USING SANT DATALINK FOR CANCER RESEARCH AND CANCER CONTROL

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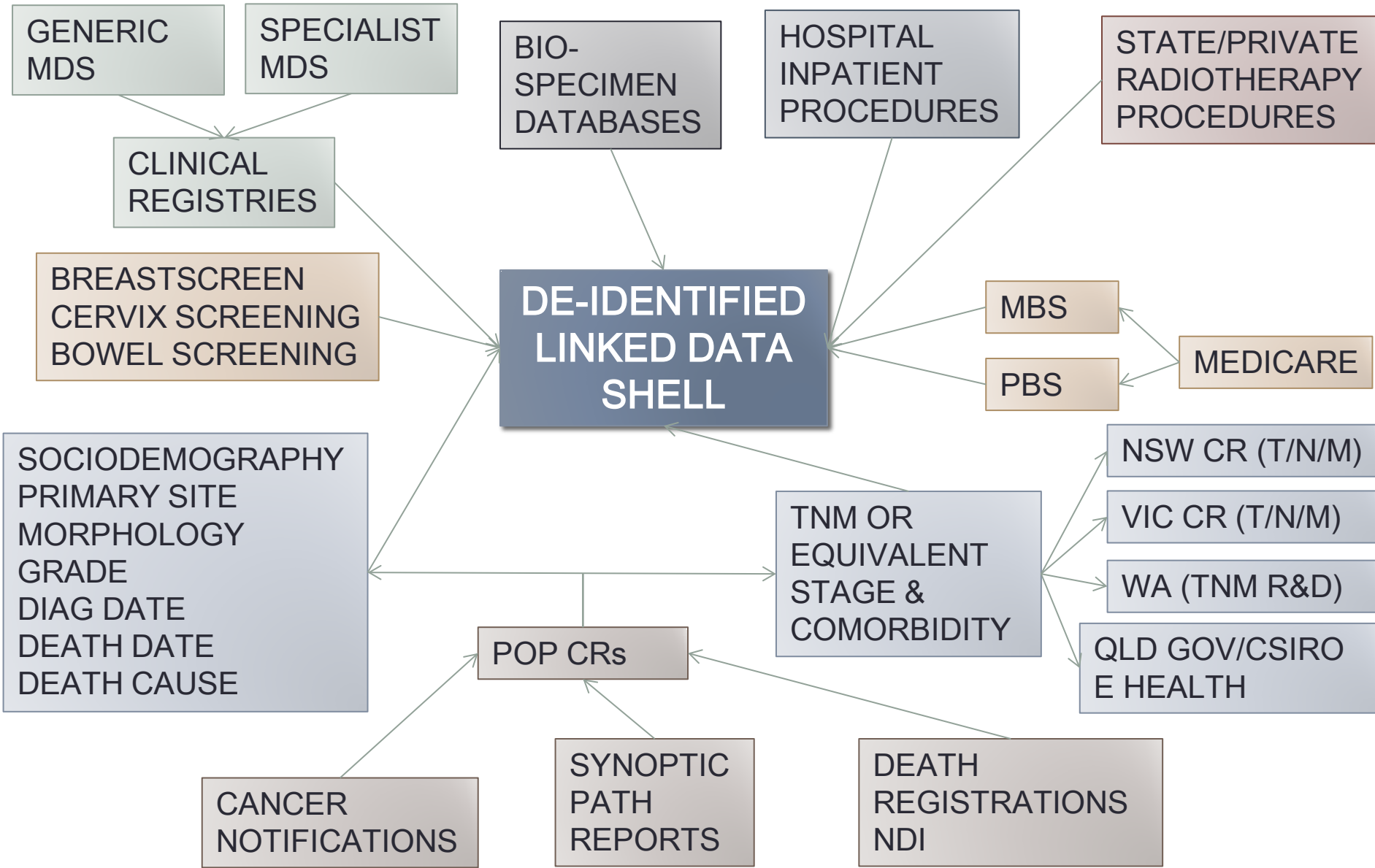
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SANT Datalink Conversation Series
June 2013

Linked Clinical Cancer Data: A Proposed Pathway

Colorectal cancer data linkage project

First demonstration project for SANT DataLink

Aims:

To create a population-wide of colorectal cancer patients in SA dataset to :

