

SUPPLEMENTARY DATA

**Supplementary Table S1.** HbA<sub>1c</sub> levels over time

**HbA<sub>1c</sub> values over time for diabetes following pancreatic disease, type 1 diabetes, and type 2 diabetes. With p values based on Mann-Whitney U test comparison with type 2 diabetes values used as the reference group, and the null hypothesis that there is no difference in mean HbA<sub>1c</sub> values between type 2 diabetes and the comparing group.**

	Diabetes with no prior pancreatic disease		Diabetes following pancreatic disease		
	Type 1 diabetes	Type 2 diabetes	All	Diabetes following acute pancreatitis	Diabetes following chronic pancreatic disease
<b><i>HbA<sub>1c</sub> at diagnosis</i></b>					
mean (SD) [mmol/mol]	12.1% (2.5%) [109 (27)]	7.9% (2.0%) [63 (22)]	8.3% (2.4%) [67 (26)]	8.2% (2.3%) [66 (25)]	8.6% (2.7%) [70 (29)]
p value	<0.001	n/a	0.002	0.076	0.006
<b><i>HbA<sub>1c</sub> at one year</i></b>					
mean (SD) [mmol/mol]	7.6% (1.7%) [60 (19)]	6.8% (1.2%) [51 (13)]	7.1% (1.5%) [54 (16)]	7.1% (1.4%) [54 (15)]	7.3% (1.6%) [56 (17)]
p value	<0.001	n/a	<0.001	0.003	0.010
<b><i>HbA<sub>1c</sub> at five years</i></b>					
mean (SD) [mmol/mol]	8.6% (1.7%) [70 (19)]	7.2% (1.4%) [55 (15)]	7.6% (1.7%) [60 (18)]	7.6% (1.7%) [60 (18)]	7.6% (1.7%) [60 (19)]
p value	<0.001	n/a	<0.001	0.002	0.006
<b><i>Missing Data</i></b>					
HbA <sub>1c</sub> value not recorded at one year					
number (proportion)	54 (16.5%)	3226 (11.3%)	69 (13.6%)	39 (11.8%)	30 (16.9%)
HbA <sub>1c</sub> value not recorded at five years					
number (proportion)	26 (16.0%)	1893 (12.3%)	32 (13.7%)	19 (12.5%)	13 (15.9%)

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**Supplementary Table S2.** Likelihood of poor glycaemic control

Likelihood of poor glycaemic control at one year and five years after diagnosis of diabetes, for diabetes following pancreatic disease, type 1 diabetes, and type 2 diabetes. With type 2 diabetes used as the reference group, and p values from logistic regression modelling. Odds ratios are adjusted for age, sex, ethnicity, index of multiple deprivation (IMD) score, alcohol consumption, smoking status, and body mass index.

\*n = number with poor glycaemic control, N = total with sufficient follow-up and measurement of HbA<sub>1c</sub>

	Diabetes with no prior pancreatic disease		Diabetes following pancreatic disease
	Type 1 diabetes	Type 2 diabetes	All
<b>Poor glycaemic control at one year (HbA<sub>1c</sub> ≥ 7%)</b>			
(n / N)*	149/273	8264/25423	177/439
proportion [95% CI]	54.6% [48.5%-60.6%]	32.5% [31.9%-33.1%]	40.3% [35.7%-45.1%]
p value	<0.001	n/a	0.001
unadjusted odds ratio [95% CI]	2.1 [1.7-2.6]	1.0	1.4 [1.1-1.7]
p value	<0.001	n/a	0.001
adjusted odds ratio [95% CI]	1.4 [1.1-1.8]	1.0	1.3 [1.1-1.6]
p value	0.007	n/a	0.005
<b>Poor glycaemic control at five years (HbA<sub>1c</sub> ≥ 7%)</b>			
(n / N)*	115/137	6251/13488	125/202
proportion [95% CI]	83.9% [76.5%-89.5%]	46.3% [45.5%-47.2%]	61.9% [54.8%-68.5%]
p value	<0.001	n/a	<0.001
unadjusted odds ratio [95% CI]	3.5 [2.5-5.1]	1.0	1.7 [1.3-2.2]
p value	<0.001	n/a	<0.001
adjusted odds ratio [95% CI]	2.5 [1.7-3.7]	1.0	1.7 [1.3-2.2]
p value	<0.001	n/a	<0.001

