Nurse practitioner diagnostic reasoning - does it differ from registrars?

Alison Pirret (NP, BA, MA, PGCert, PhD Candidate)

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

CRITICAL CARE COMPLEX

Acknowledgements

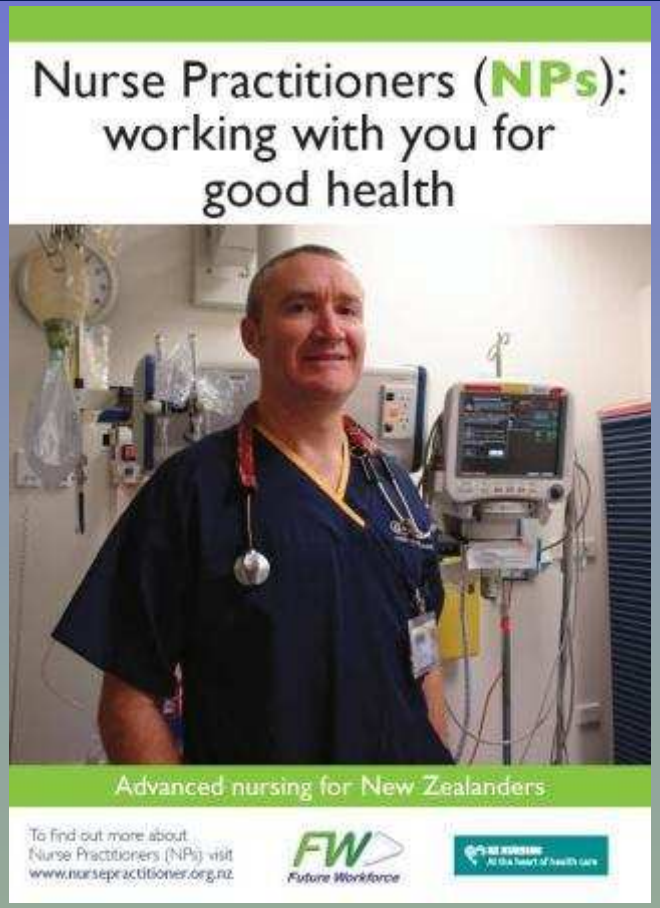
- Supervisors
  - Dr Stephen Neville
  - Professor Steve LaGrow
- Participants
- Expert panel
  - Professor Bruce Arroll
  - Associate Professor Peter Gow
  - Dr Helen Snell

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Introduction

- Nurse practitioners introduced to:
  - Increase patients' access to healthcare
  - Improve patient outcomes
  - Provide a sustainable solution to workforce shortages

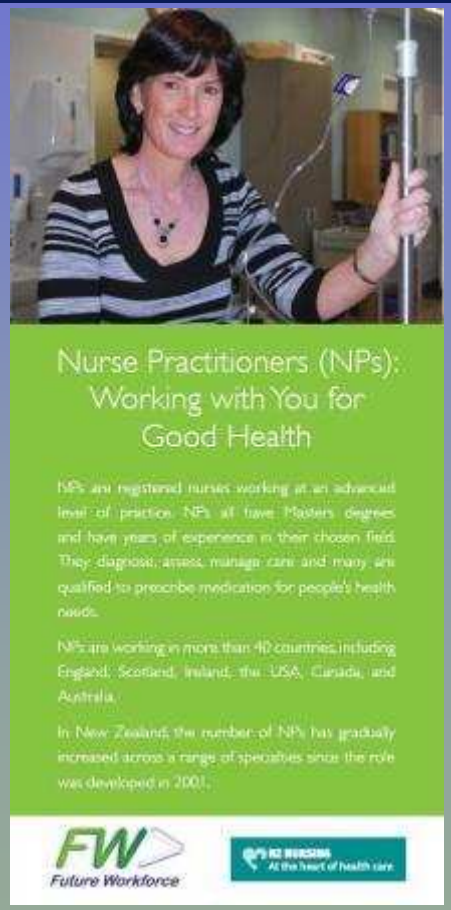


COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Nurse practitioners

- Expert nurses
- Clinically focused Master's degree
- Minimum 4 years in area of practice
- Passed Nursing Council of NZ nurse practitioner assessment

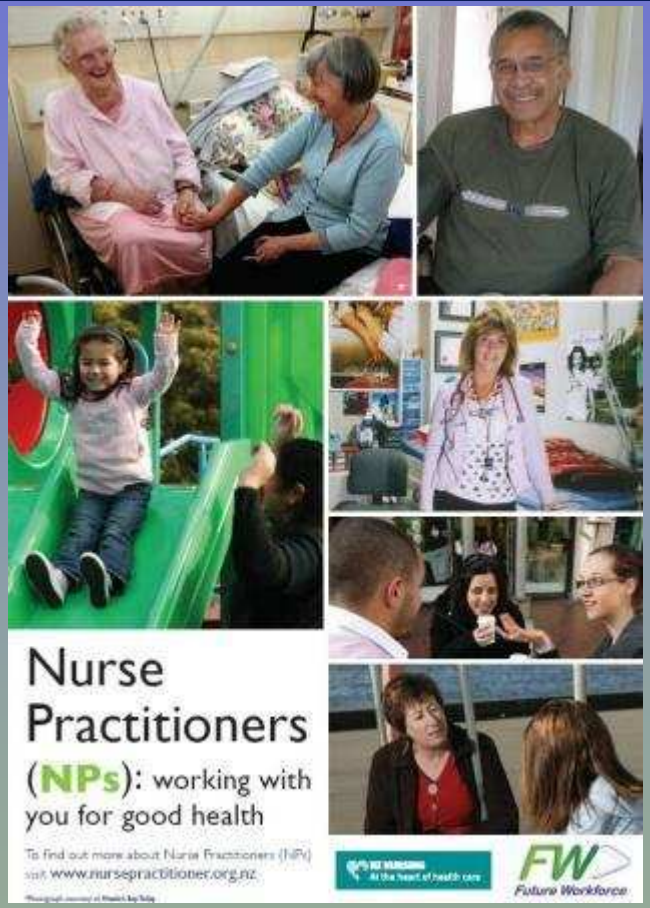


COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Nurse practitioners

- Combine
- advanced nursing practice & skills from medicine
  - Assess
  - Diagnose
  - Order diagnostic tests
  - Prescribe
- Role challenged



VOLUME 1 • NUMBER 2 • JUNE 2009

Journal
OF PRIMARY HEALTH CARE

'Substituting doctors with nurses may amount to robbing an impoverished Peter to pay a much better off Paul.'

See Back to Back, page 140

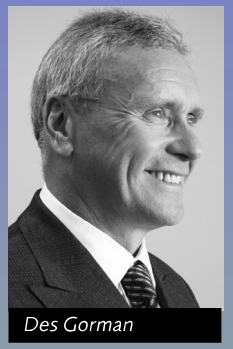
The Royal New Zealand College of General Practitioners

"The nurse practitioner provides a substantive opportunity for task substitution in primary care"

BACK TO BACK this issue:


