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Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Valabhji J, Barron E, Gorton T, et al. Associations between reductions in routine care delivery and non-COVID-19-related mortality in people with diabetes in England during the COVID-19 pandemic: a population-based parallel cohort study. *Lancet Diabetes Endocrinol* 2022; published online May 27. [https://doi.org/10.1016/S2213-8587\(22\)00131-0](https://doi.org/10.1016/S2213-8587(22)00131-0).

Supplementary Tables

S1: Incidence rate ratios for the 2021 cohort compared to the 2019 cohort as a result of poisson regression analyses

Covariates included in the model	IRR	95% CI lower	95% CI upper	p value
Time period	1.026	1.009	1.043	0.003
Time period, age, sex, ethnicity, socioeconomic deprivation and diabetes type	1.023	1.006	1.040	0.007

S2: Number and percentage of people who received all eight care processes and each individual care process and percentage change in 2020/21 compared to 2019/20 and in 2018/19 compared to 2017/18

	2021 cohort							2019 cohort						
	Number		Percentage		Percentage change			Number		Percentage		Percentage change		
	2019/20	2020/21	2019/20	2020/21	% change	95% CI lower	95% CI upper	2017/18	2018/19	2017/18	2018/19	% change	95% CI lower	95% CI upper
All eight care processes	1,547,240	853,660	48.1%	26.5%	-44.8%	-45.0%	-44.7%	1,437,740	1,370,315	48.3%	46.1%	-4.7%	-4.9%	-4.5%
HbA1c	2,886,485	2,484,830	89.7%	77.2%	-13.9%	-14.1%	-13.8%	2,743,140	2,737,110	92.2%	92.0%	-0.2%	-0.4%	-0.1%
Blood pressure	2,957,690	2,262,890	92.2%	70.5%	-23.5%	-23.6%	-23.4%	2,780,115	2,778,140	93.8%	93.7%	-0.1%	-0.2%	0.1%
Cholesterol	2,726,880	2,226,835	85.0%	69.4%	-18.3%	-18.5%	-18.2%	2,613,765	2,610,580	88.2%	88.1%	-0.1%	-0.3%	0.0%
Serum creatinine	2,810,040	2,469,510	87.6%	77.0%	-12.1%	-12.3%	-12.0%	2,694,140	2,689,150	90.9%	90.7%	-0.2%	-0.4%	0.0%
Urine albumin	1,984,900	1,403,250	61.9%	43.7%	-29.3%	-29.5%	-29.2%	1,779,270	1,675,895	60.0%	56.5%	-5.8%	-6.0%	-5.6%
Foot surveillance	2,494,870	1,558,640	77.8%	48.6%	-37.5%	-37.7%	-37.4%	2,419,665	2,442,855	81.6%	82.4%	1.0%	0.8%	1.1%
BMI	2,680,050	1,941,825	83.5%	60.5%	-27.5%	-27.7%	-27.4%	2,478,030	2,500,985	83.6%	84.4%	0.9%	0.7%	1.1%
Smoking	2,634,990	2,038,850	82.1%	63.6%	-22.6%	-22.8%	-22.5%	2,424,320	2,452,995	81.8%	82.8%	1.2%	1.0%	1.4%

S3: Percentage of people who received all eight care processes by deprivation and ethnicity in the 2021 cohort and 2019 cohort

