

## ONLINE SUPPLEMENT

### **Occupational use of high-level disinfectants and asthma incidence in early to mid-career female nurses: a prospective cohort study**

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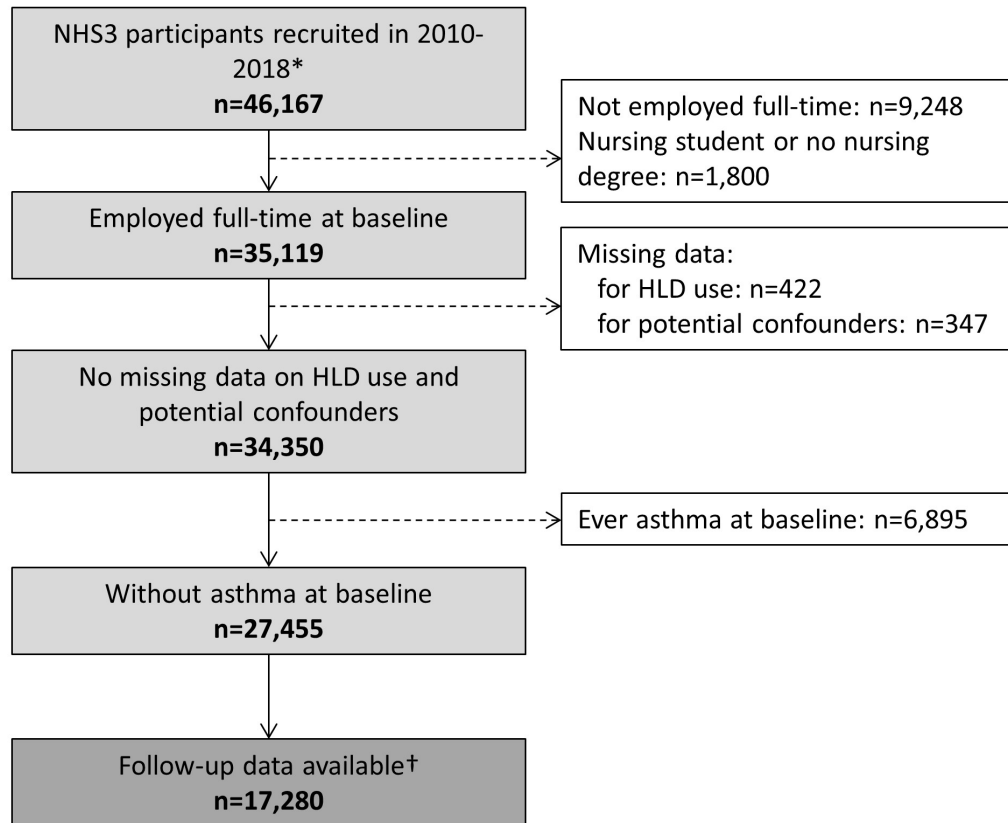
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**Figure E1** Flow chart of the study population.

\*Participants recruited in 2010-2018, eligible for  $\geq 1$  year of follow-up by October 2019.

†  $\geq 1$  year of follow-up. Compared to participants with follow-up data (n=17,280), those without follow-up data (n=10,175) were younger (mean age: 34.0 vs. 34.3 years); less often white (87% vs. 93%) and more often Hispanic (6% vs. 4%); more often obese (BMI  $\geq 30$ : 27% vs. 23%) and smokers (28% vs. 24%); and reported longer duration of HLD use ( $>5$  years: 12% vs. 11%). All differences were statistically significant ( $P < 0.05$ ) even after mutual adjustment.

**Table E1** Baseline characteristics of the study population according to use of high-level disinfectants (HLDs) in female nurses, n=17,280

	Duration of HLD use			P
	Never or <1 year (n=12,641)	1-5 years (n=2,778)	>5 years (n=1,861)	
Age, mean (SD)*	33.6 (7.1)	33.4 (7.0)	38.2 (5.7)	<0.001
Race, %				
White	93	93	94	0.05
Black	3	2	3	
Other	5	5	3	
Hispanic, %				
Non-Hispanic	96	96	96	0.90
Hispanic	4	4	4	
Smoking habits, %				
Never smoker	77	75	73	<0.001
Ex-smoker	5	5	7	
Current smoker	19	20	20	
BMI at baseline (kg/m2), %				
<25	53	52	44	<0.001
25 to 29.9	25	24	26	
≥30	22	24	30	
Highest nursing degree, %				
PhD	2	2	2	<0.001
MSc	21	19	24	
RN or BSN	73	75	67	
LPN	2	3	4	
Associate's degree	1	2	3	

Abbreviations: BMI, body mass index; SD, standard deviation; HLD, high-level disinfectant.

**Table E2** Prospective association between use of high-level disinfectants (HLD) and use of protective equipment, and asthma incidence in female nurses, n=17,280

	Person- years	No. of cases	Age-adjusted HR		Multivariable- adjusted HR	
			HR	95% CI	HR	95% CI
Never or $\leq 5$ years of HLD use (ref.)	58,347	334	1	-	1	-
>5 years of HLD use						
Use of protective equipment*						
Disinfection system with dedicated ventilation						
Yes	555	3	0.89	0.29-2.79	0.84	0.27-2.62
No	2,785	23	1.39	0.91-2.12	1.34	0.88-2.05
Respiratory protection						
Yes	405	3	1.24	0.40-3.86	1.18	0.38-3.69
No	2,953	23	1.31	0.85-2.00	1.27	0.82-1.93

Abbreviations: HR, hazard ratio; CI, confidence interval; HLD, high-level disinfectants.

Multivariable models were adjusted for age, race, ethnicity, smoking status and body mass index.

Use of HLD was evaluated by questionnaire at baseline.

\* In the past month, sometimes or always (vs. never).

**Table E3** Prospective association between use of high-level disinfectants (HLDs) and asthma incidence in female nurses, stratified by age group

	Person- years	No. of cases	Multivariable-adjusted HR	
			HR	95% CI
Nurses <34 years old at baseline				
Never or ≤5 years of HLD use (ref.)	29,788	156	1	-
>5 years of HLD use	1,627	16	1.75	1.03-2.98
Nurses ≥34 years old at baseline				
Never or ≤5 years of HLD use (ref.)	28,558	178	1	-
>5 years of HLD use	5,134	41	1.26	0.90-1.78
<i>P-interaction</i>			0.23	

Abbreviations: HR, hazard ratio; CI, confidence interval; HLD, high-level disinfectant.

Multivariable models were adjusted for age, race, ethnicity, smoking status and body mass index.

Use of HLD was evaluated by questionnaire at baseline.