

Injection Related Injury and Disease: hospital presentations

**Andrew Conroy, Research Officer
Queensland Needle & Syringe Program,
Queensland Health**



Acknowledgements

- Funded by Australian Department of Health and Ageing
 - Queensland Health in collaboration with NSW Health, Victorian Department of Human Services and the Burnet Institute
-

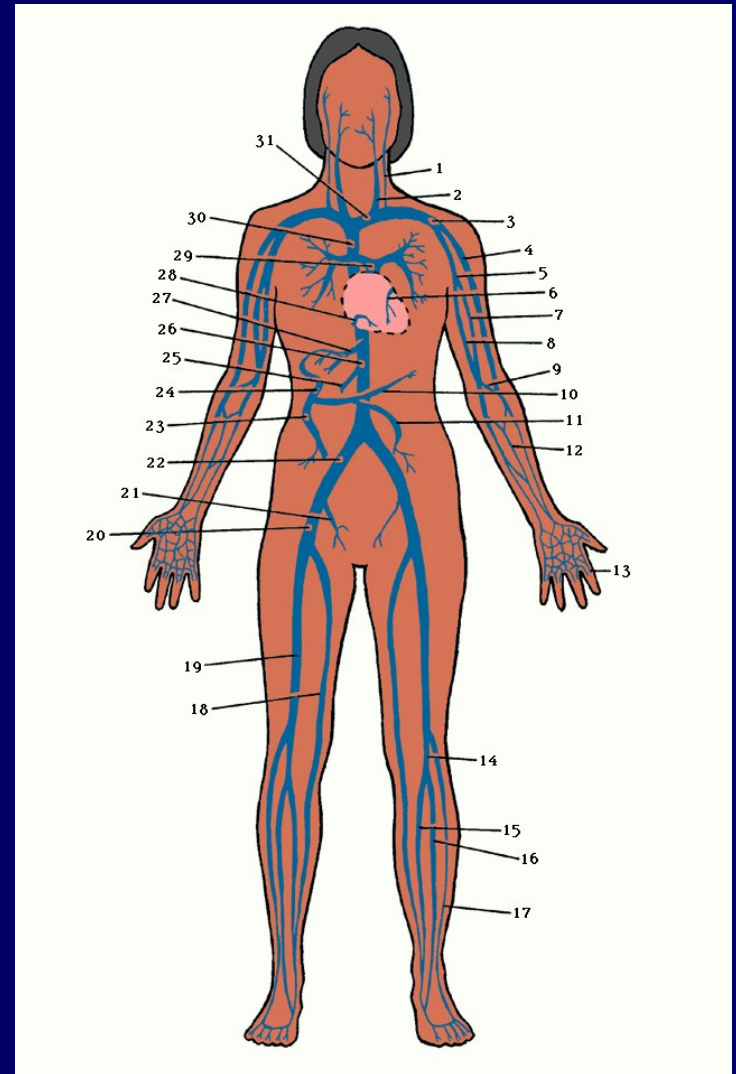


What are IRID?

- Superficial damage and infections
 - e.g. Scarring, bruising, fungal skin infections,
 - Soft tissue infections
 - e.g. Cellulitis, Abscess
 - Systemic infections
 - e.g. Septicaemia (blood infection), Septic arthritis' (joint infection), Infective endocarditis (infection of the heart valves)
 - Venous disease
 - e.g. Thrombosis (clotted/blocked veins), Chronic venous insufficiency (long-term blocked veins)
-

What are IRID?

- Arterial disease
 - Aneurysm, peripheral ischaemia, gangrene, necrosis
- Lymphatic disease
 - Lymphoedema ('puffy hand syndrome')





Goals of presentation

- Exploratory descriptive data
 - Examine the incidence of injection-related abscess, cellulitis and endocarditis,
 - In relation to the overall incidence of these presentations from any cause
 - Patient demography
 - Drug use diagnoses
 - Provide some estimates of the incidence of hospital presentations for a variety IRID
 - Look at the relative severity of these diseases, in terms of length of hospital stay and resources required
-



Goals of presentation

- Note the limitations of these incidence estimates, and touch upon the possible relationship between hospital presentations and population disease incidence for injectors
 - Look at some of the contributors to disease incidence and severity, and some possible strategies for reducing these
 - Describe the content and application of the IRID assessment instrument
-



Hospital data extraction methods

- ICD-10-AM codes
 - Admitted patient data for NSW, Vic and Qld
 - Three years data: 2003/04 – 2005/06
-



Hospital data extraction methods

□ Principal diagnosis

- The diagnosis established after the assessment of the patient to be chiefly responsible for occasioning the patient's episode of care in hospital

□ Additional diagnoses

- A condition or complaint either coexisting with the principal diagnosis or arising during the episode of care. They are conditions that affect patient management in terms of requiring therapeutic treatment, diagnostic procedures or increased care and/or monitoring
-



Hospital data extraction methods

□ Principal diagnosis

- The diagnosis established after the assessment of the patient to be chiefly responsible for occasioning the patient's episode of care in hospital

□ Additional diagnoses

- A condition or complaint either coexisting with the principal diagnosis or arising during the episode of care. They are conditions that affect patient management in terms of requiring therapeutic treatment, diagnostic procedures or increased care and/or monitoring
-



Hospital data extraction methods

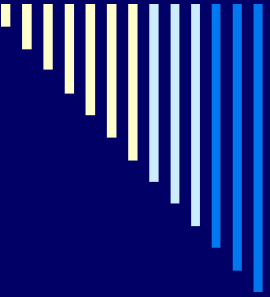
- Identification of injection related cases
 - No diagnostic category in the ICD for injecting drug use
 - Mental and behavioural disorders due to drug type
 - Opioids, cocaine, stimulants, multiple/other
 - Acute intoxication, harmful use, dependence syndrome, withdrawal state, psychotic disorder
 - Drug use
 - Hazardous pattern of drug use in absence of disorder that increases risk of harmful consequences
-



Hospital data extraction methods

Four searches

1. The relative incidence of an extensive range of conditions, including abscess, cellulitis, septic arthritis, septicaemia, endocarditis (PD only)
 2. Amputation procedures associated with IRID
 3. Abscess, cellulitis and endocarditis (PD & AD) with drug use/drug use disorder recorded
 4. Abscess, cellulitis and endocarditis (PD & AD) without drug use/drug use disorder recorded
-



