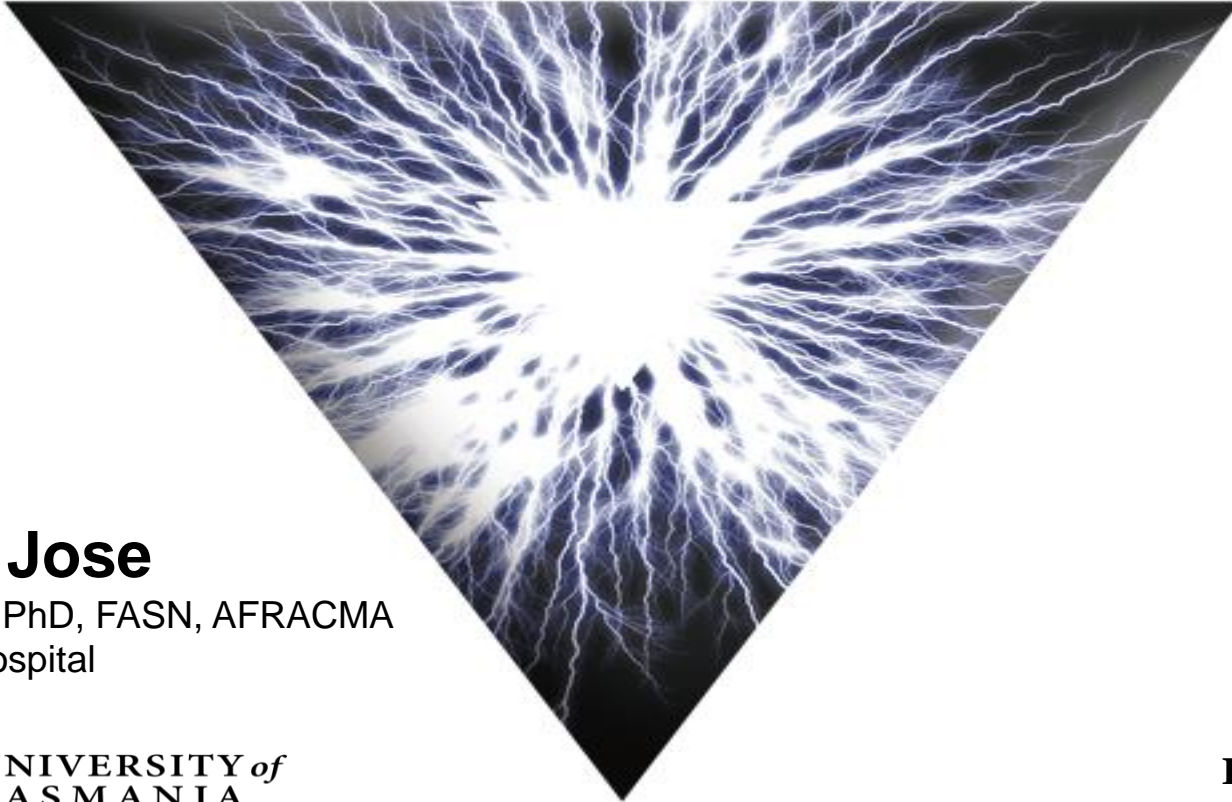


Update in Peritoneal dialysis



Matthew Jose

MBBS, FRACP, PhD, FASN, AFRACMA
Royal Hobart Hospital



**FACULTY OF
HEALTH**

I pay my respects to the traditional owners of this land, the Larrakia people, and to their elders past, present and emerging.

Conflicts of Interest

- **Member International Society of Peritoneal Dialysis (ISPD)**
- **Chairperson, PD working group of AKTN**
(Australasian Kidney Trials Network)
- **Chairperson, ANZDATA Steering Committee**
(Australia and New Zealand Dialysis and Transplant Registry)
- No commercial conflicts of interest

ANZDATA Working Groups: Advanced trainee membership 2017

- ▶ HD - Emily See
- ▶ PD - Jenny Chen
- ▶ Transplant - Eric Au
- ▶ Paediatrics - Jean Koh
- ▶ PROMs - Nicole Lioufas
- ▶ Indigenous - no nomination

