

SUPPLEMENTARY DATA

Supplementary Table 1. Sensitivity and specificity for detecting peak C-peptide ≥ 0.2 nmol/l using AUC CP ≥ 23 nmol/l/150minutes

Duration/months(n)	True positive rate Sensitivity %(n)	True negative rate Specificity %(n)	Patients misdiagnosed %(n)
3(321)	99.7 (308/309)	100(12/12)	0.3(1/321)
9(290)	98(233/237)	96(51/53)	2(6/290)
18(269)	97(165/171)	95(93/98)	4(11/269)
30(229)	92(101/110)	98(117/119)	5(11/229)
48(167)	98(55/56)	97(108/111)	2(4/167)
72(58)	92(12/13)	98(44/45)	3(2/58)
Whole cohort (1334)	98(874/896)	97(425/438)	3(35/1334)

Supplementary Table 2. 90 minute serum C-peptide is highly correlated to AUC C-peptide and peak C-peptide during a MMTT. * $p < 0.0001$

Diabetes duration months (n)	Correlation (r_s) between AUC and 90min CP (Peak and 90 min CP)
3(321)	0.98*(0.97)
9(290)	0.99*(0.98)
18(269)	0.99*(0.98)
30(229)	0.99*(0.96)
48(167)	0.99*(0.98)
72(58)	0.96*(0.91)

Supplementary Table 3. Fasting C-peptide is well correlated to AUC and 90 minute C-peptide during the MMTT * $p < 0.0001$

Diabetes duration months (n)	Correlation (r_s) between AUC and FCP (Peak and FCP)
3(321)	0.71*(0.65)
9(290)	0.84*(0.80)
18(269)	0.89*(0.85)
30(228)	0.89*(0.84)
48(167)	0.88*(0.85)
72(58)	0.71*(0.66)

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Supplementary Table 4. Proportion of patients with C-peptide peak at different time points during the MMTT. The highest proportion of patients reaching peak C-peptide is in bold font.

Time from diagnosis months(n)	% patients (95% CI) , with Peak CP occurring at various time points during MMTT/min						Time to C-peptide peak Mean(95% CI) minutes
	0	30	60	90	120	150	
3(321)	0.6 (0.1-2.5)	10.0 (7.0-13.9)	16.5 (12.7-21.1)	26.2 (21.5-31.4)	31.8 (26.8-37.2)	15.0 (11.3-19.4)	97.0 (93.0-101.0)
9(290)	4.1 (2.3-7.3)	9.0 (6.1-13.0)	18.3 (14.1-23.3)	26.9 (22.0-32.5)	25.2 (20.4-30.7)	16.6 (12.6-21.5)	92.9(88.2-97.6)
18(269)	4.5 (2.4-7.9)	13.4 (9.7-18.2)	20.1 (15.6-25.5)	23.4 (18.6-29.0)	26.0 (21.0-31.8)	12.6 (9.0-17.4)	87.4 (82.4-92.3)
30(229)	15.7 (11.4-21.2)	12.7 (8.8-17.8)	16.6 (12.1-22.2)	20.1 (15.2-26.0)	17.0 (12.5-22.7)	17.9 (13.3-23.6)	79.1 (72.5-85.7)
48(167)	16.8 (11.6-23.5)	15.0 (10.1-21.5)	15.6 (10.6-22.2)	20.4 (14.7-27.4)	24.0 (17.8-31.3)	8.4 (4.8-13.9)	73.5 (66.2-80.8)
72(58)	13.8 (6.6-25.9)	17.2 (9.0-29.9)	24.1 (14.3-37.5)	22.4 (12.9-35.6)	13.8 (6.6-25.9)	8.6 (3.2-19.7)	69.3 (57.6-81.1)

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Supplementary Table 5. Fasting C-peptide is higher in patients with (A) shorter duration diabetes and (B) an older age of diagnosis.

