Appendix

Supplementary tables 1–6

This appendix was part of the submitted manuscript and has been peer reviewed.

Table 1. Behaviours for which baseline data from cohort studies and external prevalence data sources were harmonised

Risk factors	Cohort data							External data	
	MCCS	BMES	ALSWH	AusDiab	NWAHS	CHAMP	45&Up	NHS	NDSHS
Modifiable risk factors									
Smoking*,†									
Status (never, former, current)	√	√	√	√	√	√	√	√	√
Time since quitting (years)	√	√	√	√	√	√	√	√	√
Intensity (cigarettes/day)	√	√	√	√	√	√	√	—	√
Duration (years)	√	√	√	√	√	√	√	√	√
Pack-years	√	√	√	√	√	√	√	—	√
Age started smoking (years)	√	√	√	√	√	√	√	√	√
Body mass index (kg/m^2)*,†	√	√	√	√	√	√	√	√	—
Alcohol consumption (drinks/day)*,†	√	√	√	√	√	√	√	√	√
Diet*									
Red meat (times/week)	√	—	—	—	—	—	√	—	—
Processed meat (times/week)	√	—	—	—	—	—	√	—	—
Non-modifiable risk factors									
Age*,†	√	√	√	√	√	√	√	√	√
Sex*,†	√	√	√	√	√	√	√	√	√
Height (cm)*	√	√	√	√	√	√	√	√	√
Country of birth (Australia, other)†	√	√	√	√	√	√	√	√	√
Marital status (married/de facto, not married)†	√	√	√	√	√	√	√	√	√
Educational attainment (low, intermediate, high)†	√	√	√	√	√	√	√	√	√
Socio-economic status (IRSD)†	√	√	√	√	√	√	√	√	√
Residential location (ARIA)†	√	√	√	√	√	√	√	√	√
Diabetes mellitus*,†	√	√	√	√	√	√	√	√	—

√ = available; — = not available.

45&Up = 45 and Up Study, ALSWH = Australian Longitudinal Study on Women's Health; AusDiab = Australian Diabetes, Obesity and Lifestyle Study; BMES = Blue Mountains Eye Study; CHAMP = Concord Health and Ageing in Men Project; MCCS = Melbourne Collaborative Cohort Study; NDSHS = National Drug Strategy Household Survey; NHS = National Health Survey; NWAHS = North West Adelaide Health Study.

ARIA = Accessibility/Remoteness Index of Australia; IRSD = Index of Relative Socio-economic Disadvantage (IRSD).

* Evaluated as a potential confounder of the association between the modifiable risk factors and pancreatic cancer risk.

† Evaluated as a potential effect modifier of the pancreatic cancer burden attributable to modifiable risk factors.

Table 2. Cohort-specific hazard ratios for pancreatic cancer incidence during 10-year follow-up, by level of risk factors

Risk factors	Hazard ratio (95% confidence interval)*							P[†]
	MCCS	BMES	ALSWH	AusDiab	NWAHS	CHAMP	45&Up	
Incident cases	75	13	75	16	7	8	410	
Non-modifiable risk factors								
Sex								
Men	1	1		1	1		1	
Women	0.69 (0.44–1.08)	0.56 (0.19–1.66)		2.47 (0.80–7.65)	2.27 (0.44–11.7)		0.74 (0.61–0.90)	0.17
Height (per 5 cm)	1.06 (0.89–1.26)	0.83 (0.54–1.29)	1.09 (0.92–1.30)	1.42 (0.94–2.13)	0.88 (0.50–1.57)	0.80 (0.48–1.32)	1.02 (0.96–1.10)	0.46
Diabetes mellitus								
No	1	1	1	1	1	1	1	
Yes	1.59 (0.69–3.68)	0.98 (0.13–7.52)	1.23 (0.57–2.69)	0.38 (0.05–2.93)	1.48 (0.17–12.8)	1.56 (0.31–7.72)	1.90 (1.48–2.43)	0.71
Modifiable risk factors								
Smoking								
Never	1	1	1	1	1	1	1	
Former	1.16 (0.69–1.95)	0.76 (0.20–2.88)	1.19 (0.72–1.99)	1.14 (0.39–3.33)	3.11 (0.55–17.5)	4.00 (0.48–33.2)	1.04 (0.84–1.29)	0.74
Current	1.27 (0.58–2.77)	2.57 (0.60–11.0)	1.61 (0.78–3.36)	0.70 (0.09–5.69)	1.71 (0.14–20.4)	6.55 (0.41–106)	2.64 (1.90–3.67)	0.47
Body mass index (kg/m^2)								
< 25.0[‡]	1	1	1	1	1	1	1	
25.0–29.9	1.05 (0.62–1.78)	1.53 (0.46–5.12)	0.88 (0.52–1.47)	1.18 (0.37–3.74)	0.73 (0.05–12.0)	0.68 (0.11–4.10)	1.09 (0.86–1.38)	0.97
≥ 30.0	0.97 (0.51–1.86)	0.68 (0.08–5.94)	0.74 (0.35–1.58)	0.92 (0.22–3.74)	5.01 (0.58–43.0)	1.20 (0.20–7.37)	1.34 (1.02–1.77)	0.59
Alcohol consumption								
≤ 2 drinks/day	1	1	1	1	1	1	1	
> 2 drinks/day	1.21 (0.68–2.17)	0.67 (0.08–5.32)	0.39 (0.05–2.80)	0.72 (0.09–5.86)	NE	0.91 (0.11–7.62)	1.10 (0.83–1.46)	0.91

