

# Reflections on 60 years of caring for people with diabetes

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It was a special upside-down year, 1961, the numerals being the same when rotated upside down. It was the year that the fine black and white £5 note and the farthing coin ceased to be legal tender. I never handled a £5 note as we were paid in what seemed like farthings, with £60-70 per month after deduction of hospital board and lodging fees. But we did look smart.

My first encounter with clinical diabetes was when I was a clinical medical student, when I was secretary of the medical history society and invited RD Lawrence to give a talk in the medical school. It was an inspiring evening and I treasure his thank you letter afterwards that sent me best wishes for the future. My first job in 1961 was locum house physician to the diabetes



*Alex D Wright 1961*

unit at King's College Hospital, London. The job included the responsibility for all the insulin prescriptions throughout the hospital. This provided continuity and some safety in an area where mistakes are easily made but the arrangement deskilled other staff.

Insulin was available in 40 and 80 units/ml strengths (rarely 20 units/ml) and was administered by a 1ml insulin glass syringe graduated in 20



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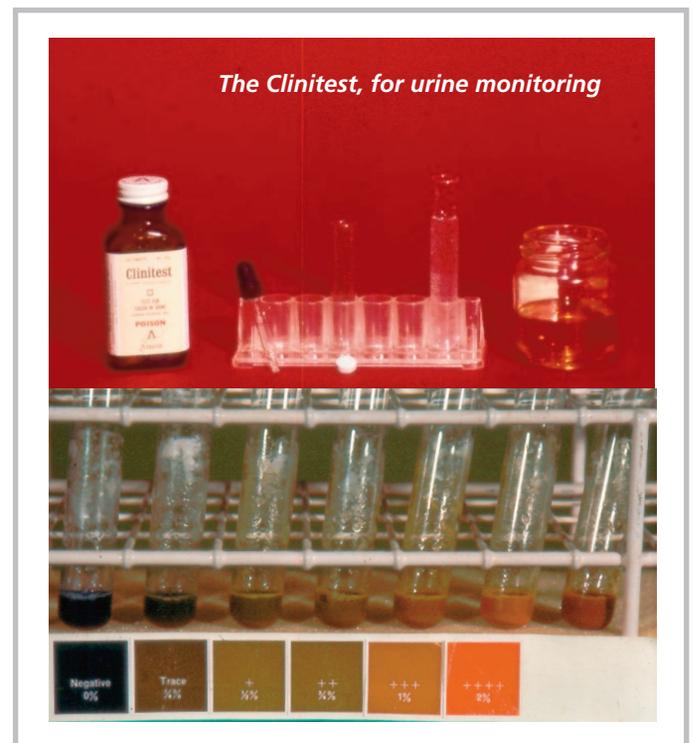
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marks. The syringes and needles were sterilised in a boiling water bath and patients usually kept them in spirit-proof cases. Knowledge of the 2x and 4x tables was essential, but mistakes between marks and units were commonly made. The introduction of a standard 100 units/ml strength in 1981 was a great step forward though the subject remains complicated with 200, 300 and 500 units/ml strengths available. The use of a numeral within the name of some modern insulins is another potential source of confusion.

The drawing up of a dose of insulin from a multidose vial requires considerable manual dexterity. The introduction of plastic syringes was a great boon but created a disposal problem. Another step forward in 1981 was the idea of an insulin pen: the first NovoPen was launched in 1985. A pen containing a cartridge of insulin with a disposable needle provides simple, portable equipment that can be used anywhere. Freedom from injections came with the introduction of insulin pumps, another impressive technical advance.

The house physician at King's was also responsible for out-of-hours venous blood sugar measurements using a Folin and Wu colorimetric technique. This took about 20 minutes to perform in a side ward. Monitoring of diabetes for both patients and diabetes staff was otherwise based on urine testing using Clinitest.





The introduction of blood glucose strips for measurement of capillary glucose, based on a glucose oxidase method, was a great breakthrough. Dextrostix arrived in 1965. This was enhanced by the first glucose meters in 1980 and by continuous blood glucose monitoring more recently.

The expansion of drugs for treating diabetes during my working lifetime has been enormous. My British National Formulary (BNF)

of 1960 cost 7s. 6d. and contained five BP insulins - Insulin Injection, Protamine Zinc Insulin Injection, Insulin Zinc Suspension, Insulin Zinc Suspension (Amorphous) and Insulin Zinc Suspension (Crystalline)-- and listed isophane insulin/NPH insulin and two oral agents for diabetes, tolbutamide and tolazamide. Metformin had been introduced in 1958 but was not included in the BNF of 1960. Phenformin was withdrawn in about 1977. Antimicrobials included chloramphenicol, chlortetracycline, oxytetracycline and tetracycline, erythromycin, neomycin, penicillin, sulphonamides and streptomycin, isoniazid and PAS. Cardiovascular drugs were limited to mersalyl, chlorothiazide, hydroflumethiazide, reserpine, hydralazine, digoxin and digitalis. Blood pressure-lowering drugs were extremely limited: we did not even have methyldopa. We had to learn metric and imperial equivalents (vol: 10 minims=0.6ml; 20 fl oz=1 pint; wt: 1 grain=60mg [for example a quarter of morphine was 15mg]; 1 oz = 28g; 16oz = 1 pound). Fortunately, as a house officer I was given the option of using metric prescriptions.

A modern BNF costs about £58.00. My BNF 80 for September 2020 to March 2021 contains four rapid-acting insulins, four intermediate-acting insulins, two intermediate-acting combined with rapid-acting insulins, three long-acting insulins, and two long-acting insulins combined with liraglutide or lixisenatide. In addition, a range of other medications is included such as metformin, five sulphonylureas, an alpha glucosidase inhibitor, pioglitazone, dipeptidyl peptidase-4 inhibitors, glucagon-like peptide-1 receptor agonists, meglitinides, and sodium glucose co-transporter 2 inhibitors together with various therapeutic combinations. The list continues to grow.

Proof that glycaemic and blood pressure control are vital for the long-term outcome in diabetes was shown by the DCCT for T1DM and by the UKPDS for T2DM. The results from these two studies and from various national data collections have been invaluable in quantifying risk. The presentation of the UKPDS results at the EASD

meeting in Barcelona was a thrilling moment in which I was honoured to take a part. The establishment of annual screening programmes for patients with known diabetes has been another welcome innovation which helps to detect evidence of micro- and macro-vascular disease. Perhaps less well established is the principle of risk stratification for complications: it has such a practical application in preventing loss of sight and amputations, which sadly still occur. The large clinical studies have also taught us that diabetes is a progressive disease.

Professional and patient education in diabetes was introduced with the first use of insulin in the 1920s and has developed into impressive, well-structured programmes that can be adjusted to differing needs.

### Summary

Great advances have occurred in every aspect of diabetes during my working life, including the number and range of therapies available, the relative ease of blood glucose monitoring, a greater understanding of the need for good glycaemic and blood pressure control and the better detection and care of complications. My hope is that the next generation will see more results from programmes that aim to prevent diabetes.

It has been an exciting 61 years in clinical diabetes, with many great colleagues and long-suffering patients. I leave you with a torch and inspiration from the 50th anniversary of the isolation of insulin in Toronto.

Medical Research for the Benefit of Mankind

To Dr. A. D. Wright  
Charles H. Best



### Key messages

- Advances in monitoring and therapy of diabetes
- Better understanding of complications of diabetes
- Prevention strategies are important

**Conflict of interest** None.

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