Diabetes duration months(n)	Fasting C-peptide median (25 th - 75 th centile) (nmol/l)				
	Whole Cohort	<10 years	10-13 years	≥13 years	P value across age of diagnosis tertiles
3(321)	0.21 (0.13-0.32)	0.15 (0.09-0.20)	0.21 (0.14-0.39)	0.27 (0.19-0.37)	<0.0001
9(290)	0.17 (0.08-0.26)	0.11 (0.05-0.18)	0.18 (0.09-0.26)	0.22 (0.16-0.38)	<0.0001
18(269)	0.11 (0.04-0.20)	0.07 (0.02-0.13)	0.09 (0.04-0.21)	0.16 (0.06-0.26)	<0.0001
30(228)	0.07 (0.02-0.16)	0.03 (0.01-0.11)	0.05 (0.01-0.12)	0.13 (0.07-0.22)	<0.0001
48(167)	0.05 (0.02-0.13)	0.02 (<0.03-0.07)	0.06 (0.03-0.13)	0.07 (0.02-0.21)	0.004
72(58)	0.03 (0.01-0.08)	0.03 (0.01-0.07)	0.03 (<0.03-0.08)	0.04 (0.01-0.08)	0.9

Supplementary Table 6. The difference between peak and 90 minute C-peptide during the MMTT.

Diabetes duration in months (n)	C-peptide during MMTT median (25 th -75 th centile)(nmol/l)		
	Peak	90 minute	C peptide difference (Peak-90minute)
3(321)	0.70 (0.48-1.1)	0.62 (0.41-1.0)	0.05 (0-0.12)
9(290)	0.50 (0.28-0.84)	0.44 (0.24-0.74)	0.03 (0-0.10)
18(269)	0.29 (0.12-0.55)	0.25 (0.10-0.47)	0.02 (0-0.07)
30(229)	0.18 (0.06-0.36)	0.16 (0.04-0.30)	0.01 (0-0.04)
48(167)	0.13 (0.04-0.30)	0.1 (0.04-0.25)	0.01 (0-0.04)
72(58)	0.09 (0.03-0.17)	0.06 (0.02-0.15)	0.02 (0-0.04)
Whole cohort (1334)	0.36 (0.13-0.71)	0.31 (0.11-0.61)	0.02 (0-0.08)

Supplementary Table 7A. C-peptide correlations during the 3 assay periods at 3 months duration. *p<0.0001

	Group 1 Before 1 st June 2000	Group 2 1/6/2000- 30/09/2004	Group 3 ≥1/10/2004	Whole group
n	184	37	100	322
r_s AUC-90minCP (PeakCP-90minCP)	0.97* (0.97)	0.97* (0.96)	0.98* (0.98)	0.98* (0.98)
r_s AUC-FCP (PeakCP-FCP)	0.62* (0.68)	0.76* (0.85)	0.73* (0.70)	0.71* (0.71)

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Supplementary Table 7B. C-peptide correlations during the 3 assay periods at 9 months duration.
*p<0.0001

	Group 1 Before June 2000	Group 2 1/6/2000- 30/09/2004	Group 3 >=1/10/2004	Whole group
n	171	27	90	291
r_s AUC-90minCP (PeakCP-90minCP)	0.97* (0.98)	0.97* (0.98)	0.99* (0.99)	0.98* (0.99)
r_s AUC-FCP (PeakCP-FCP)	0.75* (0.85)	0.92* (0.86)	0.88* (0.85)	0.86* (0.85)

Supplementary Table 7C. C-peptide correlations during the 3 assay periods at 18 months duration.
*p<0.0001

	Group 1 Before June 2000	Group 2 1/6/2000- 30/09/2004	Group 3 >=1/10/2004	Whole group
n	179	16	73	270
r_s AUC-90minCP (PeakCP-90minCP)	0.98* (0.98)	0.99* (0.99)	0.99* (0.99)	0.98* (0.99)
r_s AUC-FCP (PeakCP-FCP)	0.80* (0.90)	0.89* (0.91)	0.77* (0.87)	0.79* (0.89)