Mean glomerular filtration rates (ml/min) in normotensive patients with insulin dependent diabetes at baseline, after 8 years' follow up, and during pause in treatment in captopril and control groups

	Captopril group			Control group		
Patient No	Baseline	8 Years	8 Years + pause	Baseline	8 Years	8 Years + pause
1	100	101	120	141	157*	135*
2	129	125	131	156	131	_
3	153	_	_	131	123	_
4	96	75	_	96	39*	47*
5	114	99	122*	87	84	_
6	112	98	116*	132	106*	_
7	105	105*	112*	154	68*	_
8	127	145*	140*	151	143	_
9	140	127	144	150	161	_
10	108	70	102*	117	106	_
11	169	—	—	111	—	_
12	144	120	121	148	144	_
13	117	104	_	118	119	_
14	110	100	97	108	94*	_
15	96	108	_	126	141	_
16	171	151	166	142	168	_
17	164	156	161*	145	130	_
18	128	106	103	146	140	_
19	104	116	105	122	*	_
20	130	135	146	117	91*	_
21	132	122	128	120	112*	_
22	_	_	_	136	130*	_
23	_	_	_	120	118	_
Mean (SD)	126 (24)	114 (23)	126 (21)	129 (18)	119 (32)†	_

\*Patient developed diabetic nephropathy during 8 years of follow up or during treatment pause.

+Difference from baseline significant at P=0.03.

eight control patients who developed nephropathy was 27.3 (3.7 to 51.0; P=0.03) while glomerular filtration rate increased by 3.8 (-3.5 to 11.0) in the six patients treated with captopril with urinary albumin excretion >300 mg/24 h during the treatment pause (P=0.02 between the groups). Haemoglobin  $A_{ic}$  and blood pressure did not differ between the two groups at any time during the study.

# Comment

Our study has shown that the beneficial effect of angiotensin converting enzyme inhibition in the prevention of diabetic nephropathy is long lasting and associated with preservation of normal glomerular filtration rate. To obtain a valid determination of the rate of decline in glomerular filtration rate the applied glomerular filtration rate method should have a good accuracy and precision and the observation period should exceed 2 years.4 These requirements have been fulfilled in our study in contrast with previous studies.<sup>2 3</sup> The second part of the study showed a return in glomerular filtration rate to the values before treatment after 2 months of withdrawal of antihypertensive treatment. The temporary fall in glomerular filtration rate in the intervention group was therefore regarded as a reversible haemodynamic phenomenon. Patients with persistent microalbuminuria at follow up had a stable normal glomerular filtration rate.5 The clinically significant effect of angiotensin converting enzyme inhibition on preservation of normal glomerular filtration rate was related to prevention of progression from microalbuminuria to diabetic nephropathy in patients with insulin dependent diabetes.

Contributors: HHP had the original idea for the study. ERM and HHP were responsible for conducting the study and interpreting the results and are guarantors. ERM and EH conducted the clinical evaluation during the 8 years of study. HPH and ERM conducted the clinical evaluation during the treatment pause. UMS performed the assessments of glomerular filtration rate. All authors participated in the interpretation of the results and reporting.

Funding: ERM was funded by a senior research fellowship from the University of Copenhagen. Steno Diabetes Center supplied us with equipment for glomerular filtration analysis and laboratory tests. Squibb donated the tablets and a 1 month research fellowship for ERM.

Competing interests: None declared.

- Mathiesen ER, Hommel E, Giese J, Parving H-H. Efficacy of captopril in postponing nephropathy in normotensive insulin dependent diabetic patients with microalbuminuria. *BMJ* 1991;303:210-6.
- Viberti G, Mogensen CE, Groop LC, Pauls JF. Effect of captopril on progression to clinical proteinuria in patients with insulin dependent diabetes mellitus and microalbuminuria. *JAMA* 1994;271:275-9.
- 3 Laffel LMB, McGill JB, Gans DJ. The beneficial effect of angiotensinconverting enzyme inhibition with captopril on diabetic nephropathy in normotensive IDDM patients with microalbuminuria. *Am J Med* 1995;99:497-504.
- 4 Levey AS, Gassman J, Hall PM, Walker WG. Assessing the progression of renal disease in clinical studies: effects of duration of follow-up and regression to the mean. J Am Soc Nephrol 1991;1:1087-94.
- Mathiesen ER, Feldt-Rasmussen B, Hommel E, Deckert T, Parving H-H. Stable glomerular filtration rate in normotensive IDDM patients with stable microalbuminuria: a 5 year prospective study. *Diabetes Care* 1997;20:286-9.

(Accepted 31 December 1998)

## **Corrections and clarifications**

Ingestion of mouthwash by children This letter by Tamsin Wade and Alison Gammon (17 April, p 1078) wrongly stated that "The mouthwash... was a supermarket 'extra strength' own brand which contains 37% alcohol." It should have stated that this type of mouthwash "may contain up to 37% alcohol." The manufacturers of the mouthwash have informed the authors that it contained about 20-25% alcohol, which is still far more than what one would expect a child to have access to.

## Book reviews

In William Stoney's review of Ira M Rutkow's *American Surgery: An Illustrated History* (17 April, p 1082) William Stewart Halsted's surname was spelt incorrectly. In Alex Brooks' review of Jared Diamond's *Guns, Germs and Steel* (8 May, p 1294) the Inca emperor Atahualpa's name was spelt incorrectly and his empire was wrongly described as Aztec.

## Website of the week

In his review of the NHS Direct website (24 April, p 1152) Douglas Carnall gave the wrong number for NHS Direct's telephone service: it is 0845 4647 (or 0845 4NHS on alphanumeric telephones). A copy of Tony Blair's speech about government plans to expand the service is available at the No 10 website (www.number-10.gov.uk/public/news/ index.html).

#### **Obituaries**

In the obituary of Professor Henry Taylor Howat (8 May, p 1292) Professor Howat's surname was spelt incorrectly.