

The PFAS Health Study

Presentation to the Williamtown Community
Reference Group

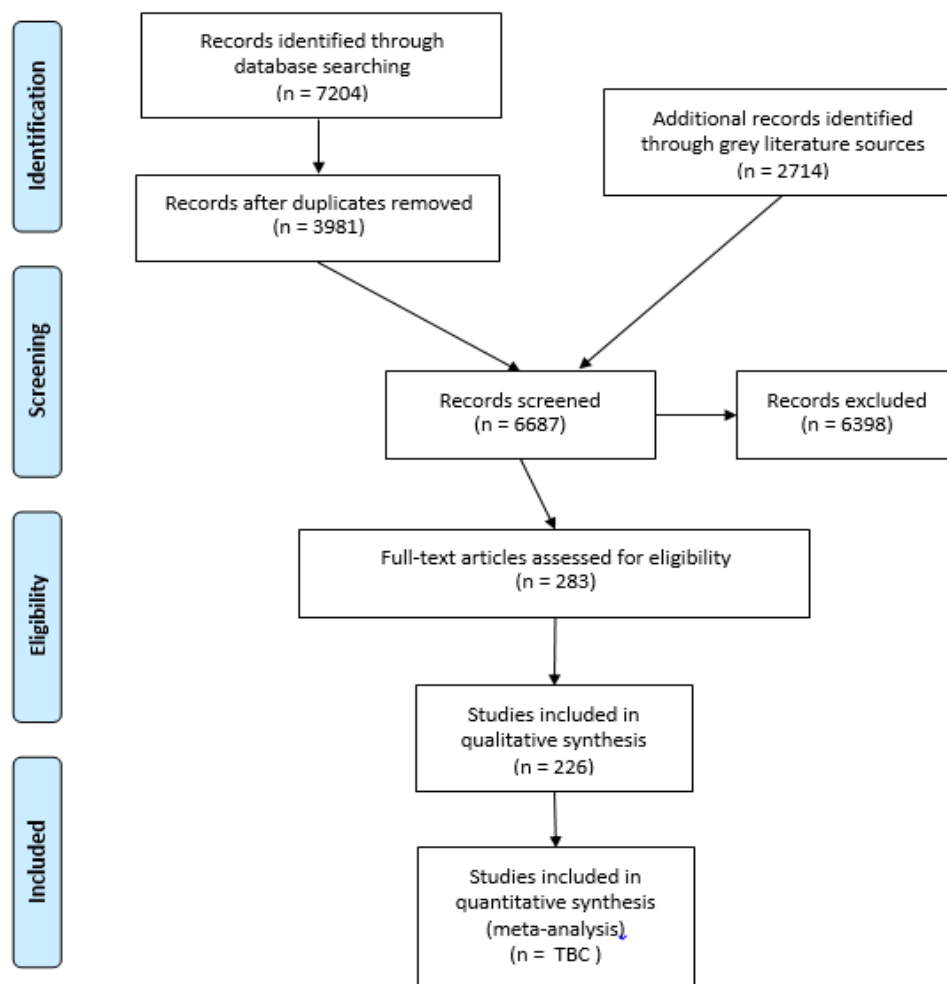
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Phase I – Systematic Review

- A systematic review summarises the results of previously conducted studies
- It aims to critically analyse the methods used as well as the findings in the available research
- This review will highlight health outcomes linked to PFAS exposure

PRISMA Flow Diagram of Studies



Phase 1 Systematic Review

Update on the systematic review on PFAS and health outcomes

- Evaluated health outcomes – Reproductive effects, metabolic effects (cholesterol, kidney and liver), neurodevelopmental effects, cardiovascular diseases, diabetes, obesity, immunological effects (autoimmune diseases and vaccination effects), respiratory conditions and skeletal effects (osteoarthritis and osteoporosis)
- Evaluations in progress – Cancer, prenatal effects, thyroid effects, asthma and allergies

Phase II Research Questions

- What concerns do individuals living in the vicinity of Williamtown and Oakey have in relation to exposure to PFAS and their health?
- What are the serum concentrations (mean and range) of PFAS in Williamtown and Oakey residents and how do these levels compare to those of people residing in non-contaminated communities?
- What sociodemographic (e.g. age, sex, location) and other factors (e.g. duration of residence in the area, water source) are associated with high serum PFAS within the Williamtown and Oakey communities?

