP, SIP, GPMP, TCA, HMR and so on), the paper chase and the endless red tape have to be overcome, and it can be hard work getting access to the Medicare Plus items for Allied Health resources.

It can also be hard to convince patients to increase therapy. Doctors may console themselves that 'It's pretty close... I'll check again next time... Anyway there are too many tablets already'.

Australia is not alone in missing the targets in diabetes care. Patients with type 2 diabetes



© ISTOCKPHOTO/FRICHCANO

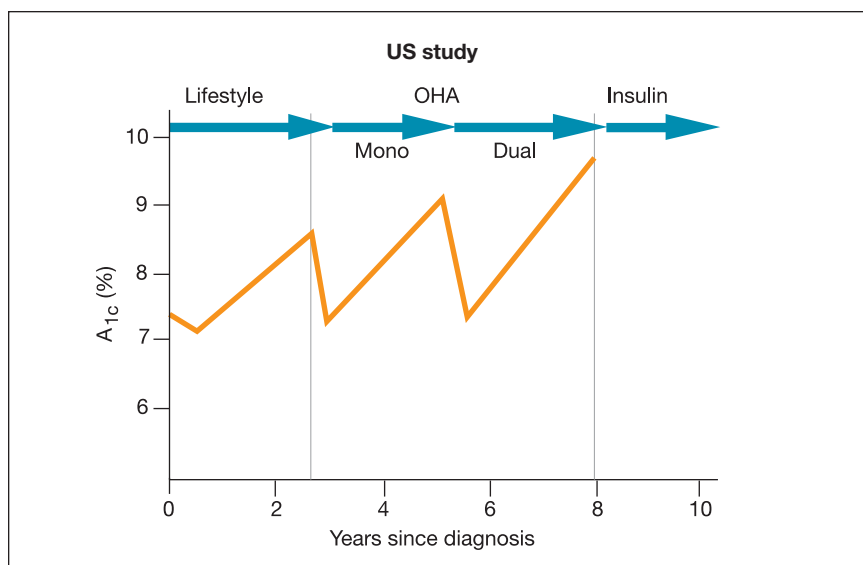
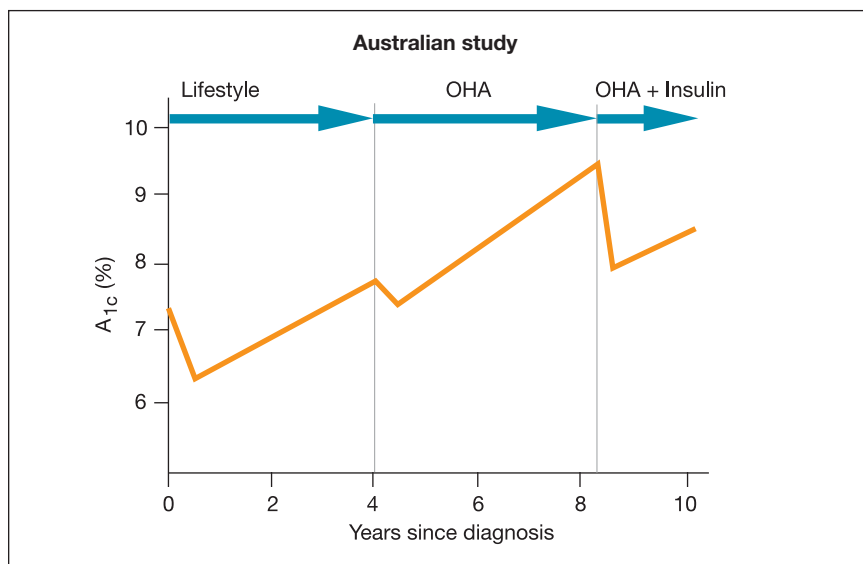
in Australia and the USA spend virtually all their time with A_{1c} values above the target of 7%, and a lot of time with A_{1c} values over 8% (Figures 1a and b).^{14,15} These A_{1c} values are high, considering that average blood glucose level (BGL) in mmol/L is equivalent to $2A_{1c}$ minus 6, and therefore an A_{1c} of 7% equates to a BGL of 8 mmol/L whereas an A_{1c} of 8% equates to a BGL of 10 mmol/L. In both countries, increases in hypoglycaemic medication are delayed (therapeutic inertia) so each increase occurs at progressively higher A_{1c} levels.