		2021 cohort					2019 cohort				
		Number who received all eight care processes in 2020/21	Number who received all eight care processes in 2019/20	Percentage received all eight care processes in 2020/21	Percentage received all eight care processes in 2019/20	Percentage change in 2020/21 compared to 2019/20	Number who received all eight care processes in 2018/19	Number who received all eight care processes in 2017/18	Percentage received all eight care processes in 2018/19	Percentage received all eight care processes in 2017/18	Percentage change in 2018/19 compared to 2017/18
Overall		853,660	1,547,240	26.5%	48.1%	-44.8%	1,370,315	1,437,740	46.1%	48.3%	-4.7%
Deprivation	IMD 1 (most deprived)	191,770	362,390	25.3%	47.5%	-47.1%	318,010	332,175	45.0%	47.0%	-4.3%
	IMD 2	188,700	340,950	26.5%	47.9%	-44.7%	295,560	307,890	45.3%	47.1%	-4.0%
	IMD 3	178,420	318,825	26.9%	48.1%	-44.0%	279,855	294,945	46.0%	48.5%	-5.1%
	IMD 4	157,555	284,560	26.7%	48.2%	-44.6%	254,180	271,055	46.4%	49.5%	-6.2%
	IMD 5 (least deprived)	137,050	240,200	27.9%	49.0%	-42.9%	222,385	231,325	48.7%	50.6%	-3.9%
Ethnicity	Non-white	210,255	344,565	30.7%	50.3%	-39.0%	279,810	275,305	46.8%	46.0%	1.6%
	White	578,135	1,072,995	25.7%	47.8%	-46.1%	934,255	992,030	46.2%	49.1%	-5.8%

S4: Characteristics of participants by eight care processes group in the 2021 cohort and 2019 cohort

		Not received 8 CPs in both years		Received all 8 CPs in both years		Received in the first but not in the second year		Received in the second but not in the first year	
		2020/21 and 2019/20	2018/19 and 2017/18	2020/21 and 2019/20	2018/19 and 2017/18	2020/21 and 2019/20	2018/19 and 2017/18	2020/21 and 2019/20	2018/19 and 2017/18
Total		1,376,270	1,018,855	558,595	853,260	988,645	584,480	295,060	517,050
Diabetes type	Type 1 diabetes	10%	12%	5%	5%	6%	7%	7%	7%
	Type 2 diabetes	87%	87%	95%	95%	94%	93%	92%	92%
	other	3%	1%	0%	0%	1%	1%	1%	1%
Age	<40	10%	11%	3%	3%	4%	5%	6%	6%
	40-44	5%	5%	3%	3%	3%	3%	4%	4%
	45-49	7%	8%	5%	5%	5%	6%	7%	7%
	50-54	10%	10%	8%	7%	8%	9%	10%	10%
	55-59	12%	11%	11%	10%	11%	11%	13%	12%
	60-64	12%	11%	13%	13%	13%	13%	13%	13%
	65-69	11%	11%	15%	15%	14%	14%	13%	13%
	70-74	11%	10%	16%	17%	15%	14%	13%	13%
75+	23%	23%	26%	28%	28%	25%	21%	23%	
Sex	Male	54%	53%	58%	59%	57%	55%	57%	57%
	Female	46%	47%	42%	41%	43%	45%	43%	43%
Ethnicity	Asian	12%	13%	16%	12%	13%	12%	15%	14%
	Black	4%	4%	6%	4%	5%	4%	5%	5%
	Mixed	1%	1%	1%	1%	1%	1%	1%	1%
	Other	2%	2%	2%	2%	2%	2%	2%	2%
	Unknown	10%	12%	7%	12%	9%	12%	8%	11%
	White	70%	67%	67%	69%	71%	69%	69%	67%
Deprivation	IMD 1 (most deprived)	24%	25%	23%	23%	24%	24%	22%	24%
	IMD 2	22%	23%	22%	21%	22%	22%	22%	22%
	IMD 3	21%	20%	21%	20%	20%	21%	21%	21%
	IMD 4	18%	18%	18%	19%	18%	19%	19%	18%
	IMD 5 (least deprived)	15%	14%	16%	17%	15%	15%	17%	15%

S5: Rates of mortality per 100,000 people with diabetes between weeks 27 and 41 in 2021 and 2019 in each eight care process group in the 2021 cohort and 2019 cohort