Mary Jane Gilmer

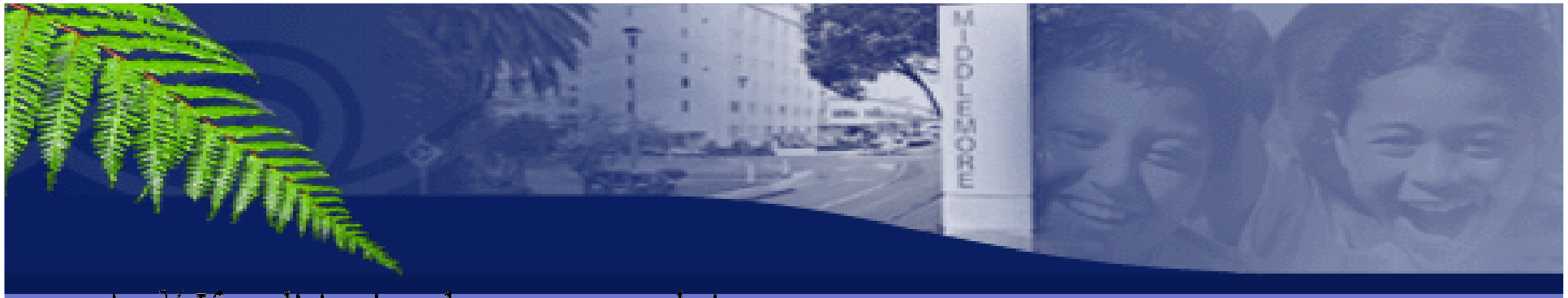
YES


Des Gorman

NO

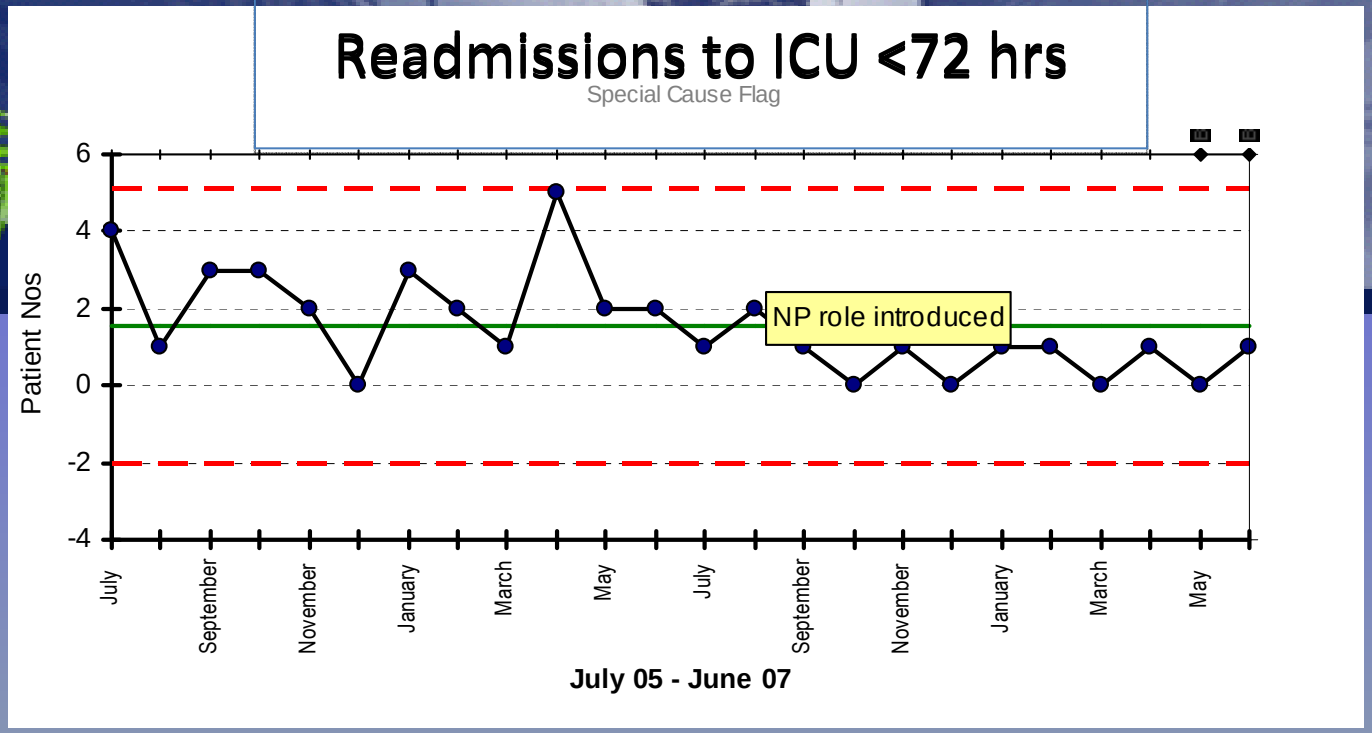
COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX



practice.[2,6] If medicine is to have a strong role in future health workforces then largely it will be at the front door of health care facilities interpreting patient complaints, planning care and referring to NP and other health profession-led intervention clinics.

If the key role of the doctor in 2025 is to be a health professional who has a largely cognitive function and is primary and generalist care-oriented, is there really a scope for meaningful workforce substitution in the primary health care setting? Certainly, there are no data to show



Intensive and Critical Care Nursing (2008) **24**, 375—382

ELSEVIER

ICCN

www.elsevierhealth.com/journals/iccn

ORIGINAL ARTICLE

The role and effectiveness of a nurse practitioner led critical care outreach service

Alison M. Pirret [a,b,]

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Intuition dominant mode of thinking in nursing

- Insufficient knowledge and using intuition & experience to make prescribing decisions

- Offredy, M., Kendall, S., & Goodman, C. (2008). The use of cognitive continuum theory and patient scenarios to explore nurse prescribers' pharmacological knowledge and decision-making. *International Journal of Nursing Studies, 45*(6), 855-868.

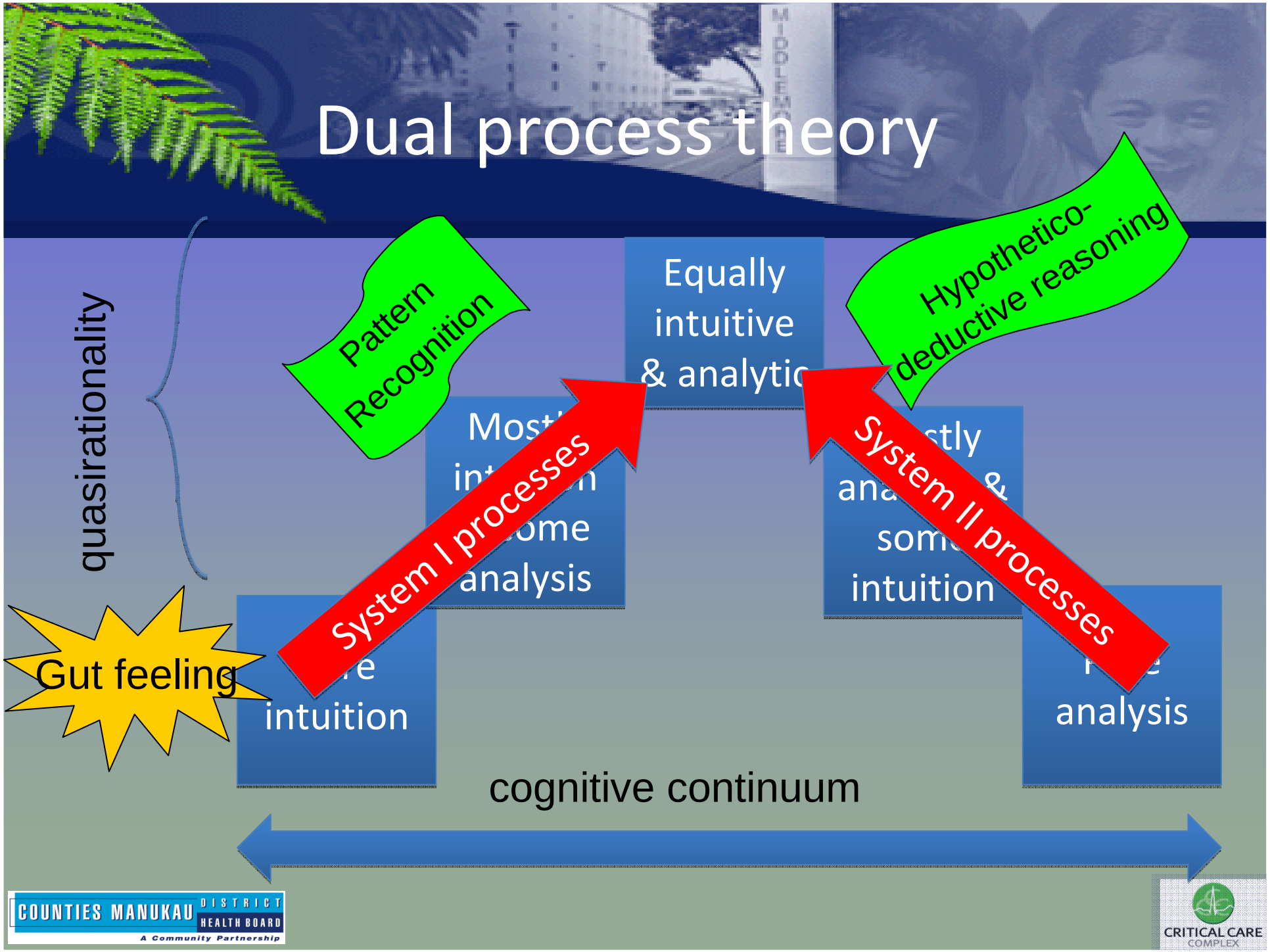
- Intuition to make strong but wrong decisions

- Thompson, C., et al.,. (2007). Nurse's critical event risk assessment: A judgment analysis. *Journal of Clinical Nursing, 18*, 601-612.