NE = not estimable.

45&Up = 45 and Up Study, ALSWH = Australian Longitudinal Study on Women's Health; AusDiab = Australian Diabetes, Obesity and Lifestyle Study; BMES = Blue Mountains Eye Study; CHAMP = Concord Health and Ageing in Men Project; MCCS = Melbourne Collaborative Cohort Study; NWAHS = North West Adelaide Health Study.

* Adjusted for age and sex.

† For heterogeneity of study-specific hazard ratios (asymptotic DerSimonian–Laird Q statistic).

‡ As only 1% of the study population (eight cases of pancreatic cancer) were underweight (BMI < 18.5 kg/m^2), this group could not be analysed separately.

Table 3. Smoking-related exposures and hazard ratios for pancreatic cancer incidence, by smoking-related exposures for former and current smokers

| | Former smokers | | | | | | Current smokers | |
| | All | | Quit ≥ 15 years ago | | Quit < 15 years ago | | | |
Smoking variable	n	Hazard ratio (95% CI)*	n	Hazard ratio (95% CI)*	n	Hazard ratio (95% CI)*	n	Hazard ratio (95% CI)*
Time since quitting (years)								
Median (IQR)		20 (10–29)		26 (20–34)		7 (3–10)		
Continuous (per 5 years)	189	0.89 (0.84–0.94)	113	0.93 (0.85–1.03)	76	0.93 (0.72–1.22)		
Categorical								
Never smoker	286	1						
Former, ≥ 30 years ago	51	0.74 (0.55–1.01)						
Former, 25–29 years ago	15	0.73 (0.43–1.22)						
Former, 20–24 years ago	31	1.29 (0.88–1.87)						
Former, 15–19 years ago	16	0.80 (0.48–1.33)						
Former, 10–14 years ago	29	1.59 (1.08–2.34)						
Former, 5–9 years ago	23	1.53 (0.99–2.35)						
Former, < 5 years ago	24	1.67 (1.10–2.55)						
Current	65	2.18 (1.65–2.88)						
Frequency (cigarettes/day)								
Median (IQR)		16 (10–20)		15 (10–20)		20 (10–25)		16 (10–25)
Continuous (per 5 cigarettes/day)	189	1.01 (0.96–1.06)	104	1.00 (0.93–1.08)	73	0.97 (0.88–1.06)	65	0.97 (0.85–1.09)
Categorical								
Never smoker	286	1	286	1	286	1	286	1
≤ 5	27	1.19 (0.80–1.76)	16	0.90 (0.54–1.49)	8	2.10 (1.04–4.26)	4	1.33 (0.50–3.59)
6–10	42	0.98 (0.71–1.36)	27	0.82 (0.55–1.21)	15	1.80 (1.07–3.02)	8	1.29 (0.64–2.62)
11–15	20	0.90 (0.57–1.42)	9	0.57 (0.30–1.12)	9	1.51 (0.79–2.94)	19	3.59 (2.25–5.73)
16–20	49	1.06 (0.78–1.45)	26	0.79 (0.52–1.18)	20	1.66 (1.05–2.62)	18	2.71 (1.67–4.38)
> 20	51	1.27 (0.93–1.72)	26	1.04 (0.69–1.57)	21	1.47 (0.93–2.30)	16	2.05 (1.23–3.41)

