Acknowledgements

First nation peoples of Australia

- Acknowledge and pay my respects Traditional Owners of the land on where I work and am presenting from, the Gubbi Gubbi people.

USC Office of research

- Seed Research Grant Scheme (SRG10 07)

Research supervisors

- Dr Mark Holmes
- Dr Anne Roiko
- Dr Bill Lord
- Dr Peter Dunn

2

Introduction

- Design: Mixed methods
  - Document analysis
  - Semi-structured interviews
  - National survey
  - Focus groups
- Analysis
  - Thematic analysis
  - Inferential statistics
  - Descriptive statistics
  - PRECEDE-PROCEED model
- Ethical clearance: USC HREC
  - S/10/252 & S/14/719

Response magazine. Cardiac care(photo) 2009;36(4):43

Methodology - Philosophical Approach
The question

What are the behaviours, knowledge and perceptions of Australian paramedics in relation to infection control practices in paramedic-led healthcare, and how do these relate to a paramedic's experience and formal education?

4

Global results - participants

Document analysis	Four jurisdictions from the 8 CAA members NHMRC (2010) Australian Guidelines for the Prevention and Control of Infection in Healthcare. Commonwealth of Australia.
Semi-structured interviews	14 experts interviewed - 10 Male & 4 Female
	ambulance managers (n=5), public health specialists (n=3), infection control practitioners (n=4) and university academics (n=2)
SoPIC	Paramedic PA members – convenience sample, open 1 month, 4 reminders
	823 incomplete surveys, 417 surveys analysed (17% response rate)
Focus groups	Held prior to CPD events
	FG1 included 1 male and 5 females, FG2 included 5 males and 1 female

5

Global results – SoPIC participants

Characteristic	Value
Age median group	35 to 44 years
Gender	291M & 126F
Clinical practice level	Range PTO – paramedic – ICP - retrieval
Paramedic training type	Post employment 75%
Highest level of education	30% diploma, 35% degree, 35% post grad
Other health discipline	18.9% Nursing
Years post qualification	54% 1-10, 31% 11-20, 15% > 20
State or territory	All – range 3.1% to 26.1%

6

Lens: PRECEDE – PROCEED model an ecological and educational approach to health program planning (Green and Kreuter, 2005)

- PRECEDE –
  - **P**redisposing **R**einforcing and **E**nabling **C**onstructs in **E**ducational / **E**cological **D**iagnosis and **E**valuation

    learned norms / context
- PROCEED-
  - **P**olicy, **R**egulatory, and **O**rganisational **C**onstructs in **E**ducational and **E**nvironmental **D**evelopment

7

Phase 1 PRECEDE – Situational analysis and social assessment
Situational Analysis

Literature review

1. A discipline in transition
2. Education models moving to a pre-employment training
3. Rapid expansion in their scope of practice
4. DoHA rescinded → NHMRC late 2010
5. ACSQIHC standards 2013

8

Phase 1 PRECEDE – Situational analysis and social assessment
Situational Analysis - SSI

Challenges of the paramedic work environment

- Unpredictability of the cases types
- Hostile work environment & operational pressures
- Misuse of gloves
- Varying cleaning standards
- Difficulty in cleaning some equipment
- Management of clinical waste,
- Vehicle design
- No national accreditation standards for IPC in EMS
- Little documentation of IPC practices

Barriers and enablers to improving IPC practices amongst paramedics

Barriers

- Cultural norms
  - Paramedic apathy
  - Lack of reporting breaches
- Semi autonomous workforce
  - Difficulty with conducting infield audits,
  - Difficulty enforcing policy
- Difficulty of IPC in paramedicine
- Difficulties in communication with state health regulators.

Enablers

- In field aide memoirs

9

Phase 1 PRECEDE – Situational analysis and social assessment
Social Assessment

Social diagnosis	Views the individual's perceptions in the context of the culture of the group
The paramedic participants	Felt confident with their IPC practices
	Perceived IPC as being important
	Perceived that IPC was undervalued by peers and managers.
	Described perceived barriers to the application of IPC in the field*
	Unlikely to report breaches

10

Phase 1 PRECEDE – Situational analysis and social assessment
Social Assessment - Perceived Barriers to IPC

Perceived Barrier	HH+G	EH	CG	ANTT	SSI
Insufficient time (operational pressure & scene time limits)	x	x	x	x	x
Cultural norms and attitudes	x	x	x		x
Access to products	x	x		x	
Appropriateness of products	x	x	x		
Difficulty	x	x		x	
Training	x	x	x	x	x
Knowledge		x			
Challenging environment	x			x	x