NPs and intuition

- Limited literature
- Use intuition to search for red flags

Dual process theory



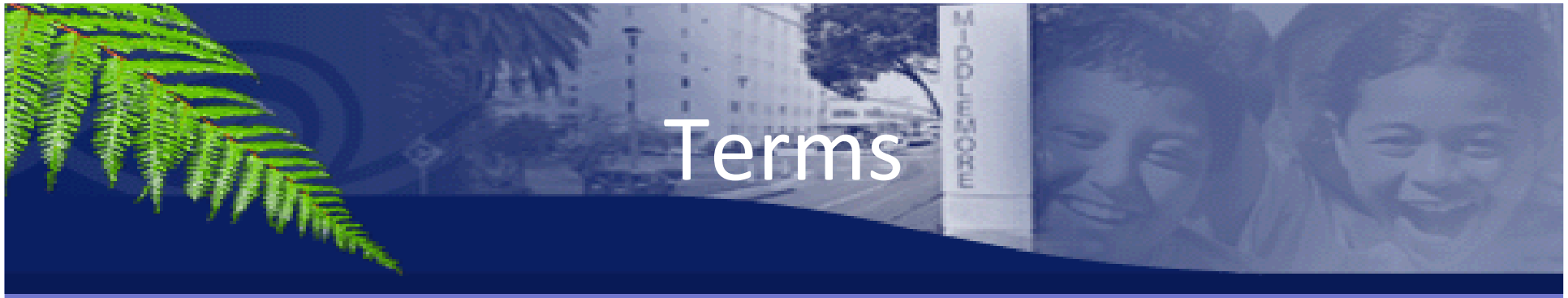
COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Study aim & question

- To explore nurse practitioner diagnostic reasoning

- How does nurse practitioner diagnostic reasoning compare to that of registrars?



Terms

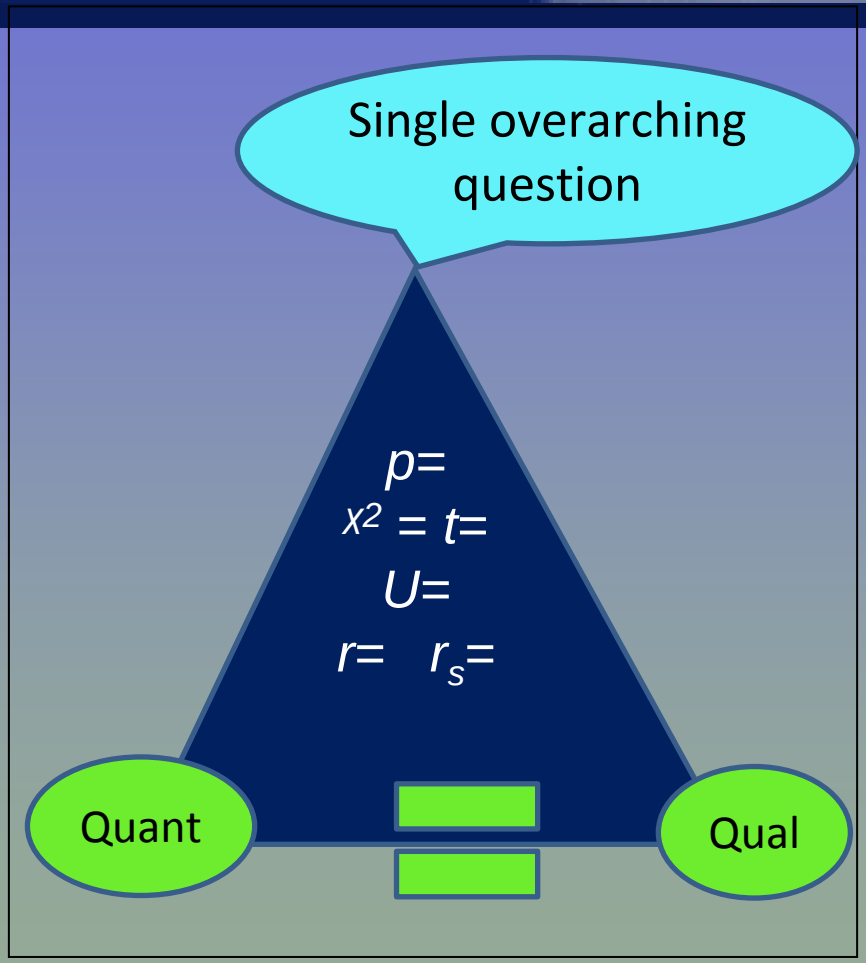
- Diagnostic reasoning
  - the cognitive process involving data collection, identification of diagnoses and problems, and the formulation of an action plan
- Diagnoses – labelling a disease
- Problem – abnormal finding or problem needing intervention

Research subquestions

1. How does nurse practitioner diagnostic reasoning abilities compare to that of registrars
2. What diagnostic reasoning style do nurse practitioners use in the diagnostic reasoning process?
3. What maxims guide nurse practitioner diagnostic reasoning?

Research Design

- Post positivist
- Mixed methods
- Convergent parallel



Methods

Diagnostic reasoning abilities

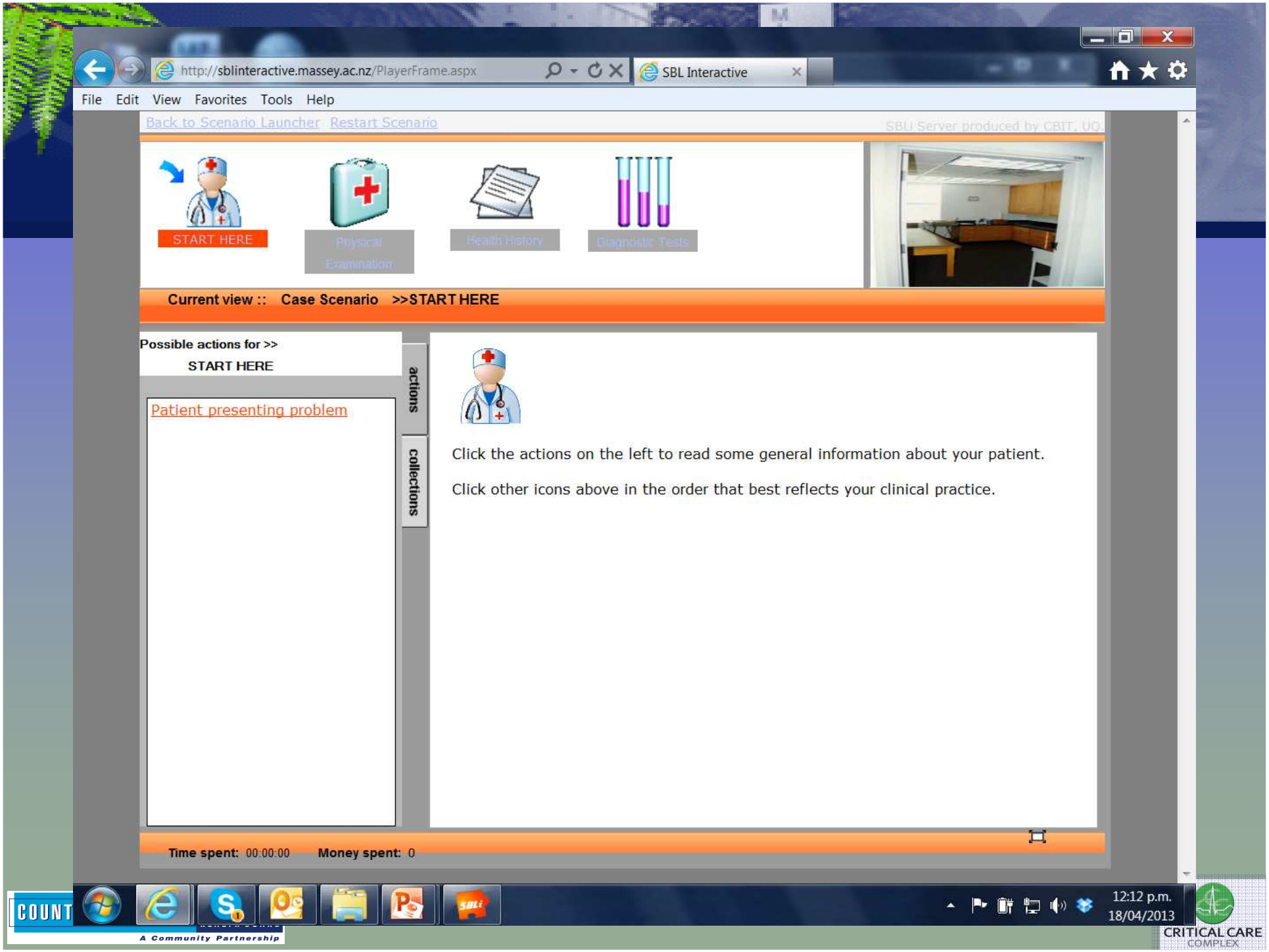
- Computerised case scenario *using think aloud*
- Web-based questionnaire
  - Intuitive analytic reasoning instr
  - Maxims questionnaire
- Demographic data shee