Phase II Research Questions

- Are age-sex adjusted rates of PFAS candidate diseases higher among people who have lived in Williamtown and Oakey than in the general Australian population?
Candidate diseases include those that are reported to be linked, or possibly linked, to PFAS in humans in published studies.
- Are rates of adverse perinatal outcomes higher among children born to mothers who have lived in Williamtown and Oakey than in the general Australian population?

Four Component Studies

1. Focus groups of residents
2. Blood Serum Study
3. Cross-sectional survey of residents
4. Data linkage study examining incidence of disease in residents

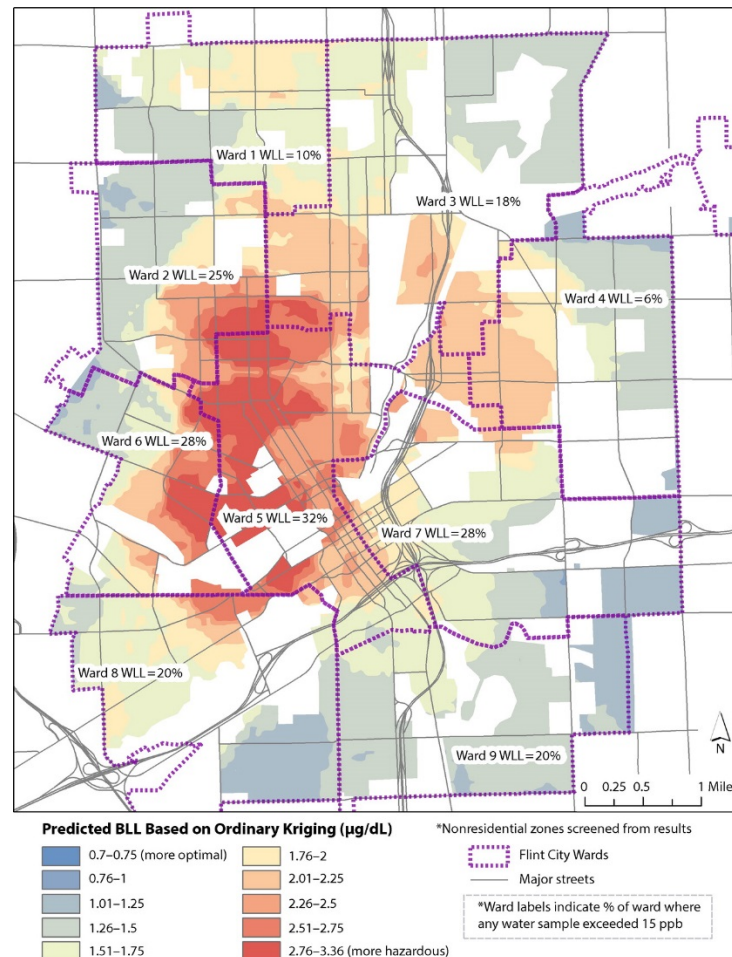
Component 1: Focus Groups

- Aim: gather information from participants in terms of their social and health experiences in relation to PFAS exposure
- 4-5 focus groups held August-October 2017
- Residents of the red zone and surrounding areas will be invited to attend
- Group discussions will be audio recorded, transcribed and analysed
- The results will provide information in developing the cross-sectional survey

Component 2: Blood serum study

- Serum concentration levels of PFAS in residents in Investigation Areas will be compared to levels in people living in the surrounding area
- Approximately 1,000 samples per town
- A geospatial analysis will report environmental risk factors and identify clusters of high PFAS concentrations

Example: Blood Lead & Water Supply



Hanna-Attisha M, LaChance J, Sadler RC, Champney Schnepf A. Elevated Blood Lead Levels in Children Associated With the Flint Drinking Water Crisis: A Spatial Analysis of Risk and Public Health Response. *Am J Public Health*. 2016 Feb;106(2):283-90. doi: 10.2105/AJPH.2015.303003.