A substudy of the United Kingdom Prospective Diabetes Study (UKPDS) has shown, however, that

Table 1. The ABCs of diabetic care – missing the targets

Diabetic care goal	Target ¹	Proportion of people with type 2 diabetes not at target ²
A – controlling A_{1c}	<7%	54%
B – controlling blood pressure	<130/80 mmHg	71%
C – controlling cholesterol	<4 mmol/L	85%
s – quitting smoking	0	18%
s – taking salicylates	75 to 150 mg/day	61%

continued



Figures 1a and b. Therapeutic inertia in diabetes type 2. a (left). Australian study.¹⁴ b (right). US study.¹⁵ (OHA = oral hypoglycaemic agent.)

it is possible to get the A_{1c} on target.¹⁶ In this study, intensive hypoglycaemic therapy (therapeutic ‘ertia’) showed that patients could spend virtually all their time with an A_{1c} below 7%. As the diabetes progressed, the hypoglycaemic medication progressed and kept the A_{1c} under 7% (Figure 2). The first oral hypoglycaemic agent was introduced at around the same time as happened in the US study but the

second was added earlier (just after four years as opposed to five years) and insulin was started just after six years as opposed to approximately eight years.

Therapeutic inertia – patients

Theoretically, life with diabetes has never been better. The combination of self-care (healthy lifestyle, medication adherence and self-monitoring) and professional care

Table 2. Evidence for best practice diabetes care

- Control of A_{1c} – UK Prospective Diabetes Study (UKPDS) 33, 1998³
- Control of blood pressure – UKPDS 38, 1998⁴
- Control of cholesterol – Heart Protection Study (HPS), 2003⁵ and Collaborative Atorvastatin Diabetes Study (CARDS), 2004⁶
- Quitting smoking – American Diabetes Association Standards of medical care in diabetes, 2008⁷
- Taking salicylates – American Diabetes Association Standards of medical care in diabetes, 2008⁷
- Using metformin – UKPDS 34, 1998⁸
- Using ACE inhibitors – Heart Outcomes Prevention Evaluation (HOPE) study, 2000^{9,10}
- Using angiotensin-receptor antagonists – Prospective Epidemiological Study of Myocardial Infarction (PRIME), 2001¹¹

(diabetes checks, tests and specialist referrals) can delay the onset and progression of micro- and macrovascular complications. But this with the disadvantages of the hassle, expense and intrusion associated with self-care and professional care, and also weight gain and the side effects of medications. Patients are faced with the costs today but the benefits in the future are only potential and seem far away. Patients may not be prepared, in terms of time, energy, commitment and finance, to make the investment.

One simple health belief model suggests that patients will accept therapy if they agree to three key questions (personal communication, Stuart Dunn):

- Do I care?
- Will it work?
- Can I do it?

Patients may have such a focus on living today that their health in 10 years' time is not an issue. They may not believe that diabetic care will deliver the promised benefits. After all, one-quarter of patients with diabetes will die of a cause that is not diabetes-related. Also, only half of the cases of diabetes complications are related to known risk factors, and these risk factors are hard to control anyway. Most of the medical risk factors are not controlled, and patients are not meeting lifestyle targets either.

The modern, middle-class mother has a career and job, her husband, children and other family, her friends, her garden and her house. She would find it hard to cope with yet another demand on her time, energy and commitment; diabetes would be a very unwelcome guest. The disadvantaged, unemployed, single mother has some of those same hassles but she also has debt, no job, no money, no car, the threats of violence and eviction, and possibly trouble with the police. She has too much on her plate of life already, and would have great problems coping with diabetes as well.

