

# Changing times: International standardisation of HbA<sub>1c</sub> reporting

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One of the cornerstones of improving glycaemic control in people with diabetes is the measurement of HbA<sub>1c</sub>. For several years, most laboratories in the UK reported HbA<sub>1c</sub> levels in DCCT (Diabetes Control and Complications Trial) aligned percentages, which allowed us to directly compare HbA<sub>1c</sub> values in our patients with those of the participants in studies such as the DCCT and the UKPDS (UK Prospective Diabetes Study). However, laboratories in different parts of the world have historically used different methods of reporting HbA<sub>1c</sub>, and DCCT calibration, although useful, was limited as the results were not “true” concentrations, but the closest 1980s technology could give us at the time.

## A need for change

Times change, however, and technology of the 1980s has now evolved, such that in recent years, the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) has established the “true” HbA<sub>1c</sub> concentrations in samples; and so this new IFCC standard has been recommended as the basis for standardising HbA<sub>1c</sub> values across the globe.<sup>1</sup>

Unfortunately, these IFCC values were found to be 1.5–2% lower than we

are used to. For example, 7% in DCCT numbers is 5.3% in “IFCC-standardised” units. Worries about possible confusion between old and new units led to the proposal that IFCC-standardised HbA<sub>1c</sub> values should be reported in mmol of HbA<sub>1c</sub> per mol of total haemoglobin (mmol/mol) – a number 10 times the IFCC percentage value. This means an IFCC-standardised HbA<sub>1c</sub> of 5.3% is equivalent to 53 mmol/mol.

Reflecting the above, as of 1 June 2009 the way in which HbA<sub>1c</sub> levels are reported in the UK changed, bringing with it the ability to standardise our reporting and to lead the way for international calibration and comparisons. The challenge for us, as healthcare professionals, is to educate ourselves to integrate this change effectively for people with diabetes.

For the next 2 years HbA<sub>1c</sub> values will be “dual reported” in both DCCT per cent and IFCC mmol/mol. In the longer-term it is suggested that only the IFCC units will be used.<sup>2</sup> On that note, I have come up with “Kilpatrick’s Kludge” to convert DCCT to IFCC units.<sup>3</sup> It is known as “minus two minus two”: if the DCCT HbA<sub>1c</sub> is 9%, the IFCC HbA<sub>1c</sub> is nine minus two (7) minus two (5) = 75 mmol/mol, and so on for other whole DCCT numbers (*Table 1*). For numbers

that are not whole, the equation to convert DCCT to IFCC units is as follows:

$$\frac{\text{HbA}_{1c} (\%) - 2.15}{0.0915} = \text{New HbA}_{1c} \text{ (mmol/mol)}$$

## Global HbA<sub>1c</sub> standardisation

Moving to these new numbers will undoubtedly be an upheaval for everyone who uses the HbA<sub>1c</sub> test. There is the consolation for healthcare professionals that this should be the last ever move as the result is now completely standardised in a way that is similar to a kilogram weight or a second in time. In the future, we can be more sure that the HbA<sub>1c</sub> value we use to assess a person’s glycaemic control will be closer than ever to the true result. ■

1. Consensus Committee (2007) *Diabetes Care* **30**: 2399–400
2. Diabetes UK et al (2009) *HbA<sub>1c</sub> Standardisation for Clinical Health Care Professionals*. NHS Diabetes, Leicester
3. Kilpatrick ES (2009) *Ann Clin Biochem* **46**: 84–5

**Table 1. Example conversions of DCCT HbA<sub>1c</sub> to IFCC HbA<sub>1c</sub>.**

HbA <sub>1c</sub> (%) DCCT	HbA <sub>1c</sub> (mmol/mol) IFCC
5%	31
6%	42
7%	53
8%	64
9%	75

## The IMPROVE™ Control Campaign

The Global Task Force on Glycaemic Control is a group of physicians and specialists in the field of diabetes from around the world that is working in collaboration with Novo Nordisk with the ultimate aim of identifying and developing practical solutions to the global problem of poor glycaemic control in people with diabetes. Since early 2008, the *Journal of Diabetes Nursing* has featured articles and submissions under the banner of IMPROVE™ Control – a global public awareness campaign focused on the need for improved control, which forms part of the Task Force’s work. Throughout 2009, the journal will continue to bring you articles on the barriers to good glycaemic control, and submissions from *you*, our readers, outlining the strategies you have used to help people with diabetes improve their control.

For example, perhaps you have implemented a new educational session in your area that has helped break down barriers to control, or maybe you have set up a new referral pathway that has helped improve HbA<sub>1c</sub> levels. The *Journal of Diabetes Nursing* would like to help you share your practical solutions for improving control, no matter how big or small, with other nurses working in diabetes. We encourage you to take part in this global initiative by calling 020 7627 1510, or emailing james@sbcommunicationsgroup.com.



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