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	Former smokers						Current smokers	
	All		**Quit ≥ 15 years ago**		**Quit < 15 years ago**			
	n	Hazard ratio (95% CI)*	*n*	Hazard ratio (95% CI)*	*n*	Hazard ratio (95% CI)*	*n*	Hazard ratio (95% CI)*
Duration (years)								
Median (IQR)		21 (12–32)		16 (9–25)		32 (23–40)		34 (27–42)
Continuous (per 10 years)	184	1.27 (1.13–1.41)	111	1.17 (0.98–1.40)	73	1.18 (0.85–1.64)	60	1.42 (0.86–2.34)
Categorical								
Never smoker	286	1	286	1	286	1	286	1
< 10	11	0.51 (0.28–0.93)	11	0.53 (0.29–0.97)	0	—	0	—
10–19	37	0.97 (0.69–1.37)	34	0.96 (0.67–1.37)	3	1.23 (0.39–3.89)	0	—
20–29	38	0.89 (0.64–1.26)	32	0.91 (0.63–1.32)	6	0.82 (0.36–1.85)	4	1.40 (0.52–3.81)
30–39	43	1.12 (0.81–1.56)	20	0.80 (0.51–1.27)	23	1.70 (1.11–2.63)	14	1.82 (1.05–3.15)
40–49	41	1.58 (1.13–2.21)	14	1.30 (0.75–2.25)	27	1.75 (1.17–2.61)	21	2.44 (1.56–3.82)
≥ 50	14	1.51 (0.88–2.60)	0	—	14	1.71 (0.99–2.94)	21	2.27 (1.45–3.56)
Pack-years								
Median (IQR)		16 (6–31)		11 (5–23)		28 (15–45)		29 (15–44)
Continuous (per 10 pack-years)	173	1.03 (0.98–1.09)	102	1.03 (0.95–1.01)	71	0.95 (0.87–1.04)	60	0.98 (0.87–1.09)
Categorical								
Never smoker	286	1	286	1	286	1	286	1
< 10	39	0.81 (0.58–1.14)	33	0.76 (0.53–1.09)	6	1.37 (0.61–3.10)	3	1.11 (0.35–3.48)
10–19	38	1.07 (0.76–1.51)	25	0.85 (0.56–1.28)	13	2.07 (1.18–3.63)	4	0.99 (0.37–2.68)
20–29	29	1.12 (0.76–1.64)	16	0.84 (0.51–1.40)	13	1.78 (1.02–3.11)	15	3.02 (1.79–5.10)
30–39	14	0.75 (0.44–1.29)	5	0.42 (0.17–1.02)	9	1.31 (0.67–2.54)	12	2.51 (1.40–4.49)
≥ 40	53	1.47 (1.09–1.99)	23	1.30 (0.84–2.02)	30	1.58 (1.08–2.31)	26	2.28 (1.52–3.42)
Age started smoking (years)								
Median (IQR)		18 (16–20)		18 (16–19)		17 (15–20)		18 (15–19)
Continuous (per year)	189	0.94 (0.75–1.19)	111	0.90 (0.66–1.23)	73	1.00 (0.71–1.42)	60	0.88 (0.61–1.28)
Categorical								
Never smoker	286	1	286	1	286	1	286	1
< 16	37	1.08 (0.76–1.53)	19	0.82 (0.51–1.32)	16	1.46 (0.88–2.44)	17	2.33 (1.42–3.84)
16–19	113	1.07 (0.85–1.33)	74	0.91 (0.70–1.19)	39	1.59 (1.13–2.23)	33	2.32 (1.61–3.35)
≥ 20	39	1.02 (0.73–1.43)	18	0.68 (0.42–1.10)	18	1.59 (0.98–2.56)	10	1.37 (0.72–2.57)

CI = confidence interval; IQR = interquartile range, *n* = number of cases of exocrine pancreatic cancer. * Adjusted for age, sex, study and body mass index.

Table 4. Hazard ratios for pancreatic cancer incidence, by body mass index (BMI)

Body mass index	n	Hazard ratio (95% CI)
Continuous (per 5 kg/m^2)*	540	1.09 (0.99–1.19)
Categorical (kg/m^2)*		
< 25.0[†]	211	1
25.0–27.4	111	0.94 (0.74–1.18)
27.5–29.9	104	1.24 (0.98–1.58)
30.0–32.4	50	1.04 (0.76–1.42)
32.5–34.9	36	1.53 (1.08–2.19)
≥ 35	28	1.24 (0.84–1.85)

CI = confidence interval; n = number of cases of exocrine pancreatic cancer.