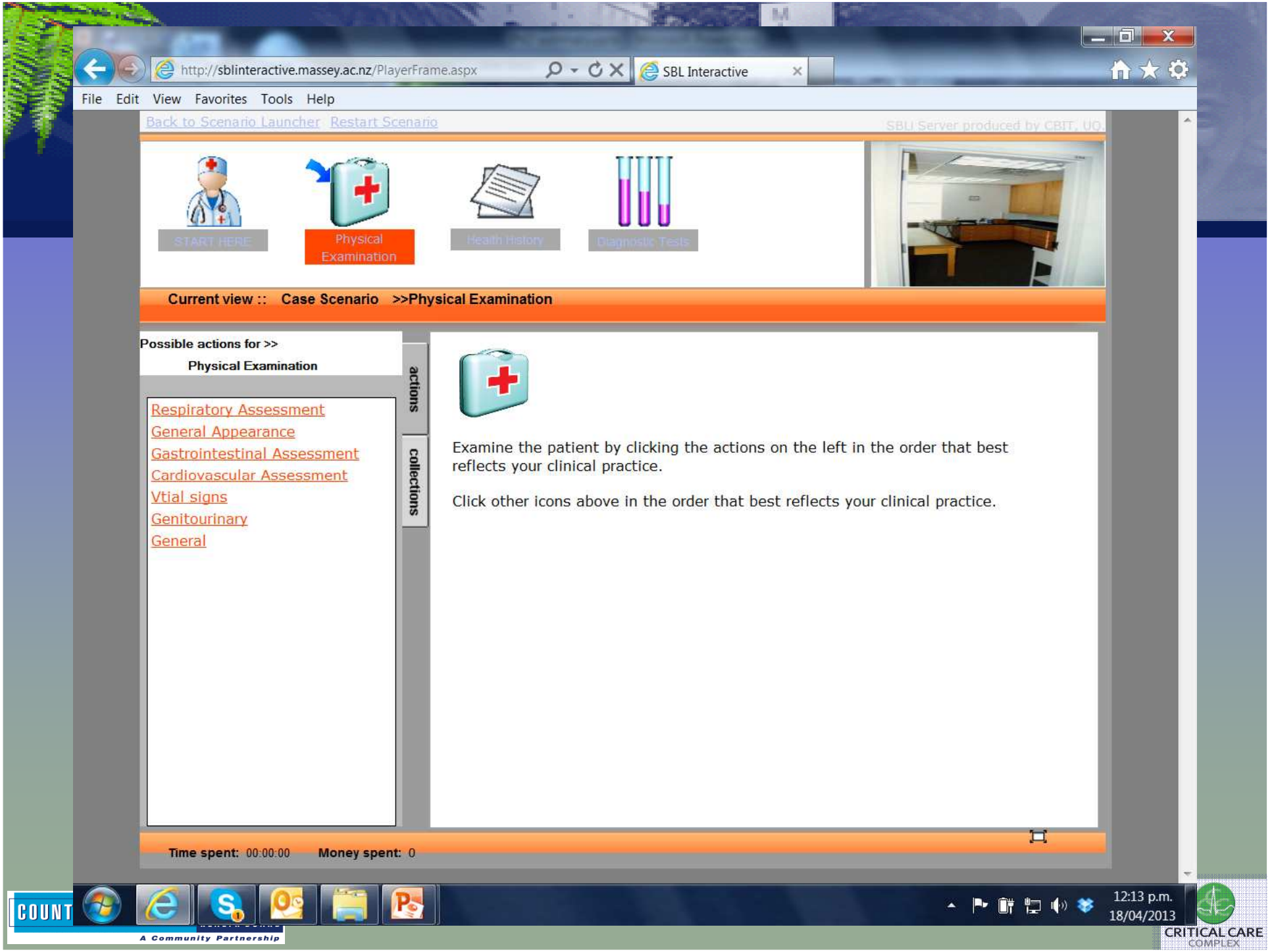
Diagnostic reasoning style

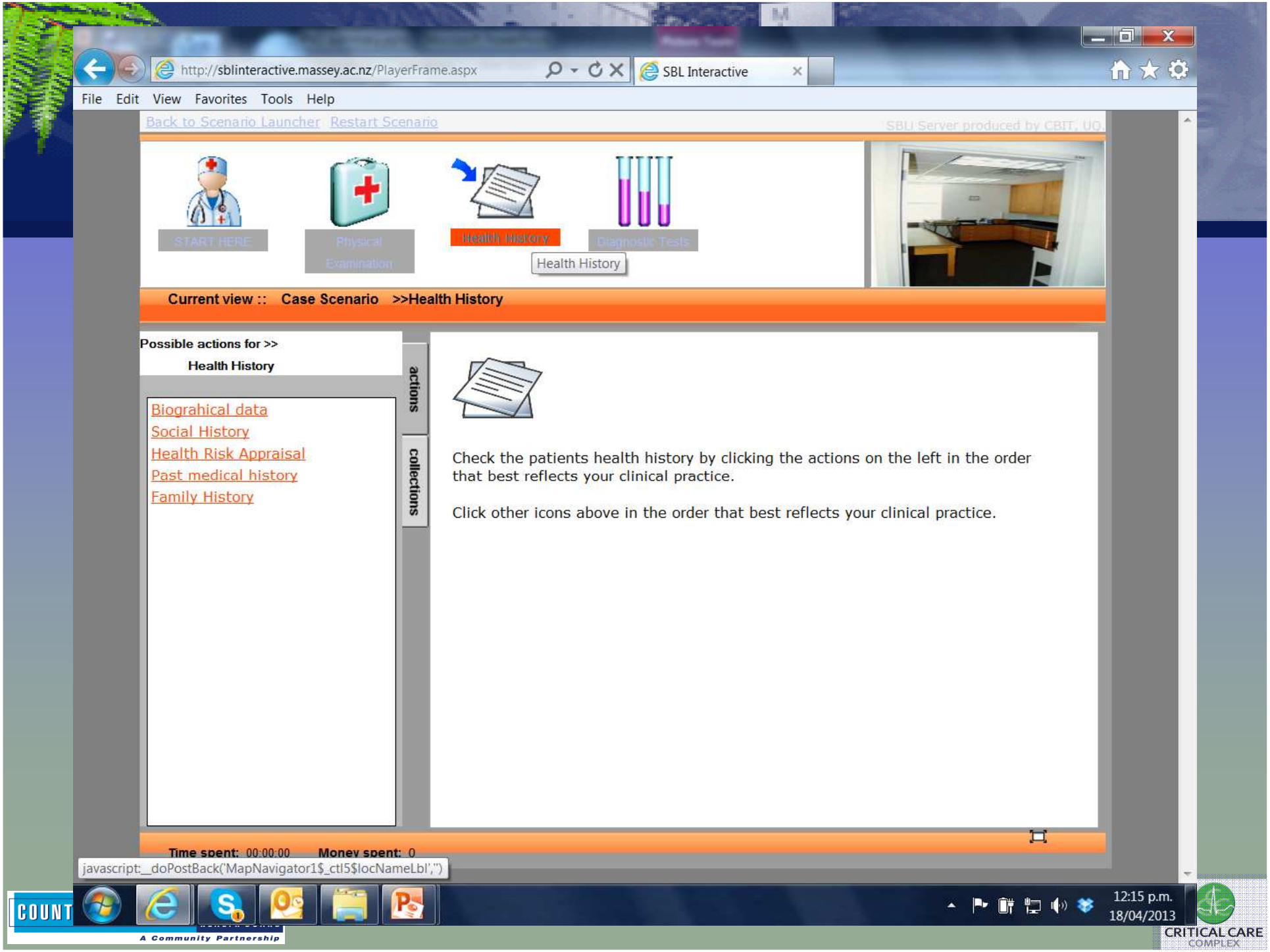
Maxims to guide diagnostic reasoning

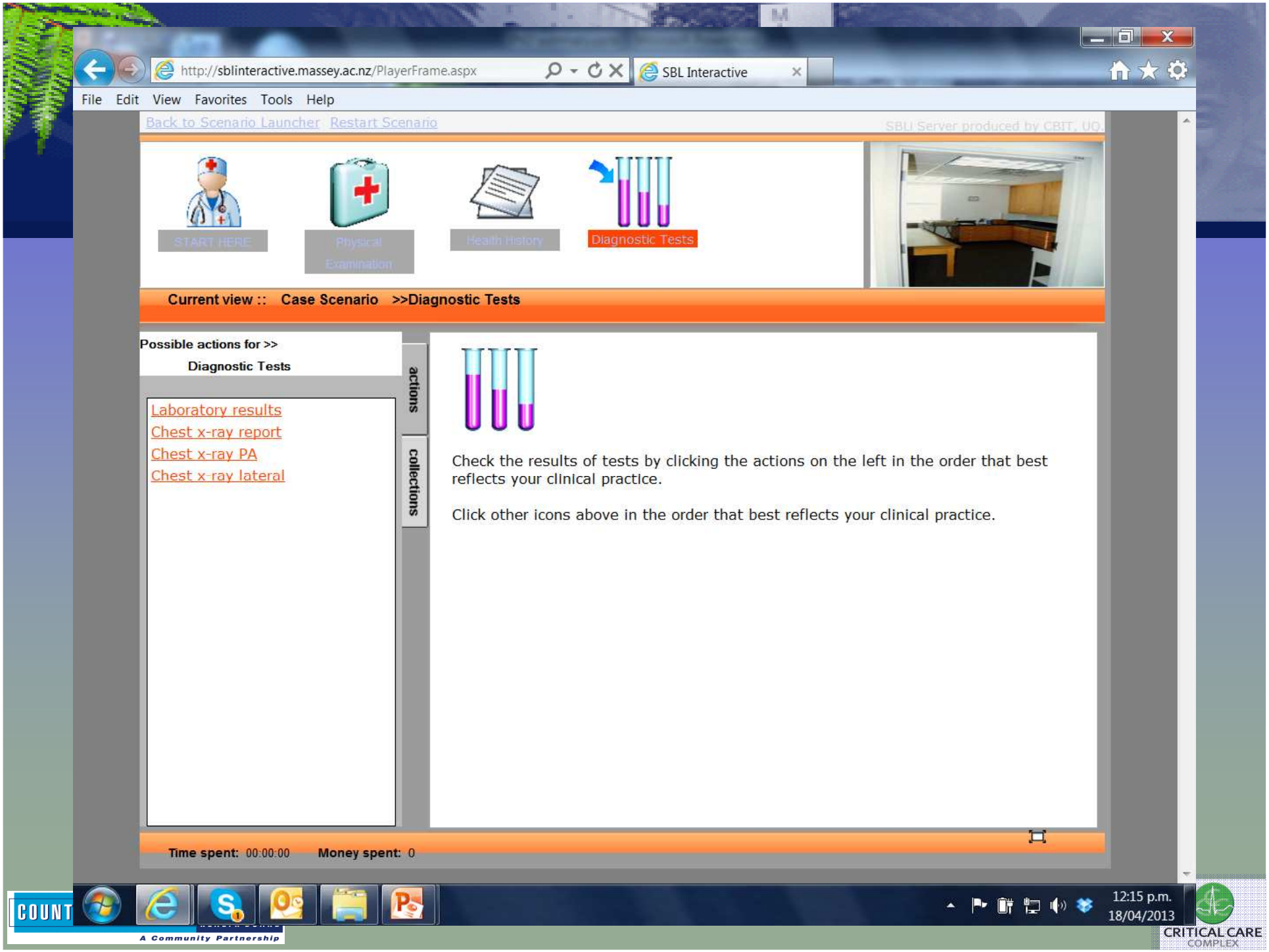
COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX


http://sblinteractive.massey.ac.nz/PlayerFrame.aspx
SBL Interactive
File Edit View Favorites Tools Help
Back to Scenario Launcher Restart Scenario
SBLi Server produced by CBIT, UQ
START HERE
Physical Examination
Health History
Diagnostic Tests
Current view :: Case Scenario >>START HERE
Possible actions for >>
START HERE
actions
collections
Patient presenting problem
Click the actions on the left to read some general information about your patient.
Click other icons above in the order that best reflects your clinical practice.
Time spent: 00:00:00 Money spent: 0
12:12 p.m.
18/04/2013
A Community Partnership
CRITICAL CARE COMPLEX


http://sblinteractive.massey.ac.nz/PlayerFrame.aspx
SBL Interactive
File Edit View Favorites Tools Help
Back to Scenario Launcher Restart Scenario
SBLi Server produced by CBIT, UQ
START HERE
Physical Examination
Health History
Diagnostic Tests
Current view :: Case Scenario >>Physical Examination
Possible actions for >>
Physical Examination
actions
collections
Respiratory Assessment
General Appearance
Gastrointestinal Assessment
Cardiovascular Assessment
Vtial signs
Genitourinary
General
Examine the patient by clicking the actions on the left in the order that best reflects your clinical practice.
Click other icons above in the order that best reflects your clinical practice.
Time spent: 00:00:00
Money spent: 0
12:13 p.m.
18/04/2013
A Community Partnership
CRITICAL CARE
COMPLEX


http://sblinteractive.massey.ac.nz/PlayerFrame.aspx