Three key IRID examined in this study



- Abscess and cellulitis
 - The most common types of bacterial infections among injecting drug users
- Endocarditis
 - Injecting drug use has become one of the leading causes of endocarditis
 - A severe outcome of bacterial infection

Abscess and cellulitis

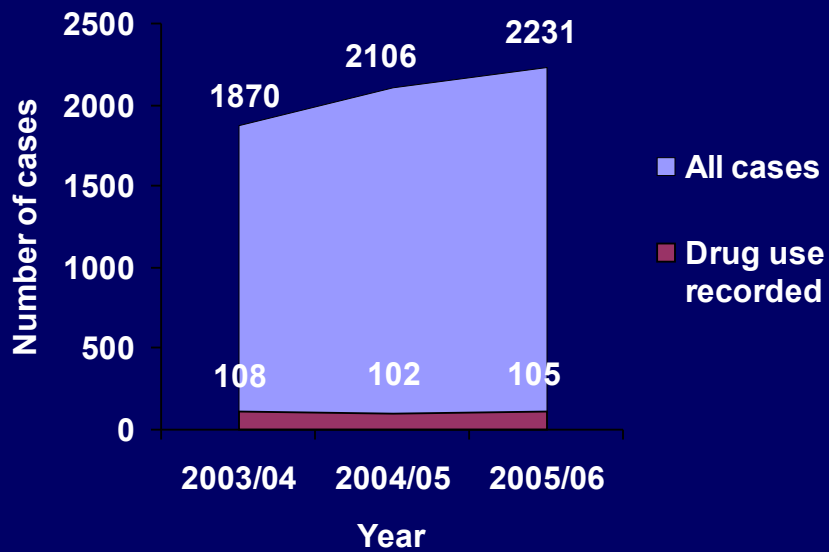
- **Abscess** – A collection of pus under the skin surrounded by inflamed tissue
- **Cellulitis** – A diffuse bacterial infection of the skin resulting in the skin becoming red, hot, swollen and tender
- **Often occur together**
- **Occurring with a fever is a sign that the infection may have become systemic (entered the bloodstream)**