Perhaps the answers to the three questions are:

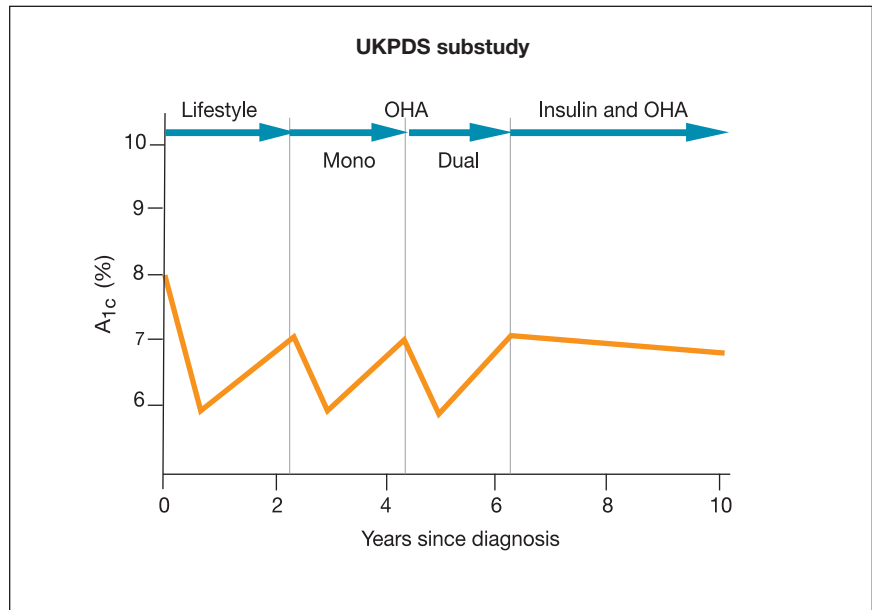


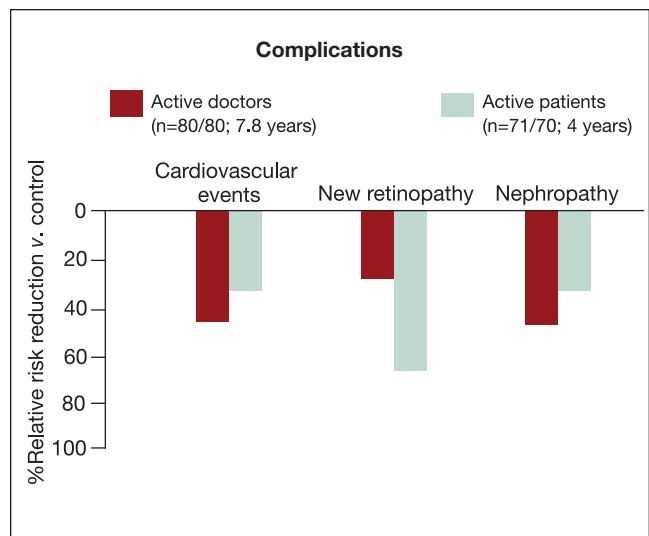
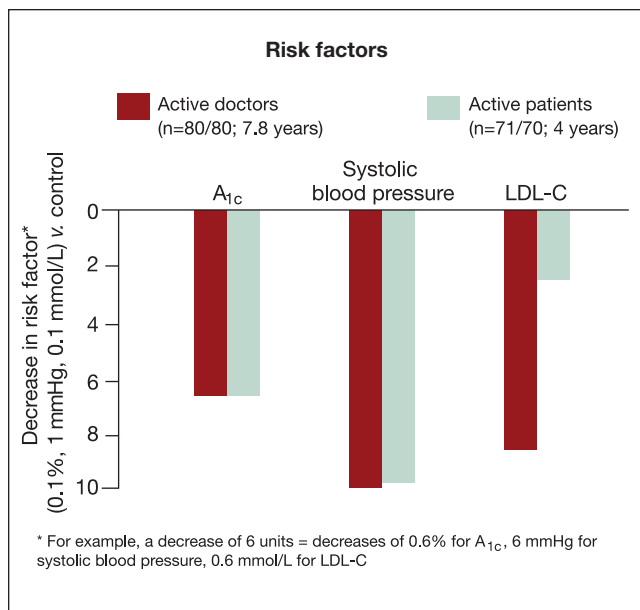
Figure 2. Therapeutic 'ertia' – UKPDS substudy.¹⁶ (OHA = oral hypoglycaemic agent.)

- Do I care? – Somewhat
- Will it work? – Maybe
- Can I do it? – Probably not.