SBL Interactive
File Edit View Favorites Tools Help
Back to Scenario Launcher Restart Scenario
SBLi Server produced by CBIT, UQ
START HERE
Physical Examination
Health History
Diagnostic Tests
Health History
Current view :: Case Scenario >>Health History
Possible actions for >>
Health History
actions
collections
Biograhical data
Social History
Health Risk Appraisal
Past medical history
Family History
Check the patients health history by clicking the actions on the left in the order that best reflects your clinical practice.
Click other icons above in the order that best reflects your clinical practice.
Time spent: 00:00:00 Money spent: 0
javascript:__doPostBack('MapNavigator1$_ctl5$locNameLbl','')
12:15 p.m.
18/04/2013
A Community Partnership
CRITICAL CARE COMPLEX


http://sblinteractive.massey.ac.nz/PlayerFrame.aspx
SBL Interactive
File Edit View Favorites Tools Help
Back to Scenario Launcher Restart Scenario
SBLi Server produced by CBIT, UQ
START HERE
Physical Examination
Health History
Diagnostic Tests
Current view :: Case Scenario >>Diagnostic Tests
Possible actions for >>
Diagnostic Tests
actions
collections
Laboratory results
Chest x-ray report
Chest x-ray PA
Chest x-ray lateral
Check the results of tests by clicking the actions on the left in the order that best reflects your clinical practice.
Click other icons above in the order that best reflects your clinical practice.
Time spent: 00:00:00
Money spent: 0
12:15 p.m.
18/04/2013
A Community Partnership
CRITICAL CARE COMPLEX

Ethical Considerations

- Consultation process
  - NPAC-NZ, NPNZ, NZNO,WORKFORCE DHB
- Massey University Human Ethics Committee
- Informed consent
- Confidentiality agreement