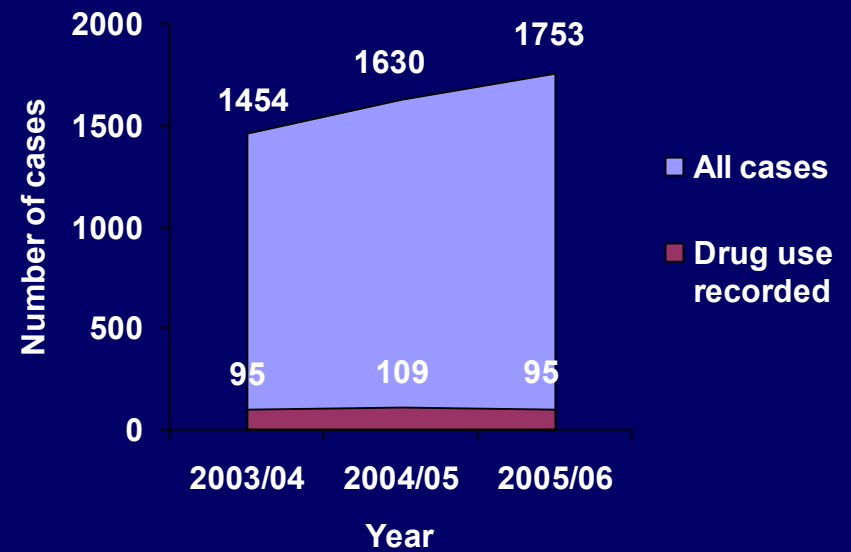
Abscess

Queensland



4.7 to 5.8 per cent

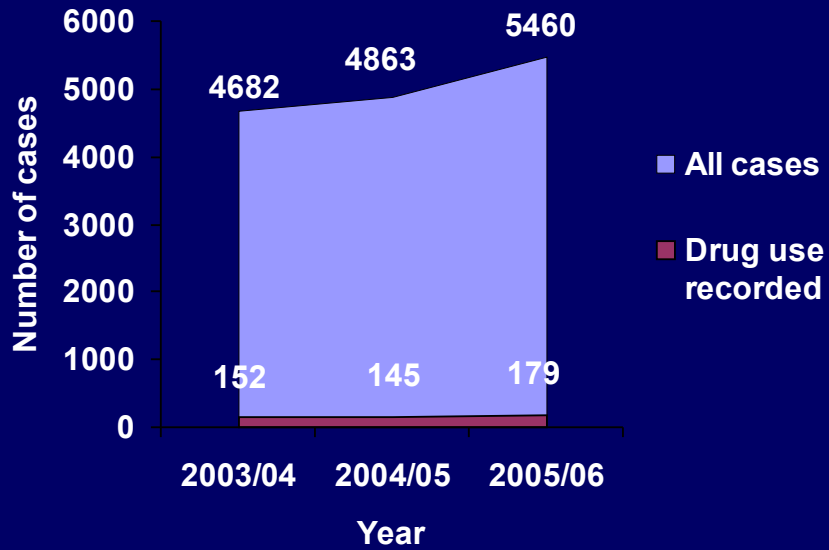
Victoria



5.4 to 6.7 per cent

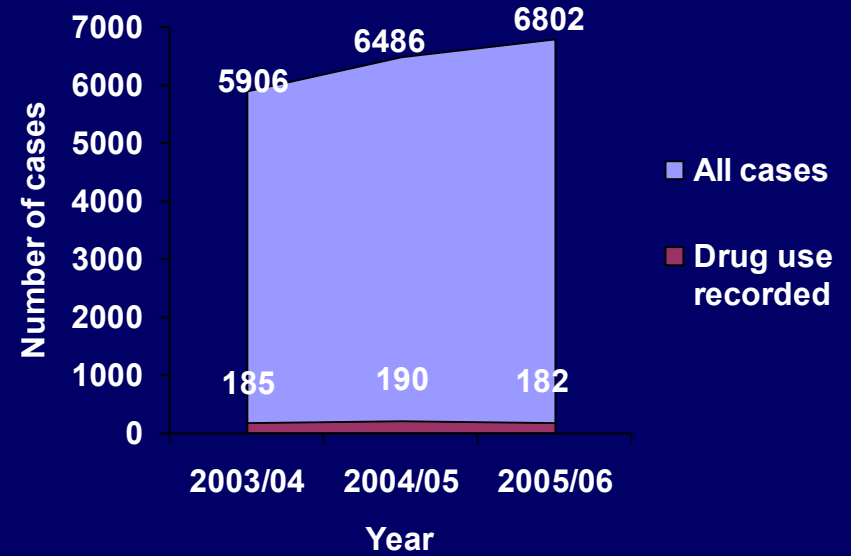
Cellulitis

Queensland



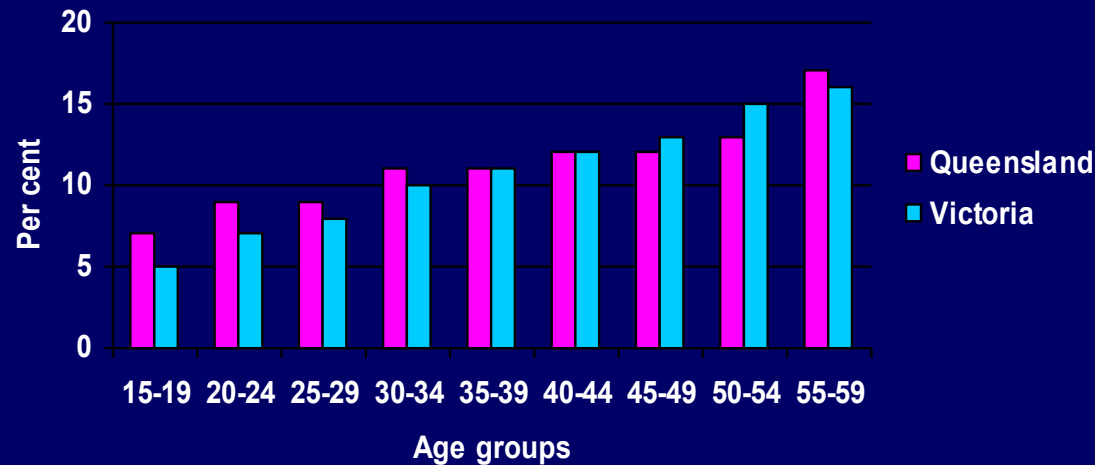
3.0 to 3.3 per cent

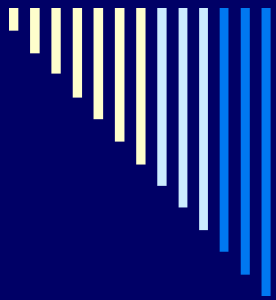
Victoria



2.7 to 3.1 per cent

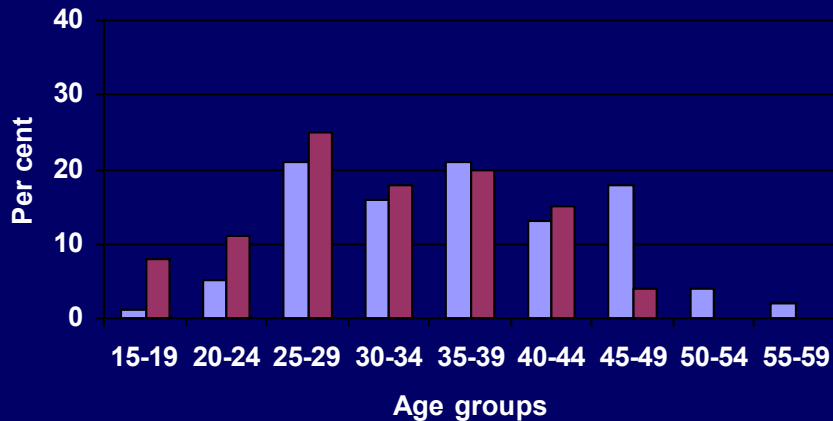
Age distribution (%) of patients with abscess or cellulitis and no recorded drug use disorder (2003/04 to 2005/06)



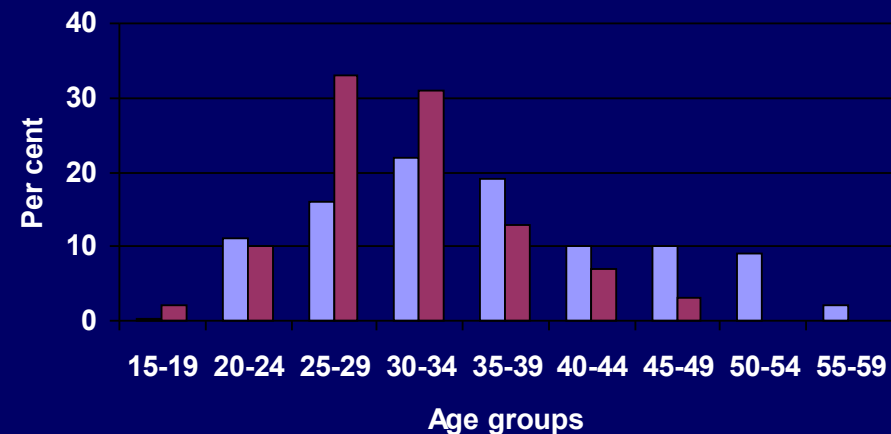


Age distribution (%) of cases with abscess or cellulitis, 2003/04 to 2005/06, for patients with opioid or stimulant disorder