11

Phase 2 Epidemiological assessment

- Part 1
  - To what extent are the stake holders engaged?
- Part 2
  - What are the problematic behaviours?
    - Consistent with international findings

12

Phase 2 Epidemiological assessment– part 1 stakeholder engagement

Ambulance Services	4 of 8 Australian CAA members submitted SOPs
	Coverage 84% population
Paramedics	The low response rate for the SoPIC
	Difficulties in attracting participants for focus group interviews

Problematic engaging both organisations and paramedics

13

Phase 2 Epidemiological assessment – part 2 Problematic behaviours

Hand hygiene

Gloving

Environmental hygiene

Aseptic Non Touch Technique

Clinical governance

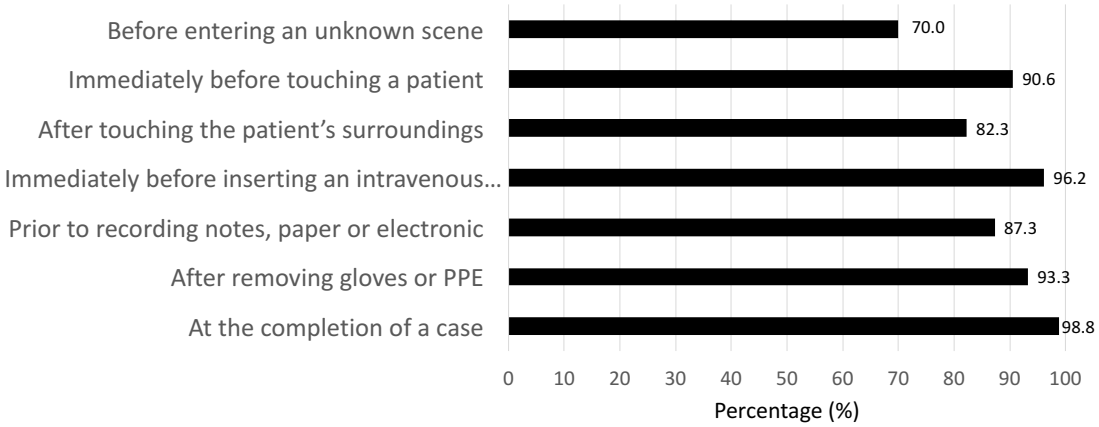
14

Phase 2 Epidemiological assessment Problematic behaviours - hand hygiene

- Most paramedics keep the same pair of gloves on for the entire patient encounter
  - "My gloves stay on from the moment I arrive at the scene until I have completed all the case, including paperwork"
- Compliance worsened with the perception of increased patient acuity
- Workarounds
  - Double gloving pre or post contamination

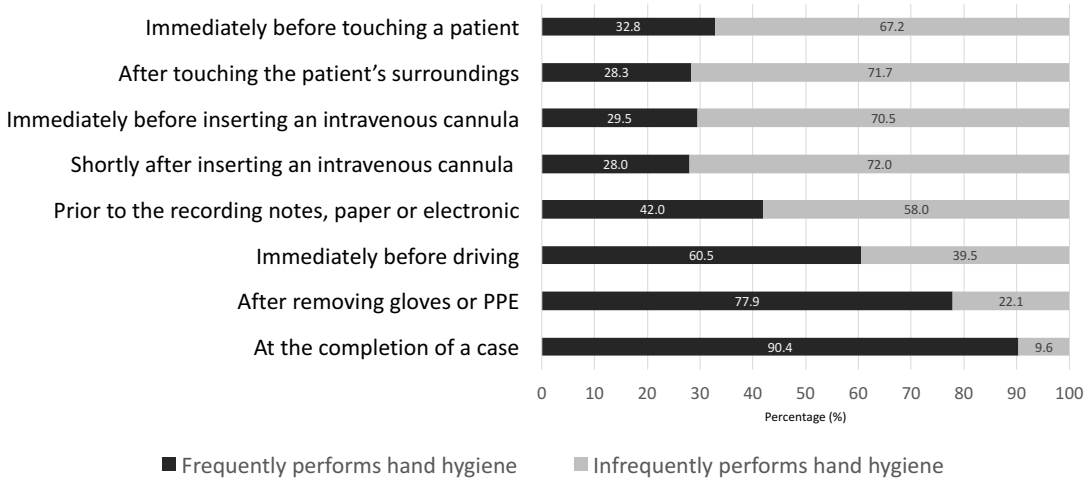
15

Percentage of SoPIC participants who perceive hand hygiene is important at defined moments



16

Percentage of SoPIC participants (*n*=417) who self-reported their undertaking episodes of hand hygiene during defined moments within clinical cases.



