The changing pattern of presentation of neurodevelopmental impairments with age in Australian adolescents living with FASD

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I acknowledge the traditional owners of the land on which we meet today and where I live and work.

Adolescents* with FASD

- Adolescents with FASD have a broad, but heterogeneous, pattern of neurodevelopmental impairments.
- Research suggests that, at diagnosis adolescents may experience higher rates of impairment, which impact health, daily functioning, social interactions and well-being.

  Waite et al,. Adv. Drug Alcohol Res, 2023) (Gibson et al,. Front Pediatr 2025)

Objective

To identify adolescents* with FASD in Australia and describe the pattern neurodevelopmental problems according to the age at presentation.

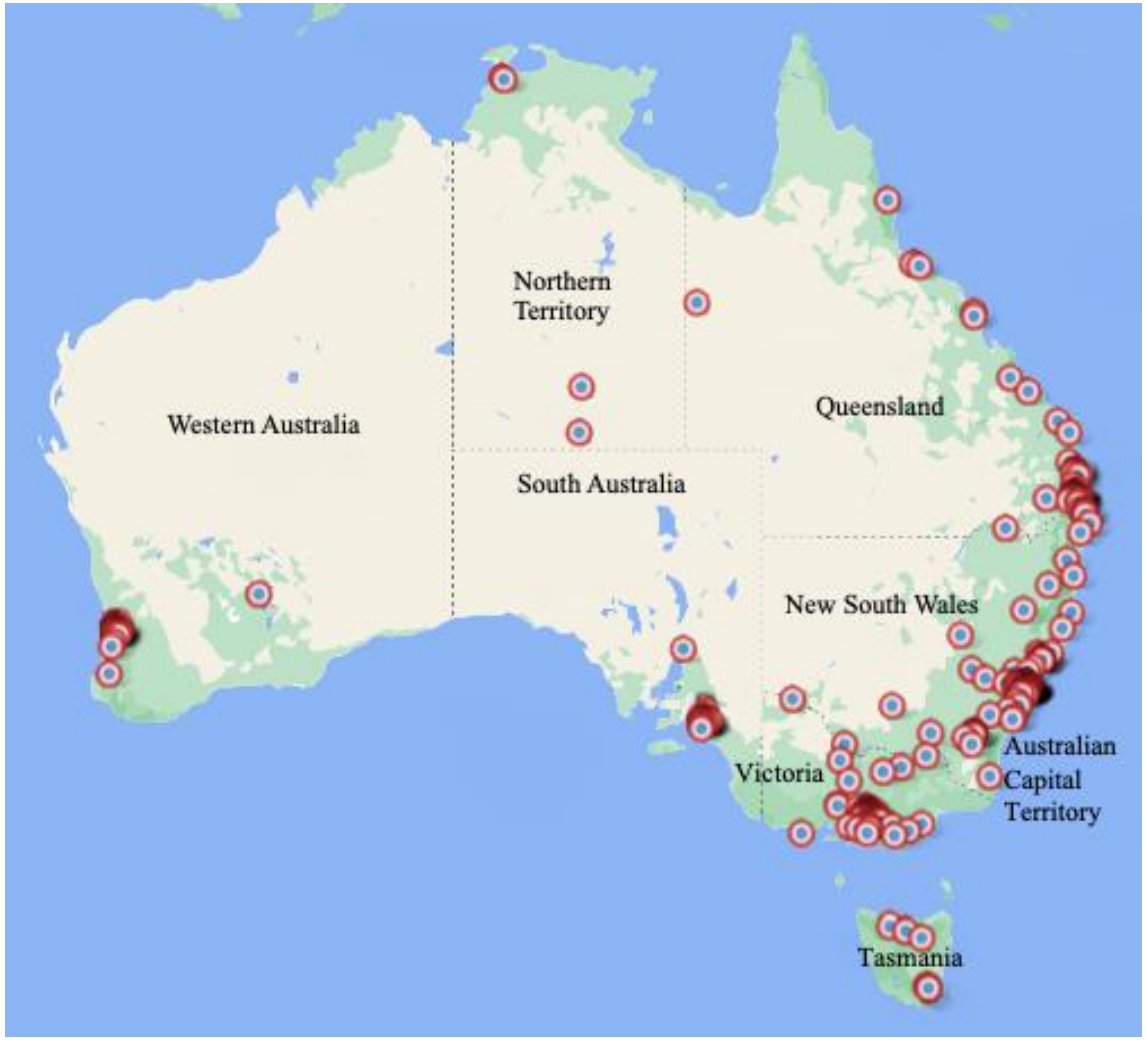
**WHO defines adolescents as age 10-19 years*