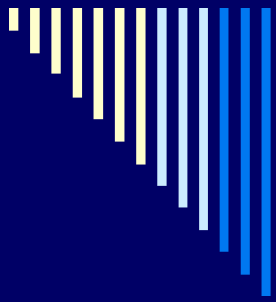
Queensland



Victoria

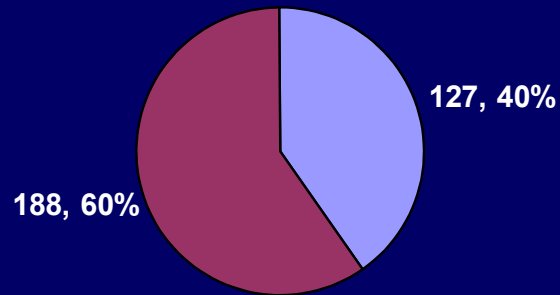


Legend:
Opioids
Stimulants

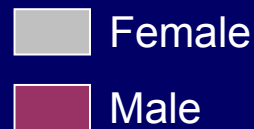
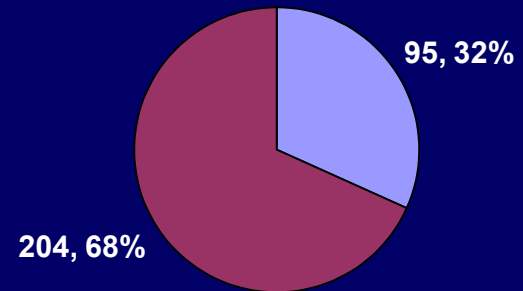