Data analysis

Expert panel

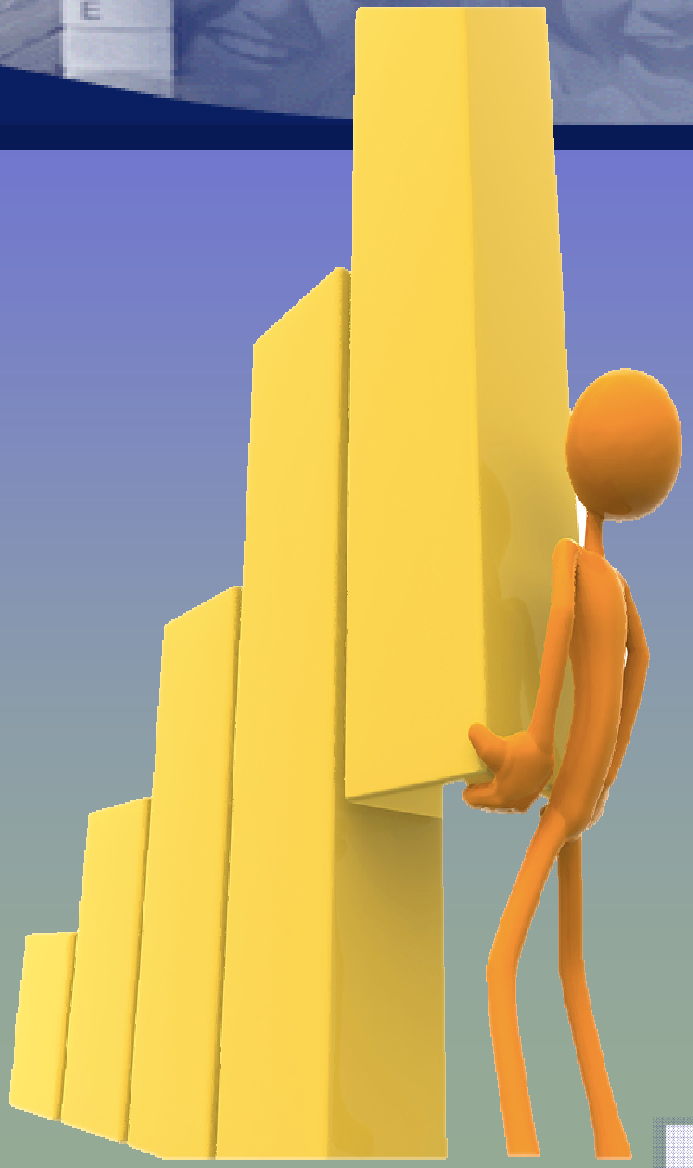
- Assessed complexity of case scenario
- Delphi Technique
  - Determined correct diagnoses, problems and actions
  - Determined logical/illogical and rational/irrational maxims

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

- SPPS 19
- Case scenario data transcribed verbatim, coded & categorised

  (Elstein et al. 1993)
- Qualitative data quantitised
- Registrar data provided normative data



COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

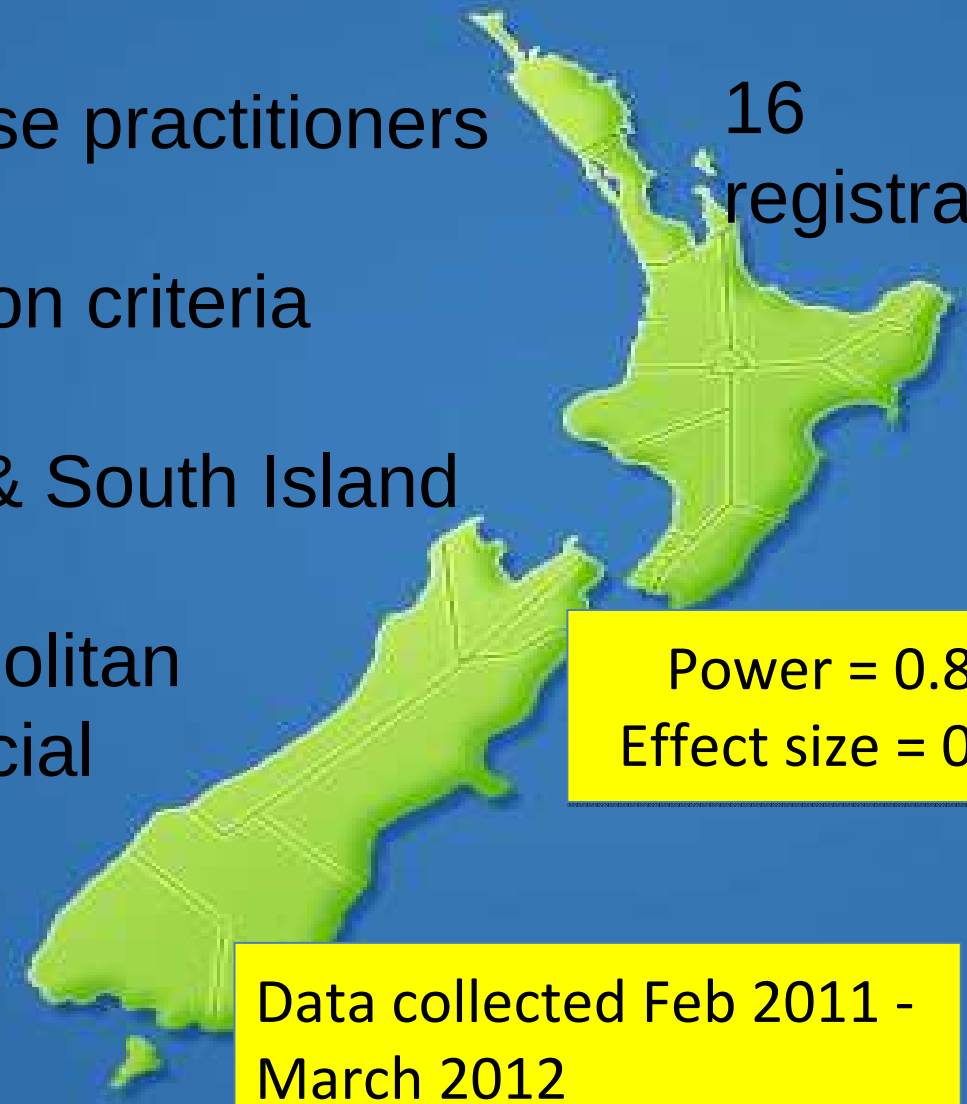
30 nurse practitioners

16 registrars

Inclusion criteria

North & South Island

Metropolitan
Provincial
Rural



Power = 0.8
Effect size = 0.8

Data collected Feb 2011 - March 2012

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Specialties

Primary health care/general practice
Respiratory
Cardiology
Emergency care
Older adult
Palliative care

Largest group

Smallest group

NP demographics

♂ = 3 ♀ =23 ℞ =27

2.2 yrs NP experience

28.2 yrs RN experience

17 years RN specialty experience

97% Clinical Masters

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Registrar demographics

♂ = 7 ♀ = 9

3.4 yrs registrar experience

2.9 yrs HO experience

13 completed part 1 exams

4 previous registrar programmes
1 previously a specialist

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Diagnostic reasoning abilities (Correct Diagnoses, Problems & Actions)

Nurse practitioners

- 44.8%
- *M*=10.30
- *Mdn*=10
- Range 4 -17
- *SD*=3.09

Registrars

- 47.3%
- *M*=10.88%
- *Mdn*=10
- R[illegible]

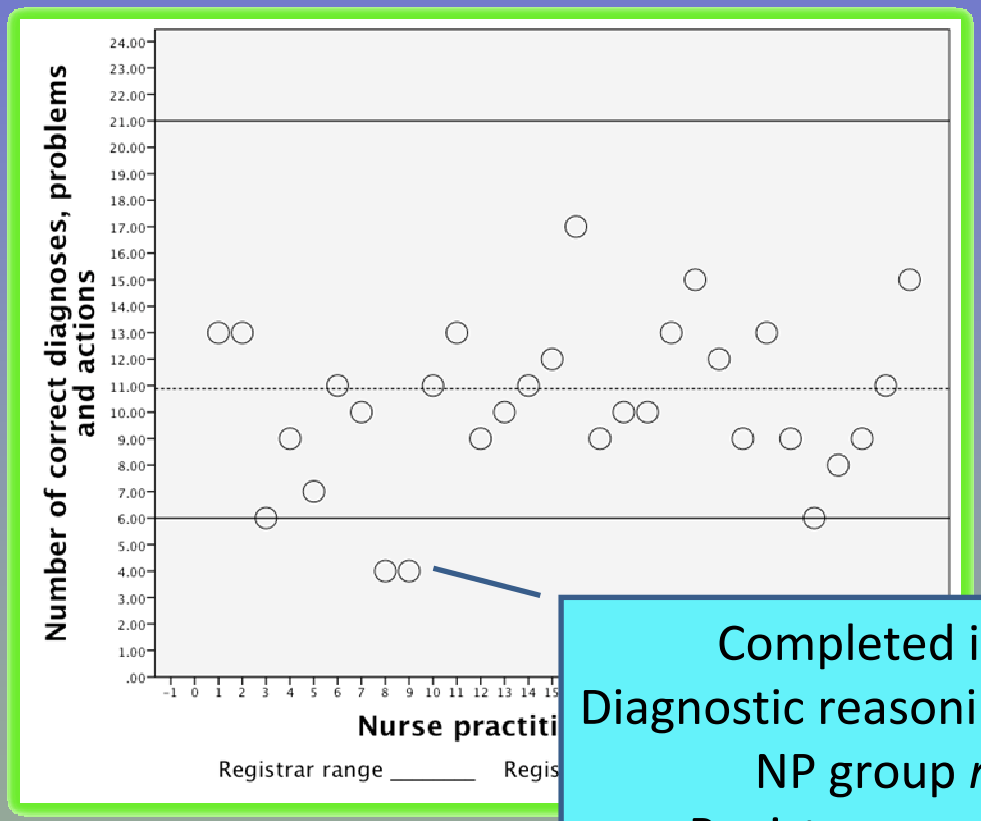
No difference between 2 groups

U=238.5, *z*=-.04, *p*=.97

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Diagnostic reasoning abilities