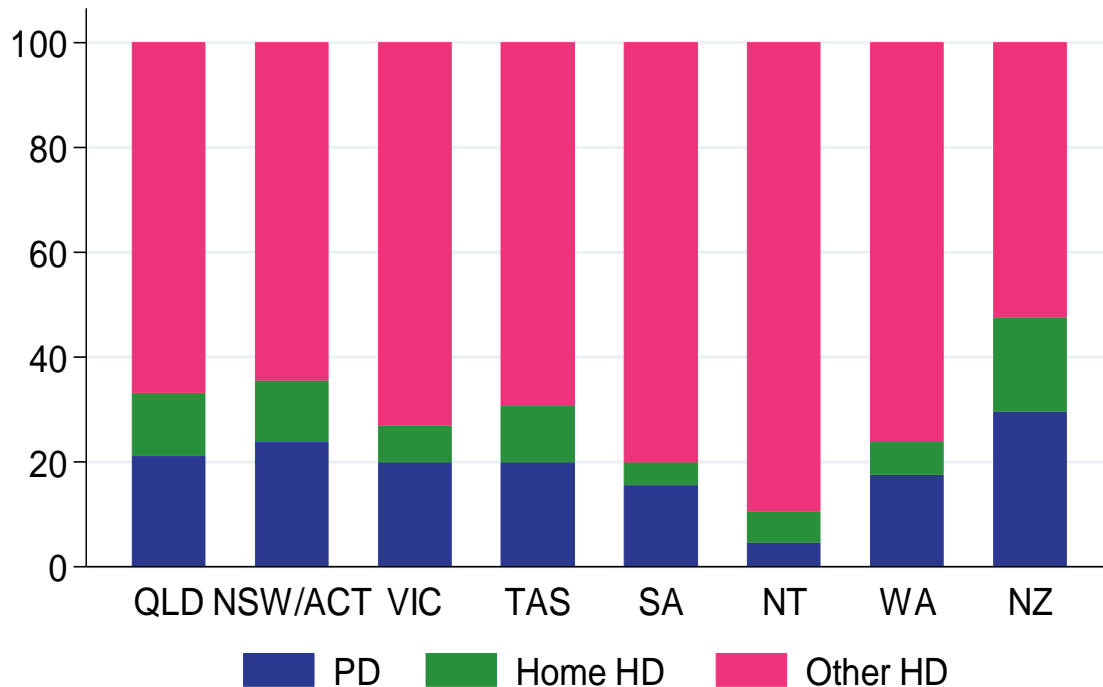
Learning Objectives

- Know the recent publications on PD
- Recognise clinical practice variation
- Recognise variation in clinical outcomes
- Know the current resources available to assist optimising PD outcomes for both patients and staff

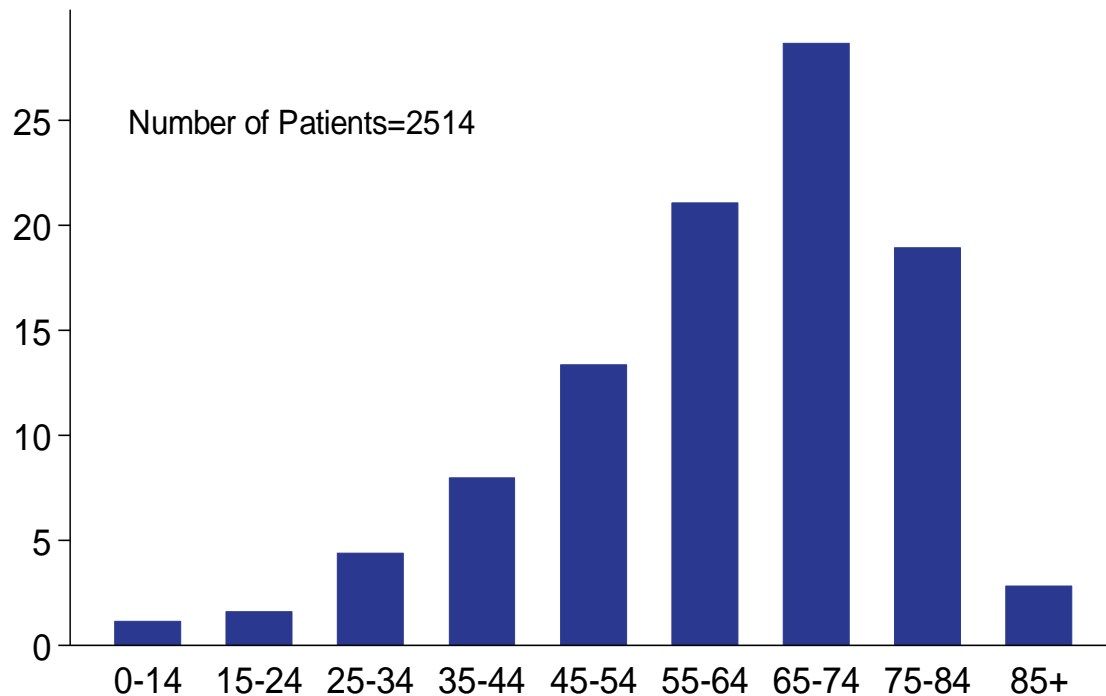
Peritoneal Dialysis in Australia and New Zealand:

Current practice and outcomes

Dialysis Modality by State at end of 2015



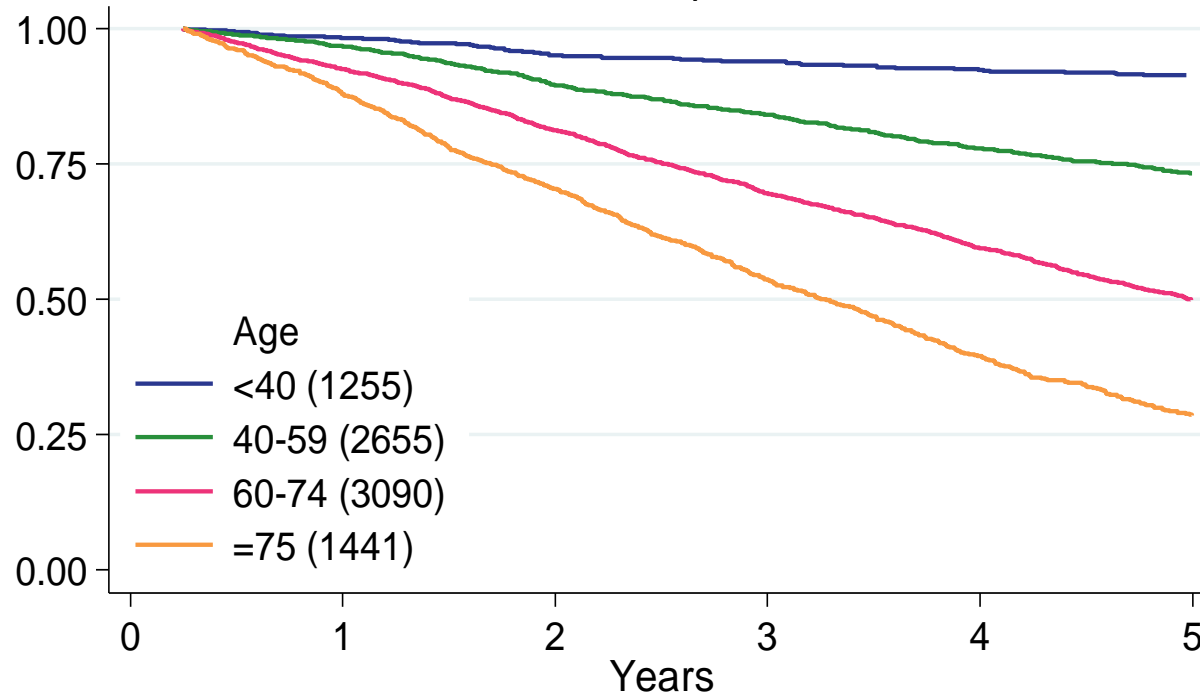
Age (%) of current peritoneal dialysis patients Australia 2015