FASD Surveillance mechanism

Australian Paediatric Surveillance Unit

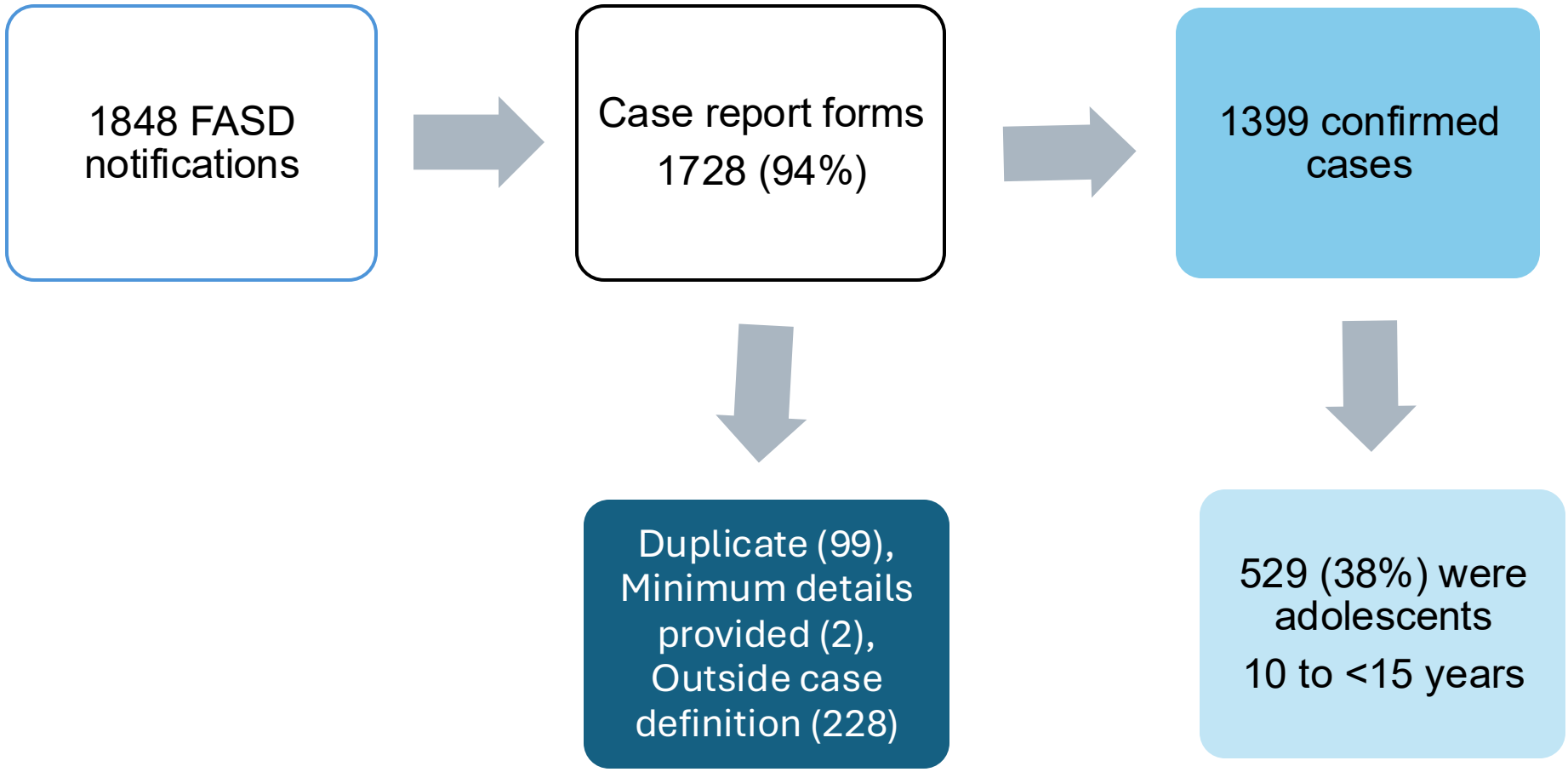
FASD AR | Fetal Alcohol Spectrum Disorder Australian Registry

FASD Surveillance mechanism



- National prospective, active, surveillance
- Monthly reporting by paediatricians (n~1400).
- New diagnoses of FASD (incident cases) <15y.
- Confirmed using the 2016 (2020) Australian Guide to Diagnosis of FASD.
  - Prenatal Alcohol Exposure (PAE).
  - Severe neurodevelopmental impairment (≥3 domains).
  - +/- Physical features: Face (short palpebral fissures, thin upper lip, flat philtrum); congenital anomalies; growth failure.
- Case report form (CRF): requests information on PAE, other substance exposure, postnatal factors, comorbidities (including MH Dx)

Surveillance overview (1 Jan 2015 -31 Dec 2024)



Sociodemographic characteristics (n=529)