Completed in fastest time

Diagnostic reasoning abilities and time

NP group r_s=.53, p=.00

Registrar group r_s=.70, p=.00

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Case scenario reflecting practice

- 37% of NP wouldn't see ca e on regular basis
  - PHC & older
  - EC & pa
  - χ^2
- 31% re t se case regularly

Specialty not related to NP diagnostic reasoning abilities (χ^2=6.57, p=.25)

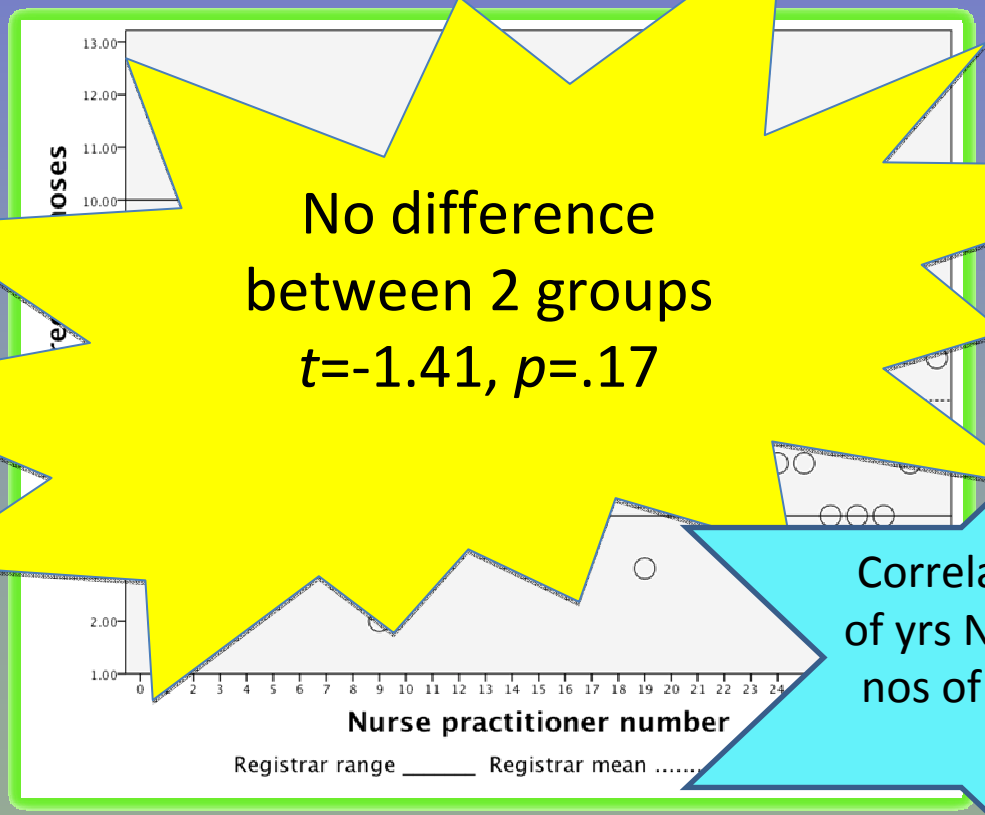
COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Relationship between correct diagnoses, problem and actions and total number of diagnoses, problems and actions (correct or incorrect)

Nurse practitioner group r_s=.75. p=.00
Registrar group r_s=.85, p=00

Correct diagnoses



No difference
between 2 groups
t=-1.41, *p*=.17

Correlation between nos of yrs NZ NP prescribing & nos of correct diagnoses
r_s.37, *p*=.04

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Correct problem

- *poor adherence to medicati**ns***
- NP (n=16, 53.3
- Registrars (
- (χ^2=.00, *p*=

Years RN specialty practice & identifying problem
r_s=.51, *p*=.004

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

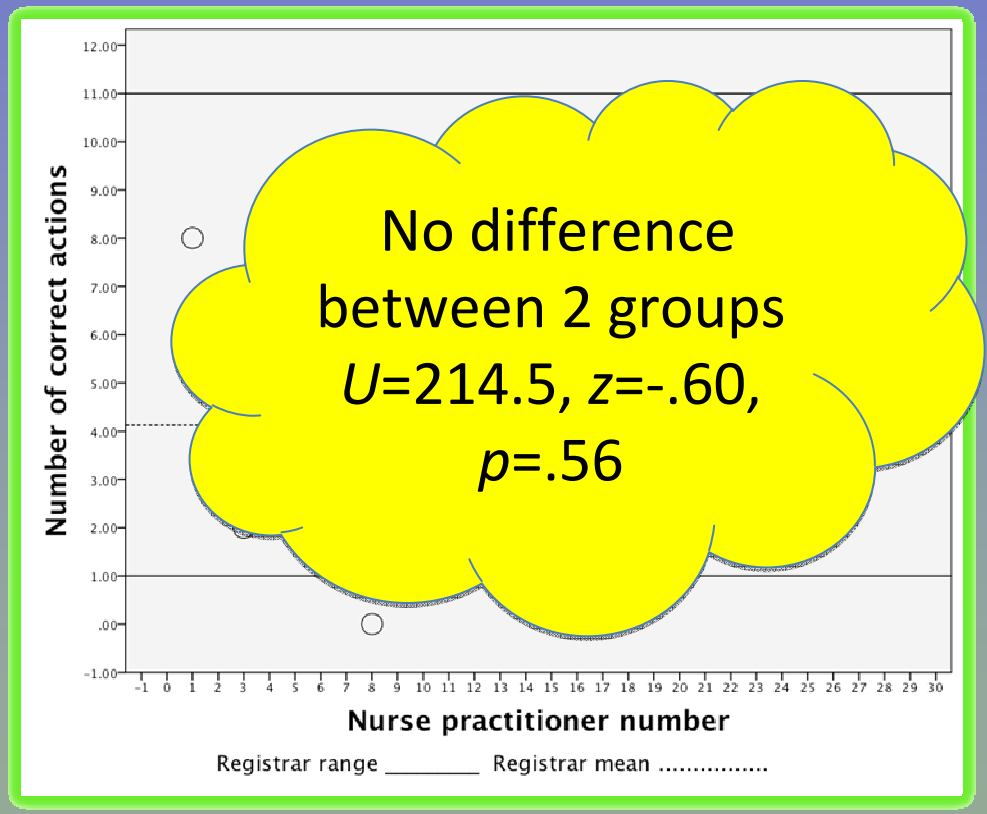
CRITICAL CARE COMPLEX

Total problems identified

No difference between the two groups

U=229.5, *p*=.80

Correct actions



COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Action - Discussed with consultant