- test feasibility of linkage
- study patterns of care and outcomes
- demonstrate usefulness of linked data in cancer research

Linked datasets

Public hospital separations	• Date admission, diagnoses (co-morbidity), procedures (surgery and some chemotherapy), country of birth, ATSI, postcode.
SA Cancer registry	• Date diagnosis, site, histology, (stage), grade, date of death, death cause, age, postcode, country of birth, ATSI
Private hospital separations	• Date admission, diagnoses (co-morbidity), procedures (surgery and some chemotherapy), country of birth, ATSI, postcode.
Public radiotherapy	• Radiotherapy start date, number rounds, dose, type, fractions
Private radiotherapy	• Radiotherapy start date, number rounds, dose, type, fractions
Hospital cancer registries (RAH, QEH, FMC)	• Surgery, radiotherapy, chemotherapy, start dates, site, grade, stage, histology

Study population

Criteria:

- Diagnosed with colon or rectal cancer 2003-2008
- Aged 50 -79 yrs at diagnosis
- Resident in SA at diagnosis

> 4894 records from cancer registry for 4836 individuals

> 44508 hospital separation records for 4744 individuals

> 1688 hospital-based cancer registry records for 1628 individuals

> 1201 radiotherapy records for 793 individuals

Research questions

Are socio-demographic* factors associated with:

- stage at diagnosis
- treatments (as per guidelines)
- survival outcomes

[*age, gender, SEIFA (socioeconomic status), ARIA (remoteness of residence), hospital admission status]

Analysis

- Disparities in stage at presentation:
  - Ordinal Logistic regression [summary odds ratio]

- Disparities in treatment patterns :
  - Robust Poisson regression [prevalence risk ratio]

- Disparities in survival (disease specific):
  - Cox regression [hazard ratio]

Stage at diagnosis

N=4357

		Odds ratio	95%CI	p-value
Site (ref colon)	Rectum	0.84	0.75-0.94	0.003
Co-morbidity (ref none)	One	1.24	1.08-1.44	0.001
	Multiple	1.49	1.25-1.77	<0.001
Age (ref 50-59 yrs)	60-69	0.77	0.66-0.90	0.001
	70-79	0.77	0.66-0.89	<0.001
Sex (ref female)	Male	0.99	0.88-1.10	0.805
SES (ref lowest quintile)	Mid-low	0.92	0.78-1.08	0.323
	Mid	0.92	0.78-1.09	0.354
	Mid-high	0.93	0.78-1.10	0.396
	Highest	0.90	0.75-1.08	0.240
Residence (ref metro)	Outer metro	0.90	0.74-1.08	0.253
	Rural /remote	0.99	0.85-1.14	0.858
Admission (ref public)	Private	0.85	0.78-1.00	0.058
Year of diagnosis	2003-2008	0.96	0.93-0.99	0.019

Treatment guidelines for colorectal cancer

Percent receiving treatment according to guidelines

Stage	Colon (n=3118)		Rectal (n=1718)	
A	Primary surgery	93%	Primary surgery	93%
B	Primary surgery	96%	Primary surgery + Primary radiotherapy + Primary chemotherapy	28%
C	Primary surgery + Primary chemotherapy	62%	Primary surgery + Primary chemotherapy + Primary radiotherapy	37%
D	Any chemotherapy	58%	Any surgery	70%

Non-adherence to guidelines

N=4357		Risk Ratio	95%CI	p-value
Site (ref colon)	Rectum	2.76	2.52 - 3.02	<0.001
Stage (ref dukes A)	B	8.52	5.88 - 12.4	<0.001
	C	16.8	11.6 - 24.3	<0.001
	D	13.0	8.83 - 19.1	<0.001
Co-morbidity (ref none)	One condition	0.97	0.87 - 1.09	0.575
	Multiple	1.32	1.18 - 1.49	<0.001
Age (ref 50-59 yrs)	60-69	1.14	1.00 - 1.29	0.045
	70-79	1.57	1.39 - 1.77	<0.001
Sex (ref female)	Male	0.91	0.83 - 0.99	0.026
SES (ref lowest quintile)	Mid-low	1.01	0.89 - 1.13	0.922
	Mid	0.92	0.80 - 1.05	0.189
	Mid-high	0.99	0.86 - 1.14	0.883
	highest	1.03	0.89 - 1.18	0.732
Residence (ref metro)	Outer metro	1.08	0.93 - 1.23	0.269
	Rural /remote	1.10	0.96 - 1.22	0.102
Admission (public)	Private	0.88	0.80-0.96	0.004