Abscess – gender distribution

Queensland

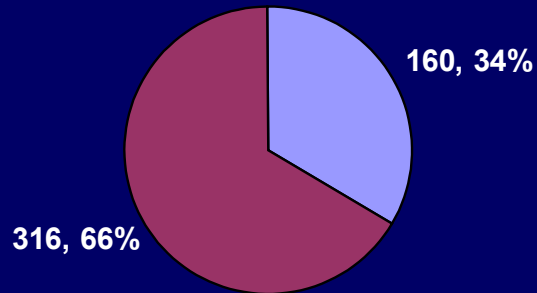


Victoria

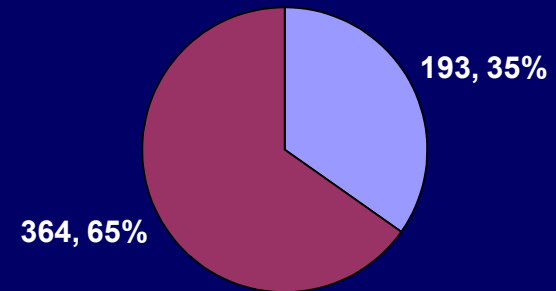


Cellulitis – gender distribution

Queensland

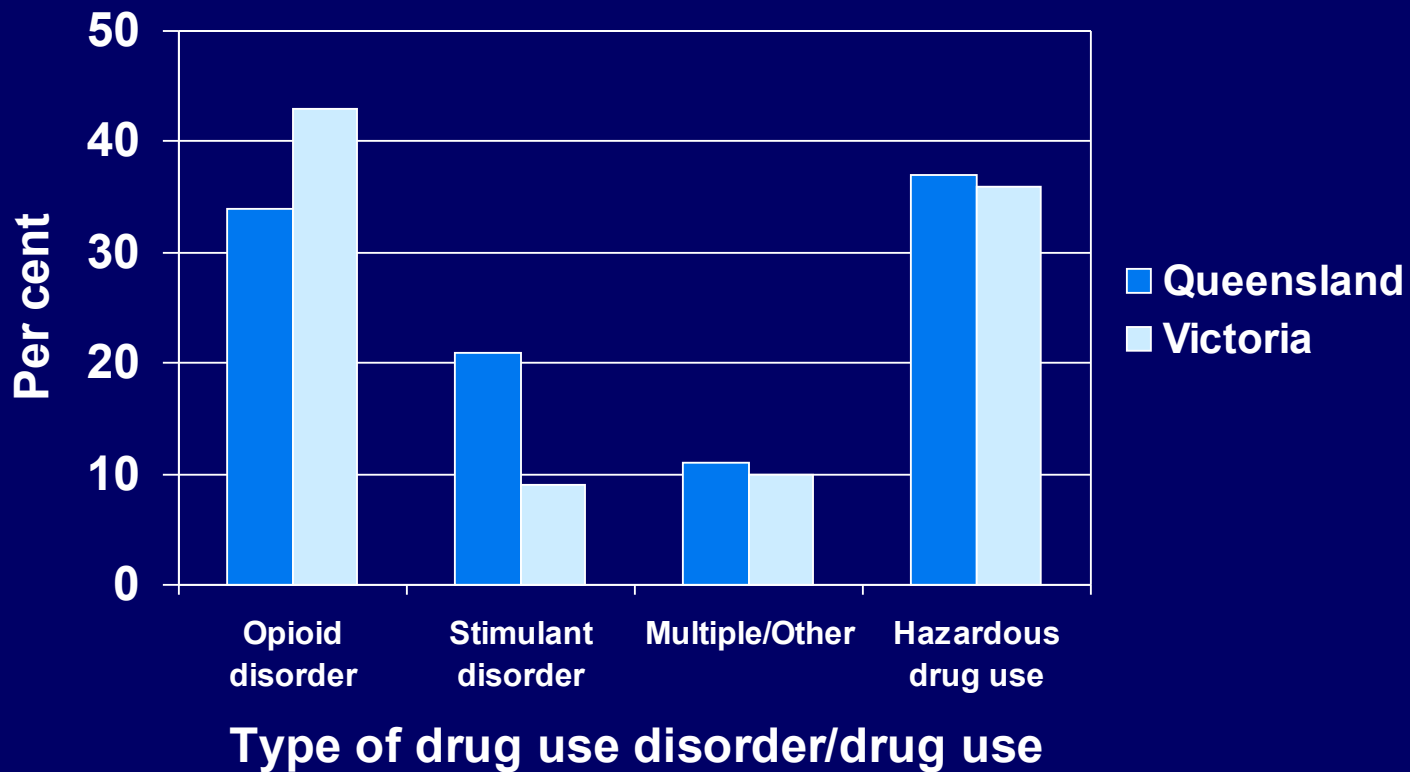


Victoria

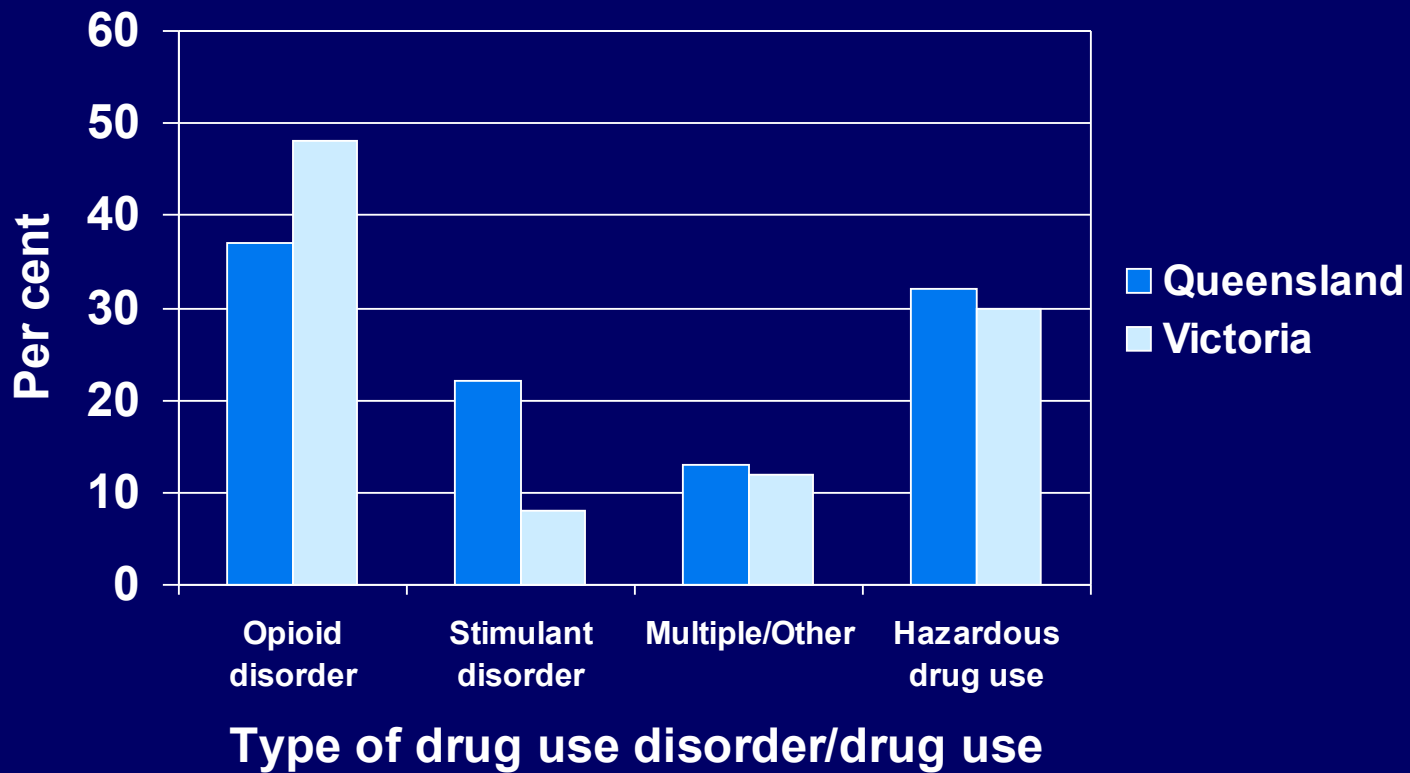


Female
Male

Injection-related abscess, by type of drug use (%)

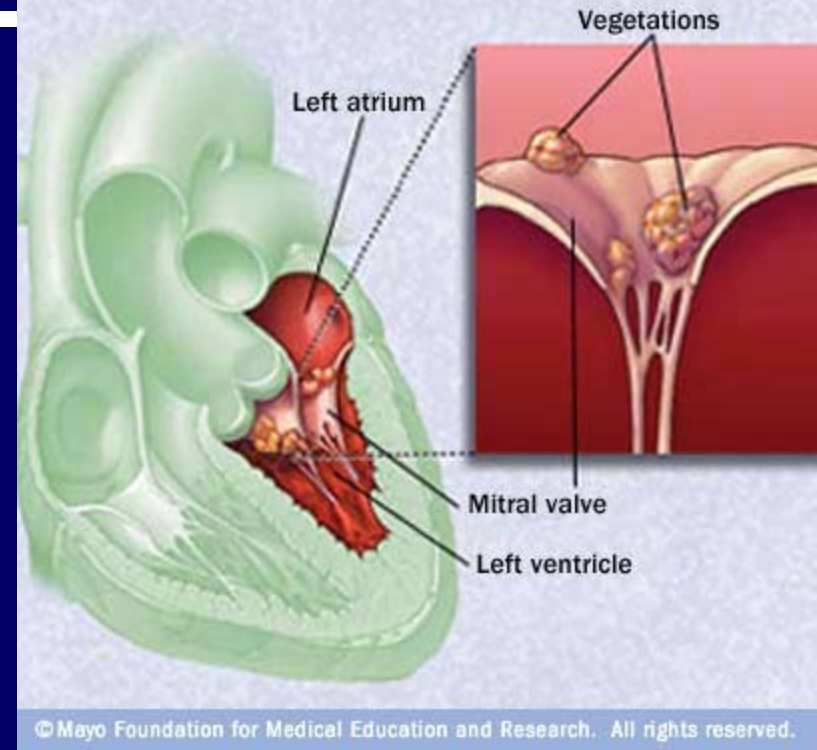


Injection-related cellulitis, by type of drug use (%)



Endocarditis

- Inflammation of the lining of the heart, and/or the heart valves, caused by infection



- o High fever and chills & dehydration
- o May develop painful spots on fingers and toes

These are clumps of bacteria being thrown off the heart valves and lodging in the small blood vessels in the fingers and toes