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**Supplementary Table S3. Likelihood of requiring insulin**

**Likelihood of insulin use within one year and five years after diagnosis of diabetes, for diabetes following pancreatic disease, type 1 diabetes, and type 2 diabetes; with type 2 diabetes used as the reference group, and p values from logistic regression modelling. Odds ratios are adjusted for age, sex, ethnicity, index of multiple deprivation (IMD) score, alcohol consumption, smoking status, body mass index, and HbA<sub>1c</sub> level at diagnosis.\*n = number with use of insulin, N = total with sufficient follow-up**

	Diabetes with no prior pancreatic disease	Diabetes following pancreatic disease		
	Type 2 diabetes	All	Diabetes following acute pancreatitis	Diabetes following chronic pancreatic disease
<b><i>Insulin use within one year</i></b>				
(n / N)*	379/26733	76/467	30/308	46/159
proportion [95% CI]	1.4% [1.3%-1.6%]	16.3% [13.1%-20.0%]	9.7% [6.8%-13.7%]	28.9% [22.2%-36.7%]
p value	n/a	<0.001	<0.001	<0.001
unadjusted odds ratio [95% CI]	1.0	13.5 [10.3-17.5]	7.5 [5.0-10.9]	28.3 [19.6-40.2]
p value	n/a	<0.001	<0.001	<0.001
adjusted odds ratio [95% CI]	1.0	9.6 [7.0-13.2]	6.4 [4.1-9.7]	16.4 [10.4-25.6]
p value	n/a	<0.001	<0.001	<0.001
<b><i>Insulin use within five years</i></b>				
(n / N)*	576/14080	61/206	28/134	33/72
proportion [95% CI]	4.1% [3.8%-4.4%]	29.6% [23.6%-36.4%]	20.9% [14.6%-28.9%]	45.8% [34.2%-57.9%]
p value	n/a	<0.001	<0.001	<0.001
unadjusted odds ratio [95% CI]	1.0	9.9 [7.2-13.4]	6.2 [4.0-9.3]	19.8 [12.3-31.7]
p value	n/a	<0.001	<0.001	<0.001
adjusted odds ratio [95% CI]	1.0	7.4 [5.2-10.4]	5.2 [3.3-8.2]	12.9 [7.4-22.2]
p value	n/a	<0.001	<0.001	<0.001

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**Supplementary Table 4.** Characteristics by individual pancreatic diseases

Characteristics of patients with diabetes following pancreatic disease, displayed by their underlying pancreatic diseases. Age and BMI are at the time of diagnosis of diabetes. Age, BMI, and time before diagnosis of diabetes are median values. HbA<sub>1c</sub> figures represent mean values. Patients with a diagnosis of both acute pancreatitis and a chronic pancreatic disease (prior to their development of diabetes) are included in the chronic pancreatic disease category only. If a patient with chronic pancreatitis developed pancreatic cancer or underwent surgical resection of the pancreas before developing diabetes they are represented in the corresponding cancer or surgical resection category only. If a patient with pancreatic cancer underwent surgical resection of the pancreas before developing diabetes they are represented in the surgical resection of the pancreas group only.

\*53 cases with comorbid acute pancreatitis

†1 case with comorbid acute pancreatitis only, and 1 case with both comorbid acute pancreatitis and chronic pancreatitis

‡7 cases with comorbid acute pancreatitis only, 6 cases with comorbid chronic pancreatitis only, 12 cases with comorbid pancreatic cancer only, and 3 cases with both comorbid acute pancreatitis and chronic pancreatitis

§2 cases with both comorbid acute pancreatitis and chronic pancreatitis

||Due to universal electronic prescribing in primary care and automatic inclusion of this information in the RCGP RSC database there is no known data missing for insulin use. Prescriptions started in secondary care and discontinued after less than two weeks may not have been captured.