Missing stage excluded

Risk of death from colorectal cancer
[Cox regression n=4831]

Factor		Hazard ratio	95%CI	p-value
Site (ref colon)	Rectum	0.92	0.81-1.03	0.150
Stage (ref dukes A)	B	2.9	2.00-4.07	<0.001
	C	6.9	4.90-9.76	<0.001
	D	38.0	27.1-53.3	<0.001
Co-morbidity (ref none)	One	0.98	0.85-1.14	0.726
	Multiple	1.53	1.31-1.78	<0.001
Age (ref 50-59 yrs)	60-69	1.03	0.88-1.20	0.726
	70-79	1.14	0.98-1.32	0.085
Sex (ref female)	Male	1.06	0.94-1.19	0.331
SES (ref lowest quintile)	Mid-low	1.15	0.98-1.36	0.086
	Mid	1.03	0.86-1.22	0.764
	Mid-high	1.03	0.86-1.22	0.781
	Highest	0.99	0.82-1.19	0.915
Residence (ref metro)	Outer metro	1.06	0.87-1.29	0.562
	Rural /remote	1.05	0.90-1.21	0.543
Admission status (ref public)	Private	0.83	0.74-0.93	0.002
Guidelines	Non-adherence	1.51	1.33-1.71	<0.001

Conclusions

- Little evidence for socio-economic or regional disparities in stage at diagnosis, treatment patterns or survival from colorectal cancer

- Differences evident in relation to hospital admission status

- Co-morbidities have a significant impact on survival

- Outcomes may improve with greater adherence treatment guidelines

➢Linked datasets are a useful tool in cancer research

Advanced Cancer Data Monitoring System for Aboriginal and Torres Strait Islander People in South Australia

Advanced Cancer Data Monitoring System Steering Committee

Alex Brown
- South Australian Health and Medical Institute (SAHMRI)

Alwin Chong
- Aboriginal Health Council of SA

David Scrimgeour
- Aboriginal Health Council of SA

David Copley
- Cancer Council SA/Quit SA

Daryl Cameron
- Aboriginal Health Council of SA

Amanda Mitchell
- Aboriginal Health Council of SA

Kim Morey
- Aboriginal Health Branch, Department for Health and Ageing, SA Health