* Adjusted for age, sex, study, smoking (never smoker, former smoker who quit ≥ 15 years ago, former smoker who quit < 15 years ago, current smoker). † As only 1% of the study population (eight people with pancreatic cancer) were underweight (BMI < 18.5 kg/m^2), this group could not be analysed separately.

Table 5. Hazard ratios for pancreatic cancer incidence, by alcohol consumption

Alcohol consumption	n	Hazard ratio (95% CI)
Continuous (drinks/day)*	527	1.04 (0.97–1.10)
Categorical (drinks/day)*		
0	227	1
< 1	115	0.89 (0.71–1.13)
1–2	110	0.96 (0.76–1.21)
2–3	37	1.00 (0.69–1.44)
> 3	38	1.02 (0.71–1.47)

CI = confidence interval; n = number of cases of exocrine pancreatic cancer.

* Adjusted for age, sex, study, smoking (never smoker, former smoker who quit ≥ 15 years ago, former smoker who quit < 15 years ago, current smoker) and body mass index.

Table 6. Hazard ratios for death from any cause during 10 years' follow-up (as the first event), by exposure level

	Hazard ratio (95% confidence interval)					
	Men and women		Men		Women	
Behavioural risk factor	Model 1*	Model 2†	Model 1*	Model 2†	Model 1*	Model 2†
Smoking status						
Never smoker	1	1	1	1	1	1
Former smoker	1.39 (1.34–1.43)	1.40 (1.36–1.44)	1.39 (1.33–1.44)	1.39 (1.33–1.45)	1.40 (1.34–1.46)	1.42 (1.35–1.48)
Current smoker	2.54 (2.42–2.66)	2.52 (2.40–2.65)	2.60 (2.43–2.78)	2.55 (2.38–2.73)	2.48 (2.32–2.65)	2.49 (2.32–2.67)
Time since quitting smoking‡						
Never smoker	1	1	1	1	1	1
Former smoker, who quit:						
≥ 15 years ago	1.20 (1.16–1.24)	1.20 (1.16–1.25)	1.21 (1.16–1.27)	1.21 (1.16–1.27)	1.21 (1.14–1.28)	1.21 (1.14–1.28)
< 15 years ago	1.97 (1.89–2.06)	1.98 (1.89–2.07)	2.06 (1.94–2.19)	2.06 (1.94–2.19)	1.86 (1.74–1.99)	1.86 (1.74–1.99)
Current smoker	2.59 (2.47–2.72)	2.57 (2.45–2.70)	2.61 (2.44–2.79)	2.61 (2.44–2.79)	2.54 (2.37–2.72)	2.54 (2.37–2.72)
Smoking intensity§						
Never smoker	1	1	1	1	1	1
Current smoker:						
0–10 cigarettes/day	2.06 (1.89–2.24)	2.03 (1.86–2.22)	2.09 (1.84–2.37)	1.99 (1.74–2.27)	2.03 (1.81–2.28)	2.06 (1.83–2.32)
> 10 cigarettes/day	2.92 (1.76–3.08)	2.90 (2.74–3.07)	2.96 (2.75–3.19)	2.93 (2.72–3.17)	2.88 (2.66–3.12)	2.88 (2.65–3.13)
Body mass index (BMI)						
< 25.0 kg/m^2	1	1	1	1	1	1
25.0–29.9 kg/m^2	0.81 (0.79–0.84)	0.82 (0.80–0.85)	0.82 (0.78–0.85)	0.83 (0.79–0.86)	0.81 (0.77–0.85)	0.82 (0.78–0.86)
≥ 30.0 kg/m^2	1.04 (1.00–1.08)	1.04 (1.00–1.08)	1.07 (1.01–1.13)	1.04 (0.99–1.10)	1.01 (0.95–1.06)	1.03 (0.97–1.09)
Alcohol consumption						
≤ 2 drinks/day	1		1		1	
> 2 drinks/day	1.02 (0.98–1.06)		0.98 (0.93–1.03)		1.20 (1.10–1.32)	

* Adjusted for age, sex, study, and risk factor of interest. † Adjusted for age, sex, study, smoking, and BMI. ‡ Evaluated for the 95% of former smokers who provided information on time since quitting.
§ Evaluated for the 93% of current smokers who provided information on smoking intensity.