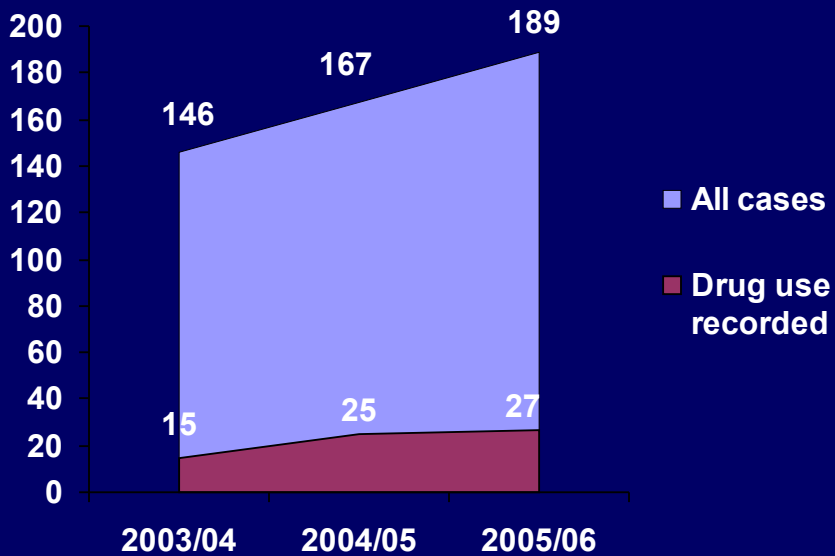


Endocarditis

- Recent skin abscess and cellulitis are risk factors for endocarditis
 - In the majority of cases caused by *S. aureus*.
 - The skin and orifices (e.g. oral or nasal colonisation)
 - 20 per cent of healthy people are persistent carriers of *S. aureus*, 60 per cent are intermittent carriers
 - Skin cleaning before injection reduces the frequency of reported endocarditis
 - Hand washing
 - IDU with previous history of endocarditis had 11-fold increased risk of endocarditis (Spijkerman, et al., 1996)
-

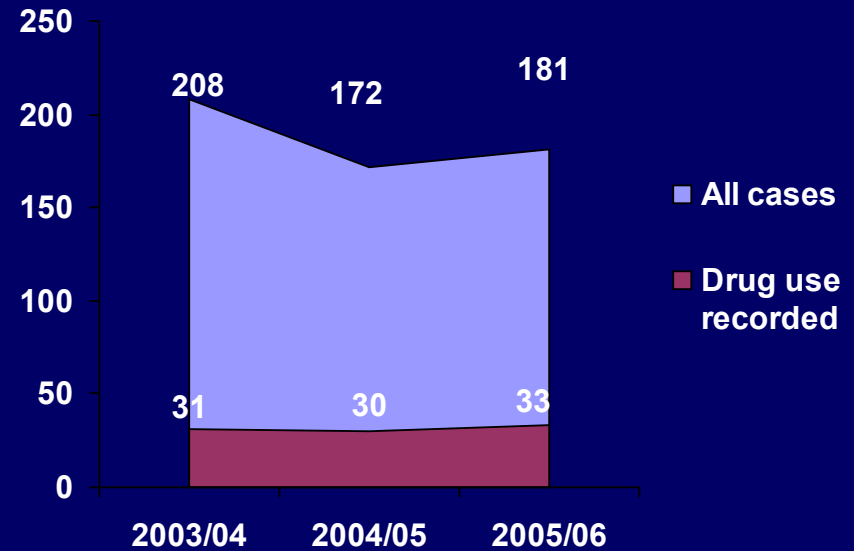
Endocarditis

Queensland



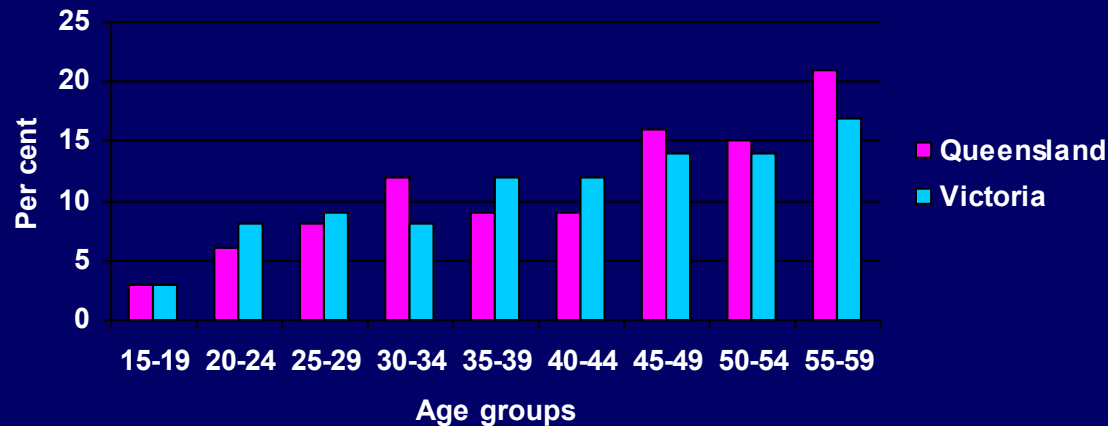
10.3 to 14.9 per cent

Victoria



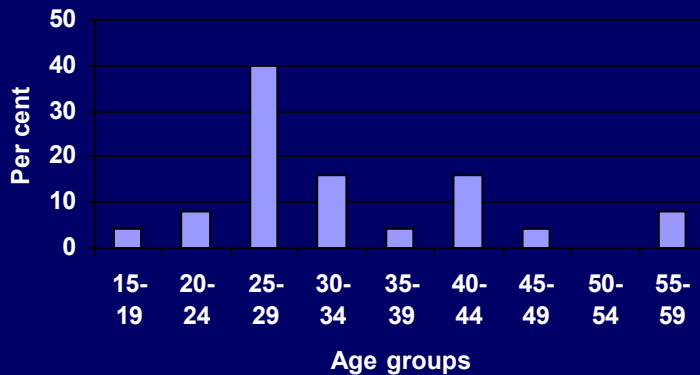
14.9 to 18.2 per cent

Age distribution (%) of patients with endocarditis and no recorded drug use disorder (2003/04 to 2005/06)

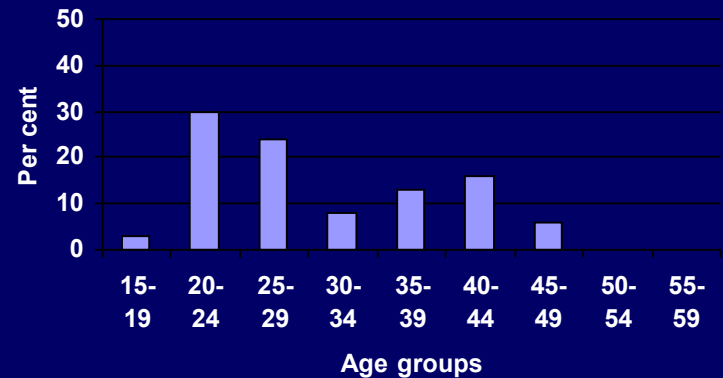


Age distribution of cases with endocarditis, 2003/04 to 2005/06, for patients with opioid or stimulant disorder