17

Associations between demographic variables and those who reported performing hand hygiene before IV insertion (29.5% of SoPIC participants) behaviours using Pearson Chi squared tests and Logistic regression (binary logistic model) to adjust P value using all demographic variables in the table.

Variables of interest	category	%	Percentage of demographic who frequently perform hand hygiene before IV insertion (%)	raw P / adjusted P[1] value
Gender (n=417)*	Male	69.8	29.2	P = 0.845 / **0.031**
	Female	30.2	30.2	
Clinical practice level (n=377)[2]	Paramedic (n=208)	49.9	26.9	P = 0.048 / 0.220
	ICP (n=118)	28.3	22.9	
	RP/GCP (n=51)	12.2	41.2	
	Excluded (n=40)	9.6		
Competency based training for standard precautions (n=417)*	Yes (n= 295)	70.1	34.2	P = 0.001 / **0.002**
	No (n= 122)	29.1	18.0	
Training type (n=417)	Pre-employment (n=106)	25.4	24.5	P= 0.194 / 0.880
	Post-employment (n=311)	74.6	31.2	
Highest level of education (n=417)	Certificate or diploma (n= 122)	30.0	38.5	P = 0.026 / 0.070
	Bachelor degree (n= 143)	35.2	25.2	
	Post graduate study (n= 142)	34.8	25.4	
Health training (n=387)[3*]	Paramedic only (n= 308)	79.0	25.0	P = 0.001 / **<0.001**
	Paramedic & nursing (n=79)	18.9	45.6	
	Excluded (n=30)	2.1		
Time post qualification (n=417)*	1 -10 years (n=194)	46.5	25.8	P = 0.009 / **0.006**
	11 - 20 years (n=128)	30.7	25.8	
	≥ 20 years (n=95)	22.8	42.1	
State or territory*	Range	3 – 26	8.0 - 46.8	P = 0.002 / **0.008**

Phase 2 Epidemiological assessment
Problematic behaviours - environmental hygiene

- Recognition knowledge but not recall knowledge or analytical processes
- No participant correctly described the process for:
  - routine cleaning of shared medical items
  - routine cleaning of ambulance interiors
  - the management of spills
- Inappropriate cleaning methods & biocide misuse
  - Solo disinfectants, pressure hoses…
- Inconsistent schedules for the routine and deep cleaning of ambulances

19

The frequency of responses aligning to NHMRC advice and the percentage of omitted areas in responses

Task and number of responses	**Comment alignment with NHMRC advice (%)**			**Comments with omitted steps in responses (%)**				
Spills management	Met	Mostly met	Not met	PPE	Remove spill	Deterg	Disinfect	Hand hygiene
Small (n=330)	0.0	11.8	88.2	95.5	60.0	50.6	21.2	100.0
Large (n=353)	0.0	3.7[#]	96.3	95.8	98.3[*]	52.7	39.4	100.0

20

The frequency of responses aligning to NHMRC advice and the percentage of omitted areas in responses

Task and number of responses	Comment alignment with NHMRC advice (%)			Comments with omitted steps in responses (%)				
Cleaning non critical items	Met	Mostly met	Not met	PPE	Remove soiling	Deterg	Disinfection	Hand hygiene
Small items (n=372)	0.0	9.7	90.3	98.7	21.8	46.0	19.1	100.0
Large items# (n-360)	0.0	16.1	83.9	99.2	23.6	47.2	22.2	100.0
Response bags@ (n=339)	0.0	6.8	93.2	99.7	30.1	51.9	33.9	100.0

21

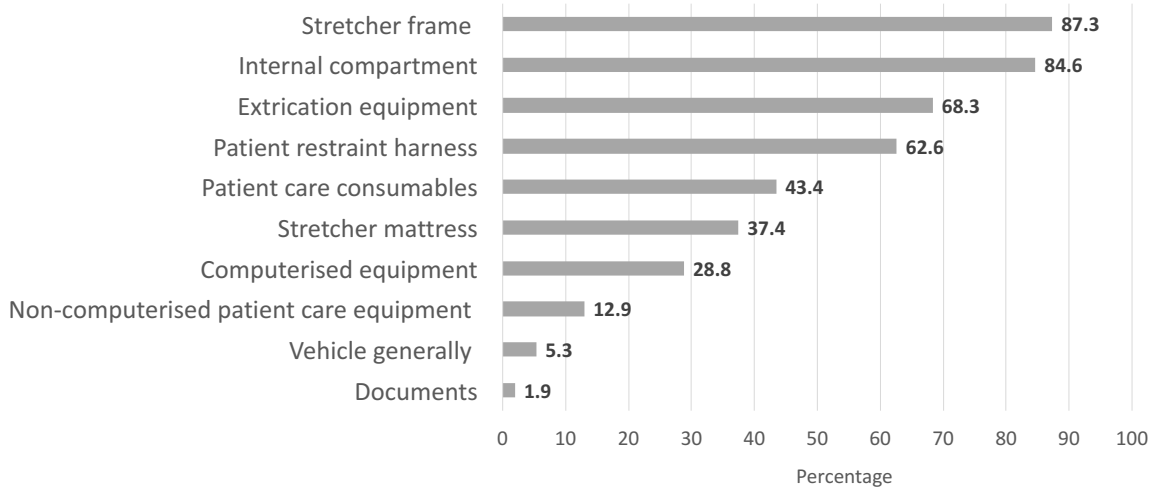
Routine management of the physical environment!