	Diabetes following acute pancreatic disease	Diabetes following chronic pancreatic disease				
	Acute Pancreatitis	Chronic Pancreatitis	Pancreatic Cancer	Surgical Resection of the Pancreas	Cystic Fibrosis	Haemochromatosis
<b>Subjects</b>	361	91	11	43	18	35
Age (years) [IQR]	60 [51-72]	55 [44-66]	71 [66-82]	60 [51-74]	38 [26-56]	57 [51-66]
BMI (years) [IQR]	30.5 [27.0-36.4]	25.8 [21.5-29.6]	26.4 [21.6-30.4]	27.3 [24.0-31.5]	22.5 [21.3-26.5]	29.6 [27.3-34.0]
Time before diagnosis of diabetes (years) [IQR]	6.5 [2.5-13.3]	5.0 [2.3-9.5]	1.2 [0.8-2.0]	2.1 [0.4-5.6]	22.2 [14.9-31.3]	4.9 [2.0-7.4]
Subjects with comorbid pancreatic disease prior to diabetes diagnosis (proportion)	0 (0.0%)	53 (58.2%)*	2 (18.2%)†	28 (65.1%)‡	2 (11.1%)§	0 (0.0%)

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<b><i>HbA<sub>1c</sub> at diagnosis [SD] (mmol/mol)</i></b>	8.2% [2.3%] (66 [25])	9.0% [3.0%] (75 [33])	8.3% [2.0%] (67 [22])	8.2% [2.2%] (66 [24])	8.7% [2.7%] (72 [29])	8.2% [2.4%] (66 [26])
<b><i>HbA<sub>1c</sub> at one year [SD] (mmol/mol)</i></b>	7.1% [1.4%] (54 [15])	7.3% [1.7%] (56 [19])	7.5% [0.3%] (58 [3])	7.5% [1.5%] (58 [16])	6.9% [1.0%] (52 [11])	7.0% [1.7%] (53 [18])
<b><i>Poor glycaemic control at one year</i></b>						
(n / N)	113/291	32/75	3/3	16/34	5/12	8/24
proportion [95% CI]	38.8% [33.2%- 44.7%]	42.7% [31.5%- 54.6%]	100.0% [31.0%- 100.0%]	47.1% [30.2%- 64.6%]	41.7% [16.5%- 71.4%]	33.3% [16.4%- 55.3%]
<b><i>HbA<sub>1c</sub> at five years [SD] (mmol/mol)</i></b>	7.6% [1.7%] (60 [18])	7.6% [1.5%] (60 [16])	8.0% [n/a] (64 [n/a])	8.2% [1.3%] (66 [14])	8.0% [3.1%] (64 [34])	7.2% [2.0%] (55 [22])
<b><i>Poor glycaemic control at five years</i></b>						
(n / N)	82/133	24/37	1/1	10/12	3/7	5/12
proportion [95% CI]	61.7% [52.8%- 69.8%]	64.9% [47.4%- 79.3%]	100.0% [5.5%- 100%]	83.3% [50.9%- 97.1%]	42.9% [11.8%- 79.8%]	41.7% [16.5%- 71.4%]
<b><i>Insulin use within one year</i></b>						
(n / N)	30/308	22/79	0/3	9/35	14/17	1/25
proportion [95% CI]	9.7% [6.8%- 13.7%]	27.8% [18.6%- 39.2%]	0.0% [0.0%- 69.0%]	25.7% [13.1%- 43.6%]	82.4% [55.8%- 95.3%]	4.0% [0.2%- 22.3%]
<b><i>Insulin use within five years</i></b>						
(n / N)	28/134	15/36	0/0	8/12	10/10	0/14
proportion [95% CI]	20.9% [14.6%- 28.9%]	41.7% [26.0%- 59.1%]	n/a	66.7% [35.4%- 88.7%]	100.0% [65.5%- 100.0%]	0.0% [0.0%- 26.8%]
<b><i>Missing Data</i></b>						
HbA <sub>1c</sub> value not recorded at one year						
number (proportion)	39 (11.8%)	11 (12.8%)	4 (57.1%)	5 (12.8%)	6 (33.3%)	4 (14.3%)
HbA <sub>1c</sub> value						

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not recorded at five years						
number (proportion)	19 (12.5%)	4 (9.8%)	0 (0.0%)	3 (20.0%)	4 (36.4%)	2 (14.3%)