Median age at FASD diagnosis = 12.3 years
Range 10 -14.9 years

Male 66.5%
Female 33.5%

Aboriginal 57.8%
Caucasian 31.2%

NSW 26.8%
WA 23.8%
VIC 18.7%
QLD 12.3%
NT 11.2%
SA 3.6%
TAS 2.1
ACT 0.4%
Unknown 0.2%

Sociodemographic characteristics (n=529)

Major cities 44.6%
Inner/ Outer regional 36.3%
Remote/Very remote16.3%
Unknown 2.8%

Foster/Adoptive carer 39.1%
Extended family/Friends/Kinship 33.8%
Biological parent 19.3%
Other 7.8%

Any contact with child protection services 57.3%
21.7% had an affected sibling with FASD

FASD diagnostic criteria (n=529)

98.7% had confirmed prenatal alcohol exposure

Polysubstance exposure in utero 58.8%
Cannabis 31.9%
Nicotine 30.1%

All had severe neurodevelopmental impairment in ≥3 domains.

Attention 80.7%
Adaptative behaviour 76.9%
Executive function 74.7%
Academic achievement 67.2%
Language 61.8%

10% had FASD with 3 Sentinel Facial Features

Smooth philtrum 36.7%
Thin upper lip 30.6%
Short palpebral fissure 27.8%

Congenital anomalies and MH comorbidities at FASD diagnosis (n=529)

Congenital anomalies

14.9% Major anomalies
23.1% Minor anomalies
7.8% Clinodactyly
7.6% Hockey stick palmar creases

Microcephaly

15.7% <3rd percentile age/gender at any time

MH Comorbidities (DSM-5 criteria)

ADHD 75%
Trauma/stress-related 57.9%
Communication disorders 57.7%
Anxiety 32.5%

Change in risk of ND impairment at diagnosis of FASD by increasing year of age (n=529)

Neurodevelopmental domains	Adjusted ORs**	P-value
Attention	0.82 (0.69-0.98)	0.03
Executive function	1.25 (1.06-1.47)	0.008
Adaptive behaviour, social skills/communication	0.98 (0.83-1.14)	0.76
Academic achievement	1.05 (0.89-1.22)	0.58
Language	0.97 (0.83-1.12)	0.64
Cognition	1.02 (0.90-1.17)	0.73
Motor skills	0.70 (0.56-0.86)	0.001
Affect regulation	1.23 (1.04-1.44)	0.01
Memory	1.21 (1.04-1.41)	0.02
Brain structure/neurology	1.02 (0.87-1.19)	0.83

**Multiple logistic regression used to estimate the change in OR of the outcome of interest per year of age. Multivariable models adjusted for sex, remoteness index of Australia, and child's racial background

Change in risk of MH co-morbidities at diagnoses of FASD by increasing year of age (n=529)

Mental health disorders (DSM-5 defined)	Adjusted ORs**	P-value
Autism spectrum disorder	1.10 (0.89-1.35)	0.40
Trauma, stress-related, or attachment disorders	1.10 (0.92-1.32)	0.29
Intellectual disabilities	1.14 (0.95-1.37)	0.17
Communication disorders	0.99 (0.84-1.18)	0.95
Specific learning disorders	1.04 (0.85-1.27)	0.72
Motor disorders	0.83 (0.66-1.05)	0.12
Anxiety	1.09 (0.93-1.27)	0.29
Mood disorders	1.14 (0.92-1.42)	0.24
Conduct disorders	1.06 (0.91-1.23)	0.44
Sleep disorders	1.03 (0.88-1.20)	0.73
Attention-Deficit/Hyperactivity Disorder	0.78 (0.67-0.91)	0.001

**Multivariable models adjusted for sex, remoteness index of Australia, and child's racial background

Change in risk of microcephaly or SFF at presentation by increasing year of age in FASD (n= 529)

Clinical features	Adjusted ORs**	P-value
Microcephaly	0.98 (0.82-1.18)	0.86
<3SFF	1.05 (0.86-1.30)	0.62
3 SFF	0.95 (0.77-1.17)	0.62

**Multivariable models adjusted for sex, remoteness index of Australia, and child's racial background

Conclusions and implications for adolescents living with FASD

- Adolescents with FASD represent a highly vulnerable and diverse group.
- The pattern of ND impairment and MH co-morbidity at diagnosis varies with age.
- Increasing age is linked to **greater odds** of severe impairments at diagnosis in **executive function, affect regulation, and memory**, but **lower odds** of impairment in **attention problems or a formal ADHD diagnosis**.
- These findings highlight the changing presentation with age and the need to assess/reassess adolescents with FASD, including for executive function, affect regulation, and memory to inform clinical care and family support and optimise outcomes in health and quality of life.