no one is responsible and no one seems to care

The thing I am confident about is that the vehicles are poorly cleaned full stop!!

22

The ten most frequently reported locations of blood contamination inside an ambulance by those who observed blood contamination more than 3x per year at the beginning of a shift.



23

Phase 2 Epidemiological assessment Problematic behaviours - ANTT

Touching key sites post disinfection

Reliance on micro-fields and workarounds rather than using aseptic fields

Storing items that contact mucous membranes out of packets (OPA, LMAs)

24

Phase 2 Epidemiological assessment
Problematic behaviours – Clinical Governance

- The main areas of concern reported were:
  - A lack of competency based training
  - Poor awareness of IPC guidelines
  - Lack of emphasis on IPC
  - Poor access to IPC equipment
  - Poor awareness of immunisation status
  - Little surveillance, audit and notification of breaches
  - Reluctance to officially report breaches
  - Reluctance to stop events while these occur
  - Communication around MDROs
  - *"very few hospitals or nursing homes think actually telling the paramedics that the pt. has these infections is in anyway important."*

25

Phase 3 – Ecological and Educational diagnosis
identified factors that must be addressed or acknowledged to initiate and sustain the process of behavioural and environmental change

Predisposing Beliefs, attitudes, values and knowledge.	Enabling factors Availability & accessibility of resources, policy and training	Reinforcing factors Positive and negative rewards
• Positive • IPC percieved as important (S 3) • Glove use (S 3+4) • ABHR use (S 3+4) • Flu-vax uptake (S 3+4) • Negative • Tough guy persona (S 2) • Difficulty in auditing (S 2) • Glove misuse (S 3+4) • Self protection (S 2, 3+4) • Poor knowledge & awareness of IPC policies and practices (S 3) • Skill deficit (S 3)	• Positive • SOP mostly aligned well with the NHMRC IPC guidelines (S 1) • Negative • Lack of harmonisation of IPC guidelines (S1+2) • Poor knowledge (Study 3+4) • Poor access to resources (S 3+4) • Poor dissemination (S 2+3)	• Positives • Peers will raise concerns with peers after events (S 3) • Negative • Culture of non-reporting (S 2+3) • Culture of not stopping breaches (S 3) • Little if any audit or feedback by managers (S2+3)

26

Transformational change - recommendations

National paramedic IPC guidelines

- Contextualise and harmonise national guidelines for paramedic-led healthcare
  - Maintaining asepsis in paramedic practice
  - Australian Standard for Cleanliness in Ambulances
- Decide what activities preclude the application of particular IPC practices

Remove barriers to IPC

- Appropriate resources - disseminate policy and equip paramedics
- Improve: skills training, critical thinking and knowledge of rationale, indications and procedures
- Improve reporting of processes, audit and breaches

Promote transformational change

- Strong leadership to make IPC a priority in all organisations
- Encourage champions to be the agents of change

27

www.webbertraining.com/schedulep1.php

October 24, 2019	INFECTION CONTROL ISSUES IN HEALTHCARE CONSTRUCTION, PART 2 – NEW BUILDS Speaker: **Andrew Streifel**, University of Minnesota
November 7, 2019	HEALTHCARE-ASSOCIATED PNEUMONIA THAT IS NOT VENTILATOR-ASSOCIATED: BIG PROBLEM, BUT GUIDELINE-FREE ZONE Speaker: **Martin Kiernan**, University of West London
November 12, 2019	*(FREE European Teleclass)* THE ROLE OF CLEANERS IN INFECTION PREVENTION - NEGLECTED FRONT LINE WORKERS IN HEALTHCARE FACILITIES Speaker: **Prof. Wendy Graham**, London School of Hygiene & Tropical Medicine, and **Claire Kilpatrick**, The Soapbox Collaborative ***Sponsored by the World Surgical Infection Society*** WSIS

Thanks to Teleclass Education

PATRON SPONSORS