Component 3: Cross-sectional survey

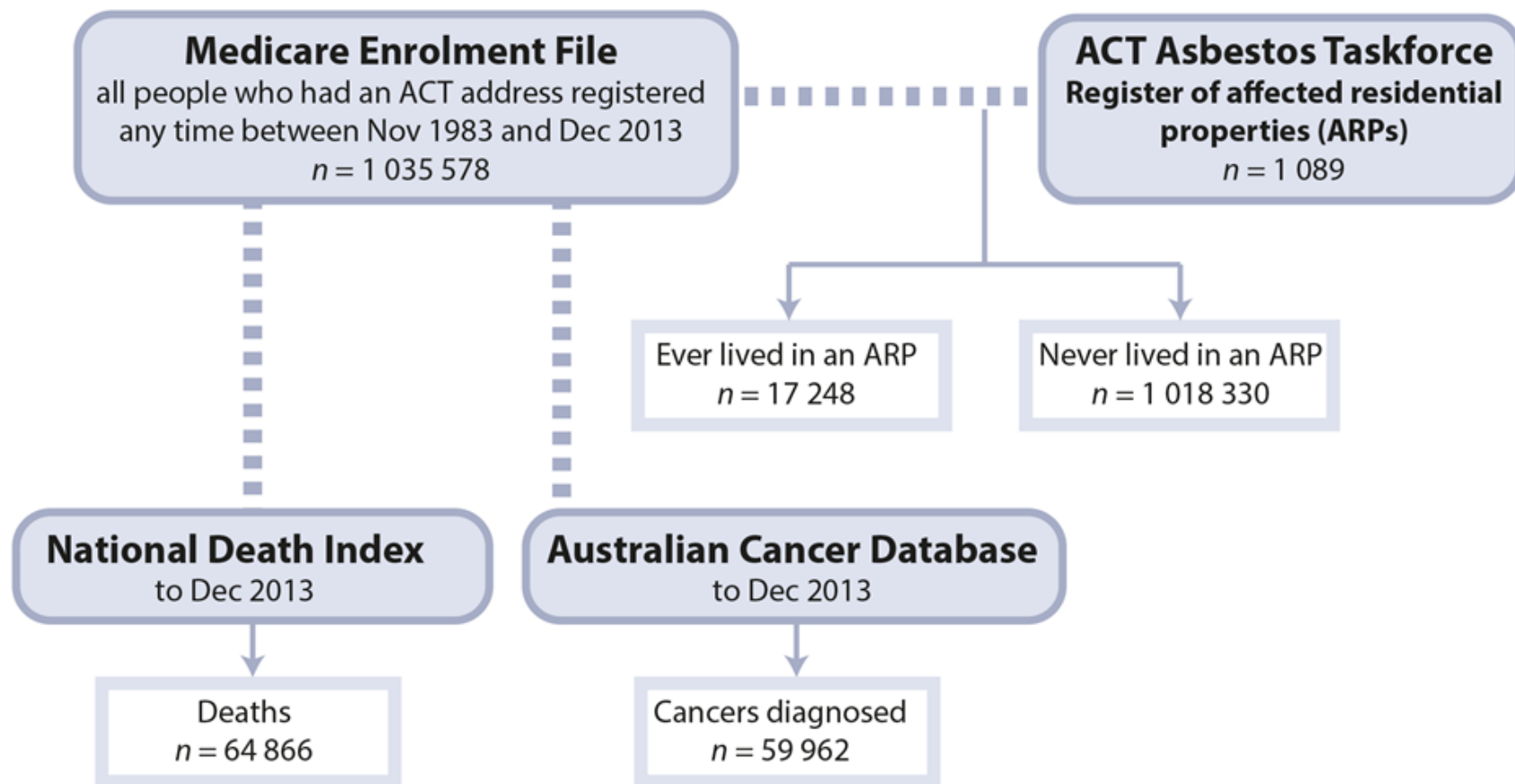
- Informed by focus groups
- Generate information for understanding
 - Health-related concerns
 - Perceptions of psychological distress
 - Likely exposure pathways
- Exposure questions
 - Reference Department of Defence Water Use and Community Surveys
 - C-8 Community Follow-up Study, Baseline Questionnaire, 2008
 - Airservices Australia's Aviation Rescue and Fire Fighting staff questionnaire