		Not received 8 CPs in both years		Received all 8 CPs in both years		Received in the first but not in the second year		Received in the second but not in the first year	
		2020/21 and 2019/20	2018/19 and 2017/18	2020/21 and 2019/20	2018/19 and 2017/18	2020/21 and 2019/20	2018/19 and 2017/18	2020/21 and 2019/20	2018/19 and 2017/18
Total		1,206*	1,292	530*	611	900	884	564*	695
Diabetes type	Type 1 diabetes	412	456	235	314	480	385	255	271
	Type 2 diabetes	1,307*	1,410	545*	627	927	922	588*	729
	other	956	753	365	407	681	560	534	565
Age	<40	69	Suppressed	Suppressed	Suppressed	50	Suppressed	Suppressed	Suppressed
	40-44	137	Suppressed	Suppressed	Suppressed	69	Suppressed	Suppressed	Suppressed
	45-49	211	206	95	67	116	108	76	67
	50-54	277	274	89	118	155	148	129	143
	55-59	378	369	135	142	225	262	220	187
	60-64	498	535	248	235	361	362	319	315
	65-69	840	922	348	417	543	579	464	541
	70-74	1,251	1,354	529	587	886	893	656	745
75+	3,530*	3,929	1,278*	1,399	2,185*	2,329	1,586*	1,913	
Sex	Male	1,132*	1,212	590*	657	921	930	601*	719
	Female	1,293*	1,382	448*	544	871	827	516*	664
Ethnicity	Asian	521	538	238	282	381	380	269	307
	Black	683	742	331	308	541	497	286	343
	Mixed	627	731	294	337	435	323	232	416
	Other	655	667	218	368	511	668	231	426
	Unknown	1,084*	1,233	525	591	847	776	501	648
	White	1,400*	1,508	633*	700	1,042	1,030	670*	827
Deprivation	IMD 1 (most deprived)	1,174	1,226	486*	570	871	873	595	651
	IMD 2	1,155*	1,279	508*	619	898	830	516*	670
	IMD 3	1,244	1,309	548	627	881	922	566*	731
	IMD 4	1,265	1,356	592	620	943	904	575*	727
	IMD 5 (least deprived)	1,211*	1,319	529*	625	919	902	572*	717

*Non-overlapping confidence intervals compared to previous years

S6: Interactions between annual eight care process group and deprivation and ethnicity in the 2021 cohort

Interaction	Wald test	P value
Eight care process group and deprivation	16.03	0.1901
Eight care process group and ethnicity	17.14	0.3107

S7: Observed and estimated number of deaths and rate of mortality per 100,000 population between weeks 27 and 41 in 2021

	Number of deaths	Rate per 100,000	95% CI lower	95% CI upper
Observed	30,118	936	925	946
Expected	27,043	840	830	850

S8: Causes of death between weeks 27 and 41 in 2021 and 2019

Cause of death	Number of deaths		Percentage increase
	2021	2019	
Diseases of the circulatory system	9,035	7,859	15.0%
Neoplasms	7,694	7,261	6.0%
Diseases of the respiratory system	3,232	3,102	4.2%
Mental and behavioural disorders	2,246	2,151	4.4%
Endocrine, nutritional, and metabolic diseases	1,836	1,595	15.1%
Diseases of the nervous system	1,656	1,410	17.4%
Diseases of the digestive system	1,632	1,389	17.5%
Other	2,787	2,365	17.8%
Total	30,118	27,132	11.0%

S9a: Sensitivity analyses: Number of non-COVID-19-related deaths for people with diabetes between weeks 27 and 50 in 2021 and 2019

	Number of deaths	Rate per 100,000	95% CI lower	95% CI upper
2021	50,539	1,570	1,557	1,584
2019	46,049	1,549	1,534	1,563

S9b: Sensitivity analyses: Incidence rate ratios for the 2021 cohort compared to the 2019 cohort as a result of poisson regression analyses for non-COVID-19-related deaths for people with diabetes between weeks 27 and 50 in 2021 and 2019

Covariates included in the model	IRR	95% CI lower	95% CI upper	p value
Time period	1.014	1.001	1.027	0.031
Time period, age, sex, ethnicity, socioeconomic deprivation and diabetes type	1.011	0.998	1.024	0.089

S10: Sensitivity analyses: Adjusted odds ratios for non-COVID-19-related deaths for people with diabetes between weeks 27 and 50 in 2021 and 2019