Sharon Bilney
- Port Lincoln Aboriginal Health Service

Farshid Gelareh
- BreastScreen SA

Priscilla Larkins
- Umoona Tjutagku Health Service Aboriginal corporation

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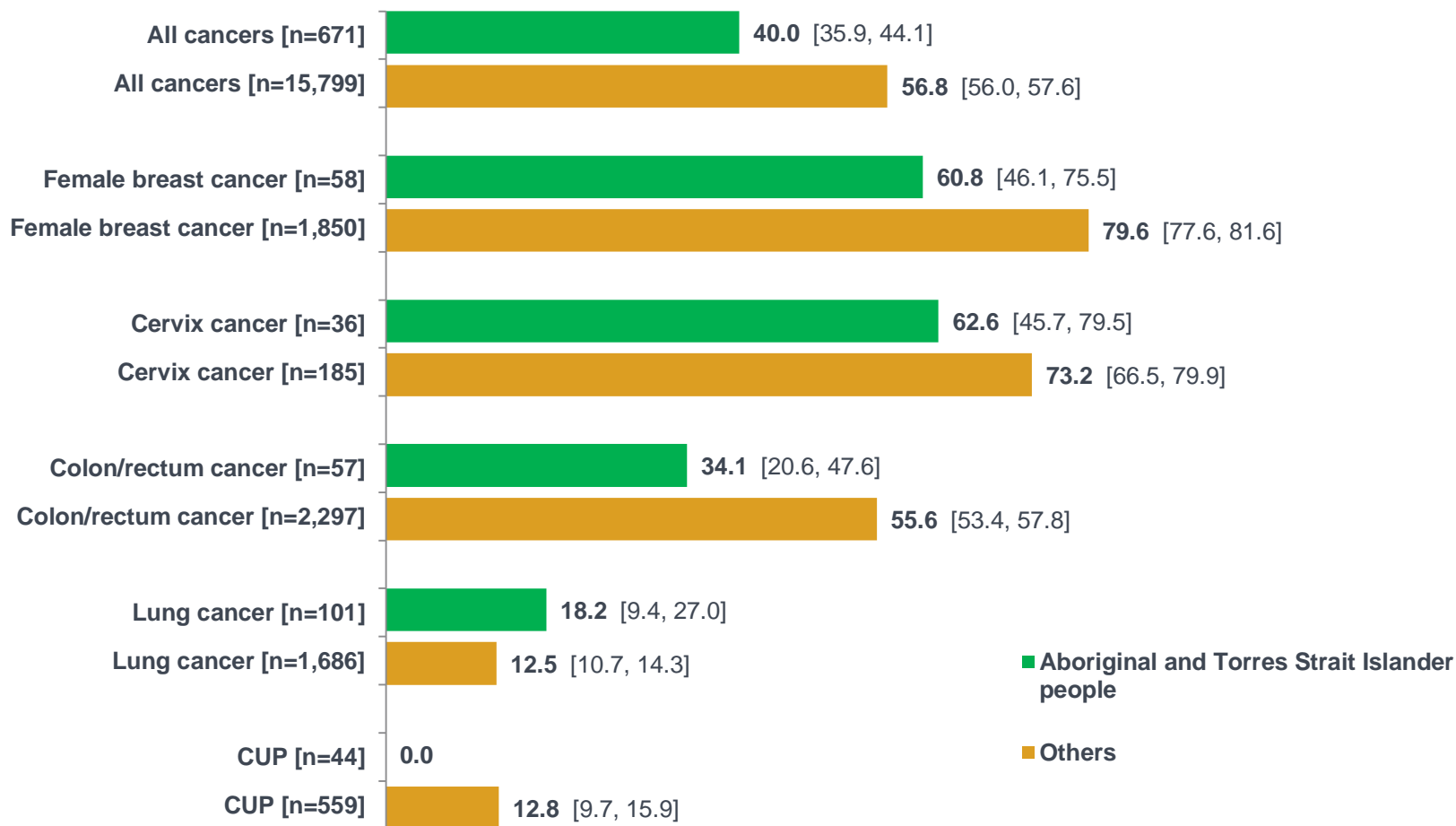- University of SA (School of Population Health)

Margaret Cargo
- University of SA (School of Health Sciences

Carmel McNamara
- Cancer Council SA

% Five Year Survivals (95% Confidence Limits) from Invasive Cancer; SA 1977-2007*

Category	Aboriginal and Torres Strait Islander people	Others
All cancers [n=671]	40.0 [35.9, 44.1]	
All cancers [n=15,799]		56.8 [56.0, 57.6]
Female breast cancer [n=58]	60.8 [46.1, 75.5]	
Female breast cancer [n=1,850]		79.6 [77.6, 81.6]
Cervix cancer [n=36]	62.6 [45.7, 79.5]	
Cervix cancer [n=185]		73.2 [66.5, 79.9]
Colon/rectum cancer [n=57]	34.1 [20.6, 47.6]	
Colon/rectum cancer [n=2,297]		55.6 [53.4, 57.8]
Lung cancer [n=101]	18.2 [9.4, 27.0]	
Lung cancer [n=1,686]		12.5 [10.7, 14.3]
CUP [n=44]	0.0	
CUP [n=559]		12.8 [9.7, 15.9]

■ Aboriginal and Torres Strait Islander people

■ Others

*Data source: SA Cancer Registry (1 in 12 sample of "other" patients)

Relative Risk (95% Confidence Limits) of Death from Cancer in SA in Aboriginal and Torres Strait Islander Versus Other Cancer Patients; 1977-2007

	All State	Adelaide	Far North	Other
Adjustment A	1.98 [1.77, 2.21]	1.94 [1.63, 2.30]	3.73 [2.02, 6.87]	1.93 [1.66, 2.25]
Adjustment B	1.37 [1.23, 1.53]	1.35 [1.14, 1.61]	2.70 [1.44, 5.08]	1.33 [1.14, 1.55]

Adjustment A: Cox model adjusting for age, sex and diagnostic period.
Adjustment B: Cox model adjusting for age, sex, diagnostic period and cancer prognostic index.

Data source: SA Cancer Registry (1 in 12 sample of "other" patients)

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