Queensland

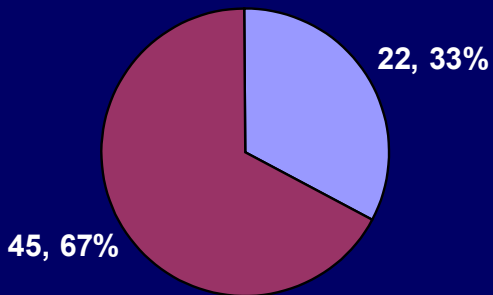


Victoria

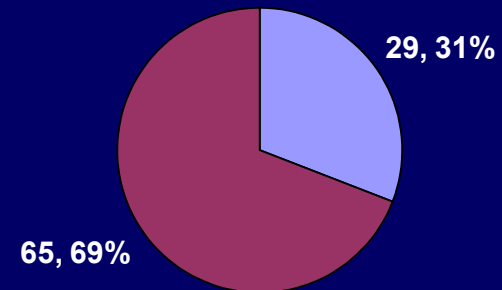


Endocarditis – gender distribution

Queensland

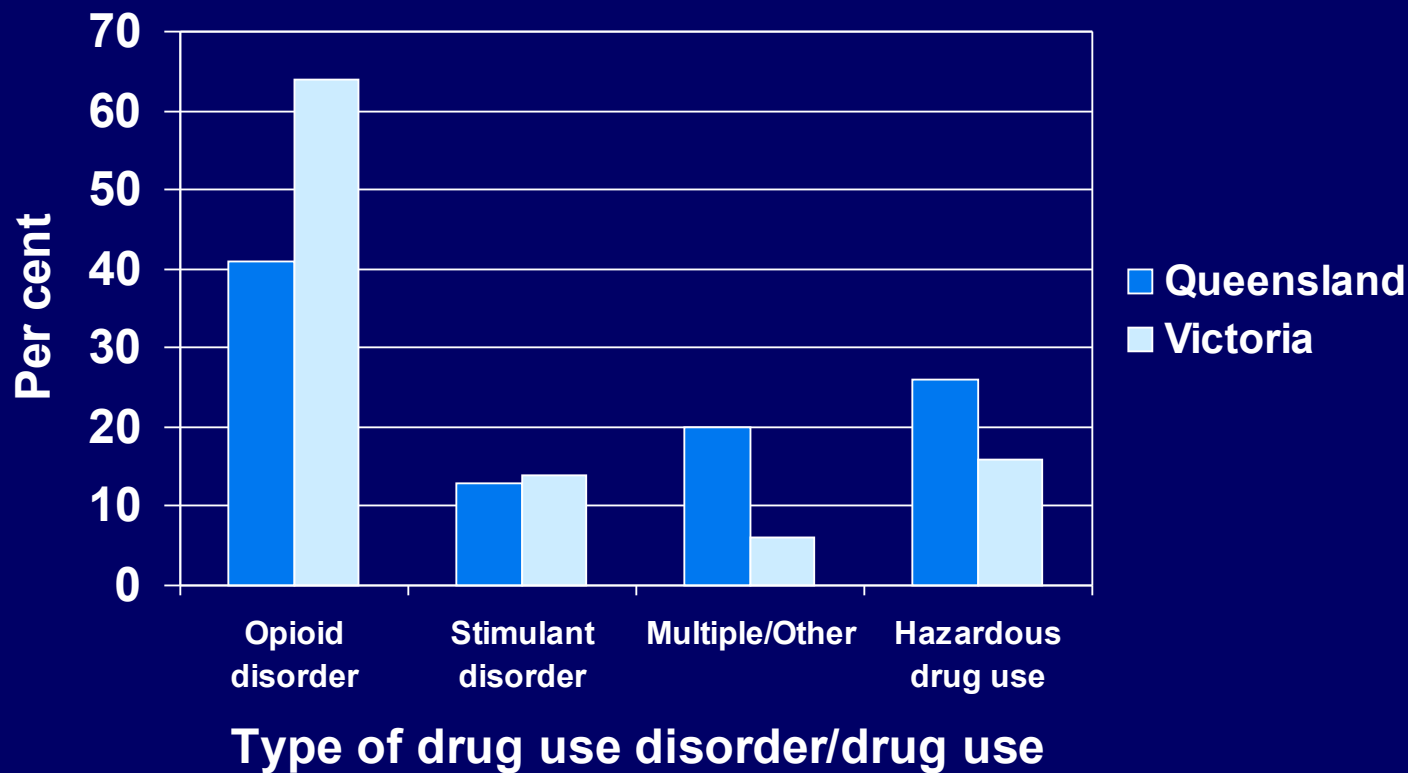


Victoria



Female
Male

Injection-related endocarditis, by type of drug use (%)