From inertia towards ertia

A Scandinavian trial (the Steno-2 Study) in high risk-patients with type 2 diabetes and microalbuminuria showed that an

intensified, targeted, multifactorial intervention can make a major difference to both the risk factors for complications and the complications themselves compared with conventional treatment.¹⁷ Although patients may not have achieved the ABCs targets with this 'active' approach by doctors, they did move closer to them. The



Figures 3a and b. Achievements of active doctors and active patients.^{17,18} a (left). Risk factors. b (right). Complications.

Diabetes care: active doctors and active patients

Diabetes care should be routine

There is an analogy between routine car maintenance and routine diabetes care.

- If you have a car, you fill it with fuel, check the tyres, oil, water and battery and arrange regular services.
 - If you are a mechanic, you service the car, do specific tests (e.g. brakes, timing) and refer to specialists (e.g. auto electricians, gearbox specialists).
- If you have diabetes, you take your medications, check your blood glucose level, feet, etc. and arrange regular diabetes checks.
 - If you are a doctor, you review diabetes care, check specific tests (e.g. fasting blood glucose level, urine tests) and refer to specialists (e.g. ophthalmologists, endocrinologists).

Active doctors

- Monitor risk factors, complications, specialist referrals and preventive care (e.g. immunisation).
- Intervene promptly when targets are not met and when complications occur.
- Assess adherence and response to interventions.
- Activate and support patient self-care.

Active patients^{18, 19}

- Learn about diabetes and the required self-care and medical care.
- Try to make healthy lifestyle choices and to modify unhealthy lifestyle habits.
- Monitor eating, physical activity, blood glucose levels (and sometimes blood pressure).
- Be aware of the schedules for general practice and specialist reviews.
- Practise preventive care.
- Know the target values of the ABCs, the main risk factors of diabetic complications.

These are:

- A – controlling A_{1c} to below 7%
- B – controlling blood pressure to below 130/80 mmHg
- C – controlling cholesterol to below 4 mmol/L
- s – quitting smoking (no tobacco)
- s – taking salicylates (75 to 150 mg aspirin per day)

combination of moving closer on all the ABCs targets had a dramatic therapeutic effect.

When patients were given information about the targets to be achieved, how they could be achieved, what the potential benefits were and how to negotiate with their doctors and health care systems, similar remarkable improvements in complication risk factors and complications occurred (Figures 3a and b).¹⁸

As far as improvements in risk factors were concerned, active doctors did better than active patients in decreasing LDL

cholesterol levels but decreases in A_{1c} and blood pressure were similar (Figure 3a). For complications, active patients did better than active doctors in relative risk reduction of retinopathy and almost as well as active doctors in terms of cardiovascular events and progression of nephropathy (Figure 3b).

The effect of combining active doctors and active patients has not been demonstrated but could be expected to further improve control of complication risk factors and the complications themselves.

Conclusion

The message is clear for the doctors who provide the medical care and for the patients who provide the self-care and work with the diabetes care team: try even harder – be active and insistent about achieving and maintaining target values of the main risk factors of diabetic complications, detecting problems early and intervening promptly (see the box on this page).

Doctors may still not get all patients to meet all targets but targets can be moved closer to by steering away from inertia towards ‘ertia’, towards best practice and towards control of complication risk factors and diabetic complications. **MT**

A list of references is available on request to the editorial office.

COMPETING INTERESTS: Dr Phillips has received research and travel grants, acted on advisory boards and been involved with clinical trials and seminars sponsored by a range of pharmaceutical companies. He does not think these associations have influenced the content of this article.

Online CPD Journal Program



What percentage of patients with type 2 diabetes are meeting all their treatment targets?

Review your knowledge of this topic and earn CPD/PDP points by taking part in Medicine Today's Online CPD Journal Program.