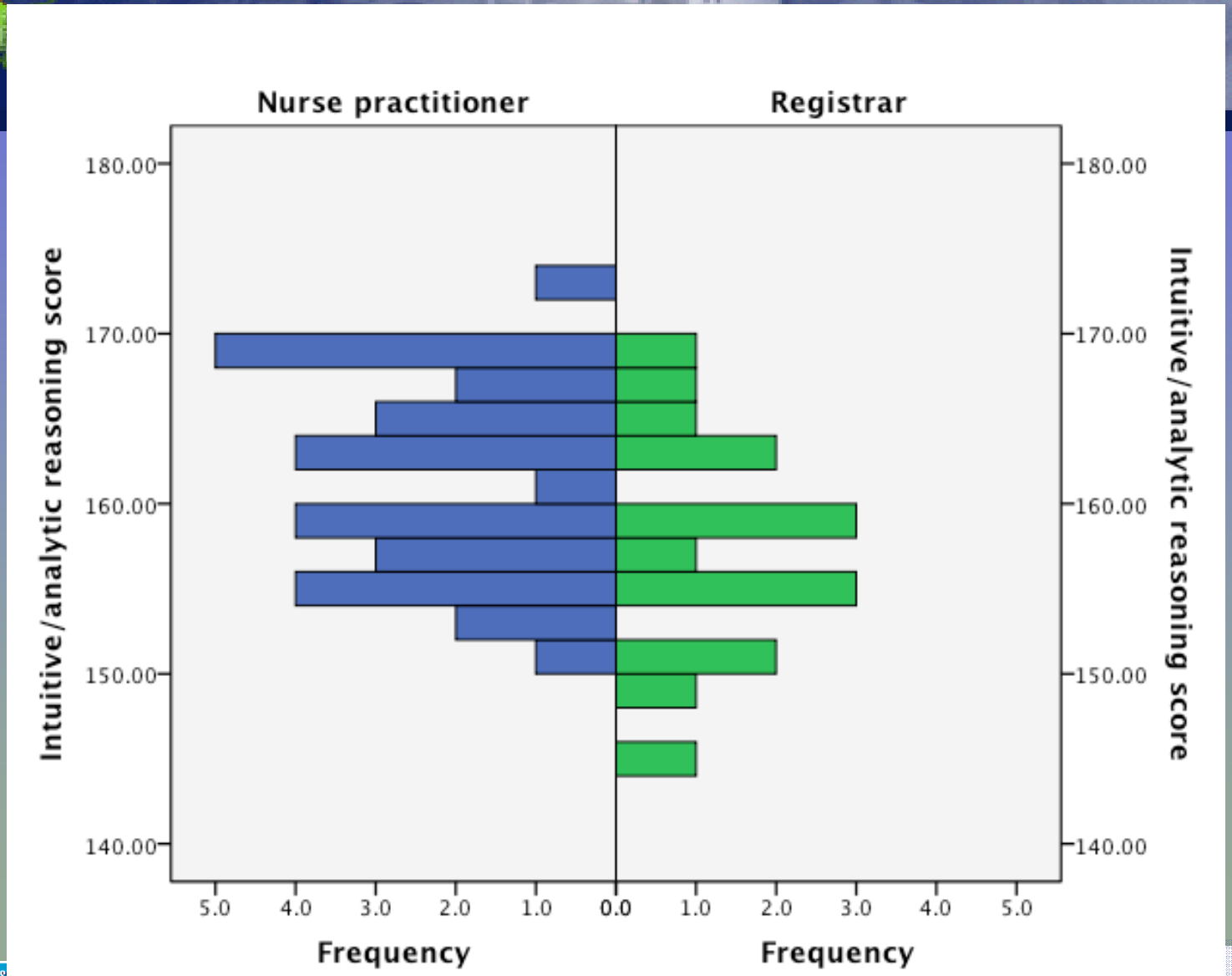
- Registrars (*n*=1, 6.3%)
- Nurse practitioners (*n*=22, 73.3%)
  - Prescribing authority (*FET p*=1.0)
  - Familiarity with scenario (*FET p*=.20)
  - Specialty area (χ^2=8.01, *p*=.33
  - Diagnostic reasoning abilities (*t*=-1

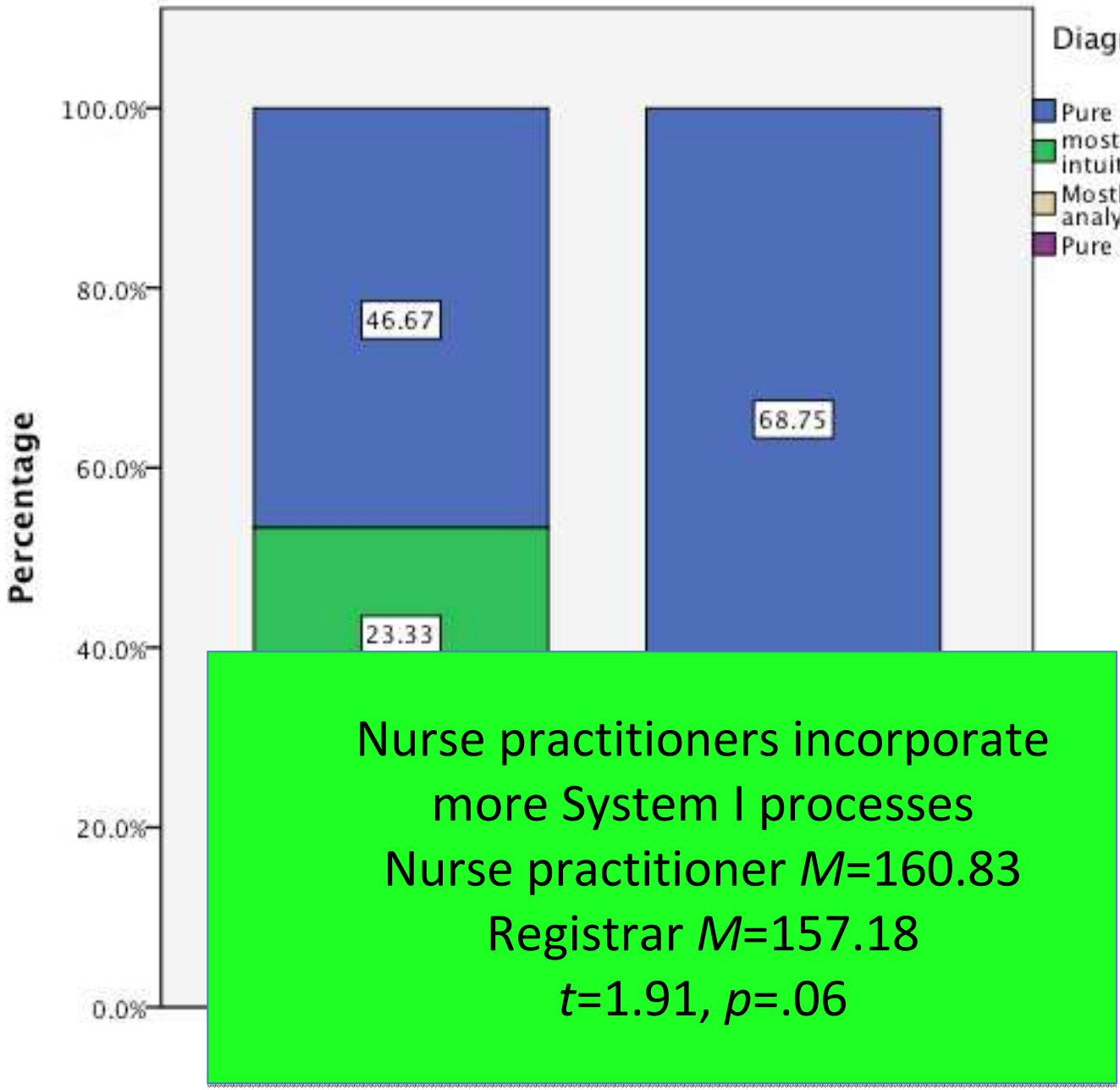
Consultant not necessarily on same premises

Diagnostic reasoning style

Pure intuition

Pure analysis





Nurse practitioners incorporate more System I processes

Nurse practitioner *M*=160.83

Registrar *M*=157.18

t=1.91, *p*=.06

Seven Maxims used often or almost always by NPs
Never worry alone, get a consultation
If what you are doing is working, keep doing it. If what you are doing is not working, stop doing it.
Follow up everything
Consider multiple sepa ate diseases n the sed this story and physical examinatio
Treat the patie
Don't order a te n the result
Common things

Only 50% registrars used this

Overall no difference between 2 groups
t=-.89, p=.38

Registrars - Real dise itself (n=9, 56.5%)

COUNTIES MANUKAU DISTRICT HEALTH BOARD
A Community Partnership

CRITICAL CARE COMPLEX

Study limitations

- Computerised case scenario
- Self reporting
  - intuitive/analytic instrument
  - Maxims questionnaire
- Normative sample
- Expert panel

Conclusion

- NP's diagnostic reasoning does not differ from registrars
- NPs have academic preparation and clinical expertise to:
  - perform role they were introduced to do
- Remove barriers & focus on how to better utilise NPs within the healthcare team