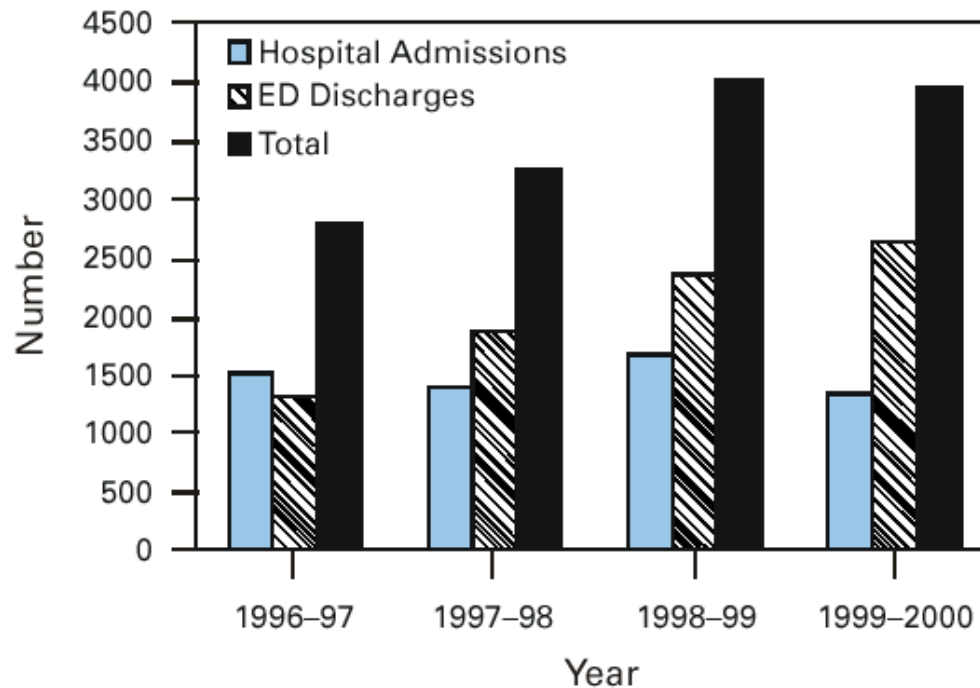


Data limitations

- Does not include emergency department presentations
 - Does not represent the incidence of disease across the injecting population
 - Is likely to underestimate even the incidence of admitted patient cases
 - Recognition of drug use; recognition of relevance of drug use
 - No ICD code for injecting drug use
-

Hospital admissions and ED discharges for SFGH

FIGURE 1. Number of persons with soft tissue infections who were admitted to the hospital or discharged from the emergency department (ED), by fiscal year — San Francisco General Hospital, 1996–2000



Admitted cases represented only 35 to 55 per cent of all hospital presentations



Australian NSP Survey 2006 (N=501)

	QLD	VIC
	% (N)	% (N)
Infection in or around injection site (> a week)	24 (501)	31 (195)
Medical treatment?	50 (119)	50 (60)

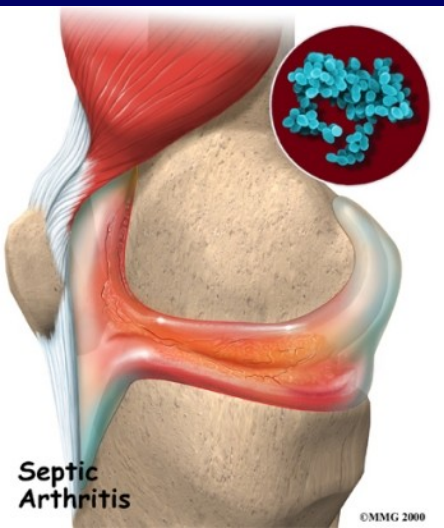


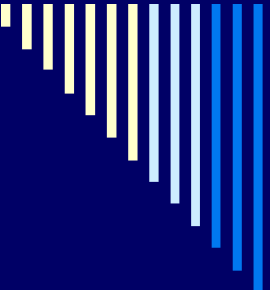
Australian NSP Survey 2006: per cent reporting IRID

Disease type	QLD N=501	VIC N=195
Abscess	22	30
Septicaemia	8	10
Thrombosis	10	14
Endocarditis	4	4

A variety of IRID

- Endocarditis, and more particularly abscess and cellulitis, are common presentations
- However, there are many IRID, including other relatively common presentations
 - Septicaemia
 - Pyogenic/Septic arthritis
 - serious infection of joints with pain, fever, chills, inflammation, swelling and loss of function
 - a medical emergency because of damage it causes to bone and cartilage, and potential for septic shock





Principal diagnoses (with drug use) – 2003/04 to 2005/06

	Number IRID cases		Average days IRID cases (SD)		Average days for this condition	Average cost for this condition
	Qld	Vic	Qld	Vic		
Abscess	203	175	4 (4)	5 (5)		
Cellulitis	213	286	5 (6)	5 (7)	4	2,800
Endocarditis	45	67	25 (20)	25 (18)	16	13,600
Septicaemia	73	130	11 (12)	14 (22)	9	8,600
Septic arthritis	41	23	9 (9)	13 (14)	6	3,900



Incidence and severity of IRID

- Injection practice:
 - drug constituents, injecting environments, syringe re-use, injection preparation etc
 - Late interventions
 - Recurring diseases
 - Reluctance/difficulty in presenting to medical services
 - Limited understanding of conditions and their consequences
 - Structure and design of available services
 - Psychosocial issues
 - Pain management
 - Co-existing conditions, eg Hepatitis C
-



Example of possible service response

San Francisco General Hospital established the Integrated Soft Tissue Infection Services (ISIS) Clinic in 2001 (Harris & Young, 2002)

- Medical & surgical care integrated with counselling, pharmacotherapies and social services
 - Clinic staffed by academic faculty surgeons, 3 nurses, a drug and alcohol counsellor, a social worker and an admin person, with a pain management specialist, pharmacist and infectious disease physician available for consultation
- 3365 patient visits in first year saved around US\$8.7m through reduced ED visits, hospital stays and operating room procedures



IRID Assessment Instrument

- Comprehensive initial assessment
 - Screening and interventions
 - Disease surveillance, ongoing monitoring
 - 39 items
 - History (6), Recent injection practices (6), Injection site issues (6), Local infections (4), Systemic infections (8), Venous disease (4), Arterial disease (3), Lymphatic disease (1), Nerve damage (1)
-



Some conclusions

- Hundreds of hospital admissions each year for treatment of preventable serious infections
 - Late assessment and treatment
 - Admitted patient data probably comprise a minority of all cases
 - Lack of sensitivity of diagnosis and coding
 - ED presentations
 - Untreated cases
-



Some conclusions

- Opioids contribute more to disease incidence than other drug classes
 - Especially for systemic infection (endocarditis)
 - Differs by State – greater contribution of Opioids in Vic compared to Qld
 - Multiple drug types
 - Lack of precision
 - Early exposure to disease types that are more common later in life
 - Increased vulnerability to subsequent disease
-



Some conclusions

- Exploratory stage of research
 - Physical review of charts to verify disease incidence and drug use classification
 - Recommend injecting drug use item in ICD
 - Ongoing monitoring
 - Looking toward greater clinical coordination
-



Andrew_Conroy@health.qld.gov.au