Log on to www.medicinetoday.com.au/cpd

Diabetes care: therapeutic inertia in doctors and patients

PAT PHILLIPS MB BS, MA(Oxon), FRACP, MRACMA, GradDipHealthEcon(UNE)

References

1. Harris P, Mann L, Marshall P, Phillips P, Snowdon T, Webster C. Diabetes management in general practice 2008/9. 14th ed. Canberra: Diabetes Australia; 2007. Available online at www.racgp.org.au (accessed August 2008).
2. North West Adelaide Health Study. Population Research and Outcomes Studies: biomedical and self-report data. Adelaide: NWAHS; 2008.
3. United Kingdom Prospective Diabetes Study (UKPDS) Group. Intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in people with type 2 diabetes (UKPDS 33). *Lancet* 1998; 352: 837-853.
4. UK Prospective Diabetes Study (UKPDS) Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. *BMJ* 1998; 317: 703-713.
5. Collins R, Armitage J, Parish S, Sleight P, Peto R; Heart Protection Study Collaborative Group. MRC/BHF Heart Protection Study of cholesterol-lowering with simvastatin in 5963 people with diabetes; a randomised placebo-controlled trial. *Lancet* 2003; 361: 2005-2016.
6. Colhoun HM, Betteridge DJ, Durrington PN, et al; CARDS investigators. Primary prevention of cardiovascular disease with atorvastatin in type 2 diabetes in the Collaborative Atorvastatin Diabetes Study (CARDS): multicentre randomised placebo-controlled trial. *Lancet* 2004; 364: 685-696.
7. American Diabetes Association. Standards of medical care in diabetes – 2008. *Diabetes Care* 2008; 31 Suppl 1: S12-S54.
8. UK Prospective Diabetes Study (UKPDS) Group. Effect of intensive blood-glucose control with metformin on complications in overweight patients with type 2 diabetes (UKPDS 34). *Lancet* 1998; 352: 854-865.
9. Heart Outcomes Prevention Evaluation Study Investigators. Effects of an angiotensin-converting enzyme inhibitor, ramipril, on cardiovascular events in high-risk patients. *N Engl J Med* 2000; 342: 145-153.
10. Heart Outcomes Prevention Evaluation Study Investigators. Effects of ramipril on cardiovascular and microvascular outcomes in people with diabetes mellitus: results of the HOPE study and MICRO-HOPE substudy. *Lancet* 2000; 355: 253-259.
11. Lewis E, Hunsicker LG, Clark WR, et al. Renoprotective effect of the angiotensin-receptor antagonist irbesartan in patients with nephropathy due to type 2 diabetes. *N Engl J Med* 2001; 345: 851-860.
12. Okonofua EC, Simpson KN, Jesri A, Rehman SU, Durkalski VL, Egan BM. Therapeutic inertia is an impediment to achieving the Healthy People 2010 blood pressure control goals. *Hypertension* 2006; 47: 345-351.
13. The Action to Control Cardiovascular Risk in Diabetes (ACCORD) Study Group. Effects of intensive glucose lowering in type 2 diabetes. *N Engl J Med* 2008; 358: 2545-2559.
14. Davis TM, Davis WA, Bruce DG. Glycaemic levels triggering intensification of therapy in type 2 diabetes in the community: the Fremantle Diabetes Study. *Med J Aust* 2006; 184: 325-328.
15. Brown JB, Nichols GA, Perry A. The burden of treatment failure in type 2 diabetes. *Diabetes Care* 2004; 27: 1535-1540.
16. Turner RC, Cull CA, Frighi V, Holman RR. Glycemic control with diet, sulfonylurea, metformin, or insulin in patients with type 2 diabetes mellitus: progressive requirement for multiple therapies (UKPDS 49). UK Prospective Diabetes Study (UKPDS) Group. *JAMA* 1999; 281: 2005-2012.
17. Gaede P, Vedel P, Larsen N, Jensen GV, Parving HH, Pedersen O. Multifactorial intervention and cardiovascular disease in patients with type 2 diabetes. *N Engl J Med* 2003; 348: 383-393.
18. Rachmani R, Levi Z, Slavachevski I, Avin M, Ravid M. Teaching patients to monitor their risk factors retards the progression of vascular complications in high-risk patients with type 2 diabetes mellitus – a randomized prospective study. *Diabet Med* 2002; 19: 385-392.
19. Phillips P (ed.). Diabetes and you: the essential guide. 2nd ed. Canberra: Diabetes South Australia; 2006.