Component 4: Data linkage study

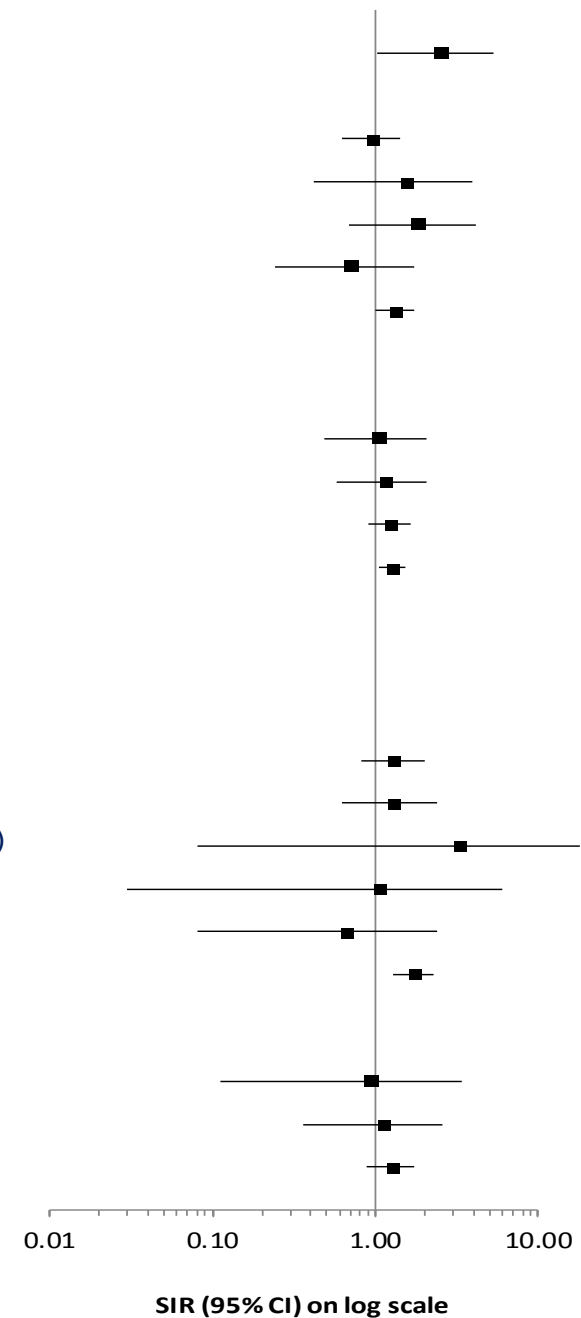
- Medicare data will be used to identify the study population
- Health outcomes will be collated from the Australian Cancer Database, Admitted Patient Data Collections and National Perinatal Data Collection
- The National Death Index will also be used to identify deaths for censoring



Data Linkage: Nov 1983 – Dec 2013



	Total cases	O / E	SIR (95% CI)
MALES			
Mesothelioma	246	7/2.75	2.55 (1.02–5.24)
Other asbestos-associated cancers			
Lung	2455	25/26.1	0.96 (0.62–1.41)
Laryngeal	254	4/2.60	1.54 (0.42–3.94)
Pharyngeal	292	6/3.20	1.87 (0.69–4.08)
Stomach	654	5/6.80	0.73 (0.24–1.72)
Colorectal	3789	54/40.8	1.32 (0.99–1.73)
Other cancers			
Bladder	832	9/8.37	1.08 (0.49–2.04)
Kidney	860	11/9.57	1.15 (0.57–2.06)
Melanoma	3636	46/37.5	1.23 (0.9–1.64)
Prostate	8209	120/93.9	1.28 (1.06–1.53)
FEMALES			
Mesothelioma	39	0/0.39	(0–9.46)*
Other asbestos-associated cancers			
Lung	1577	21/16.0	1.31 (0.81–2.01)
Ovarian	762	10/7.76	1.29 (0.62–2.37)
Laryngeal	33	1/0.31	3.25 (0.08–17.97)
Pharyngeal	85	1/0.93	1.07 (0.03–5.99)
Stomach	343	2/3.04	0.66 (0.08–2.38)
Colorectal	3186	53/30.7	1.73 (1.29–2.26)
Other cancers			
Bladder	241	2/2.12	0.94 (0.11–3.41)
Kidney	444	5/4.48	1.12 (0.36–2.6)
Melanoma	3050	37/29.3	1.26 (0.89–1.74)



Timing Of The Study

Activity	Start	End
Protocol development	Dec 2016	Apr 2017
Systematic review	Jan 2017	Jun 2017
Component 1. Focus groups	Jul 2017	Dec 2017
Component 2. Blood serum study	Dec 2016	Nov 2019
Component 3. Cross-sectional survey	Jun 2017	Sep 2019
Component 4. Data linkage study	Jan 2019	Dec 2020

Community Consultation

- Community reference panel
 - 2-3 members
- Community meetings prior to each component
- Attend community reference meetings as requested

Communications

- Department of Health
 - AHPPC & sub-committees
- Community and other stakeholders
 - Reports
 - Presentations
- Scientific community (peer-review)
 - Journal articles
 - Conferences