Patient survival - peritoneal dialysis at 90 days

2004 - 2015

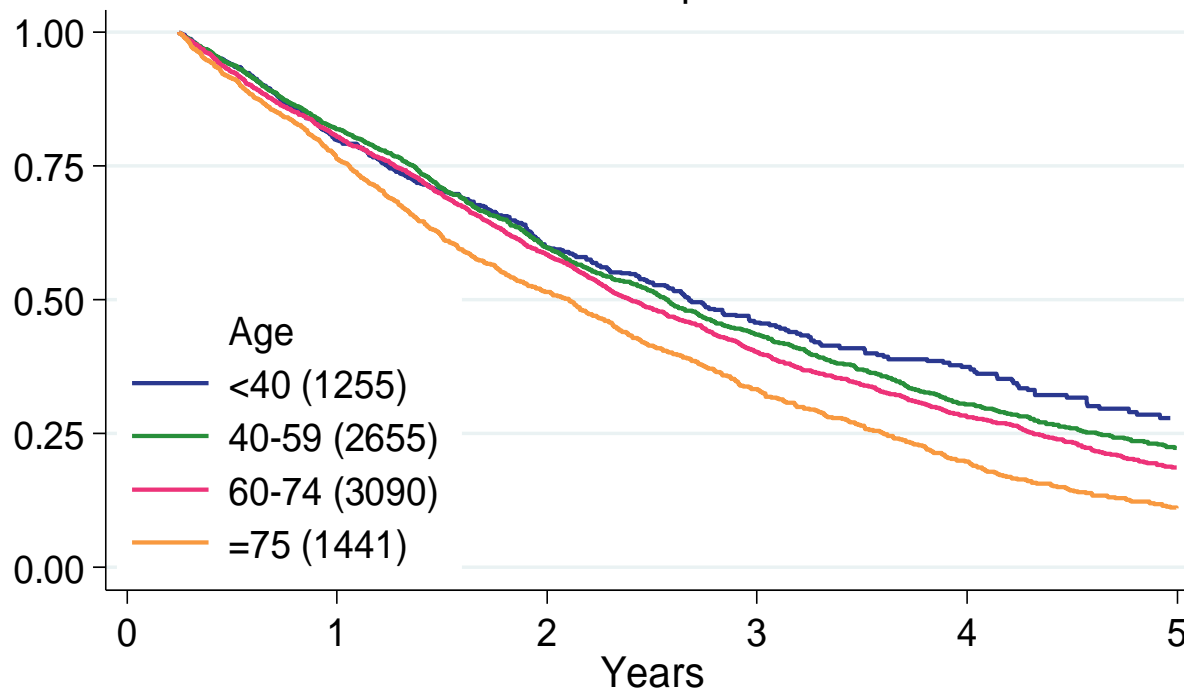
Censored for transplant - Australia



Technique survival - peritoneal dialysis at 90 days

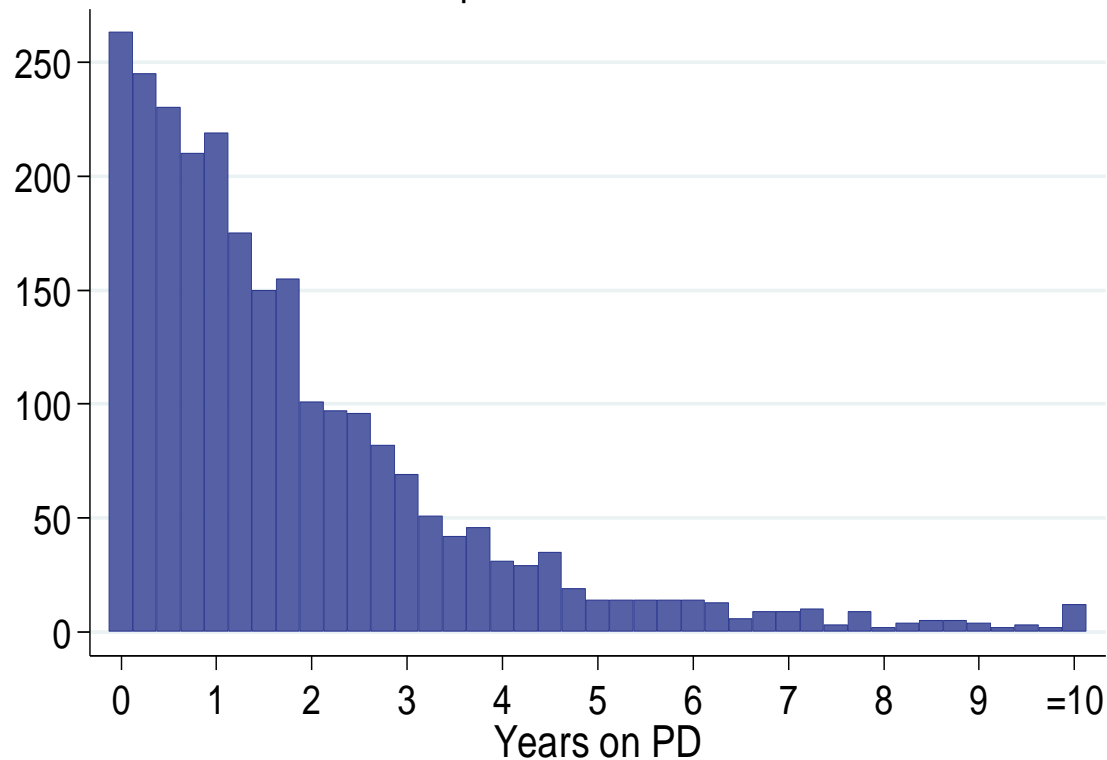
2004 - 2015

Censored for transplant - Australia

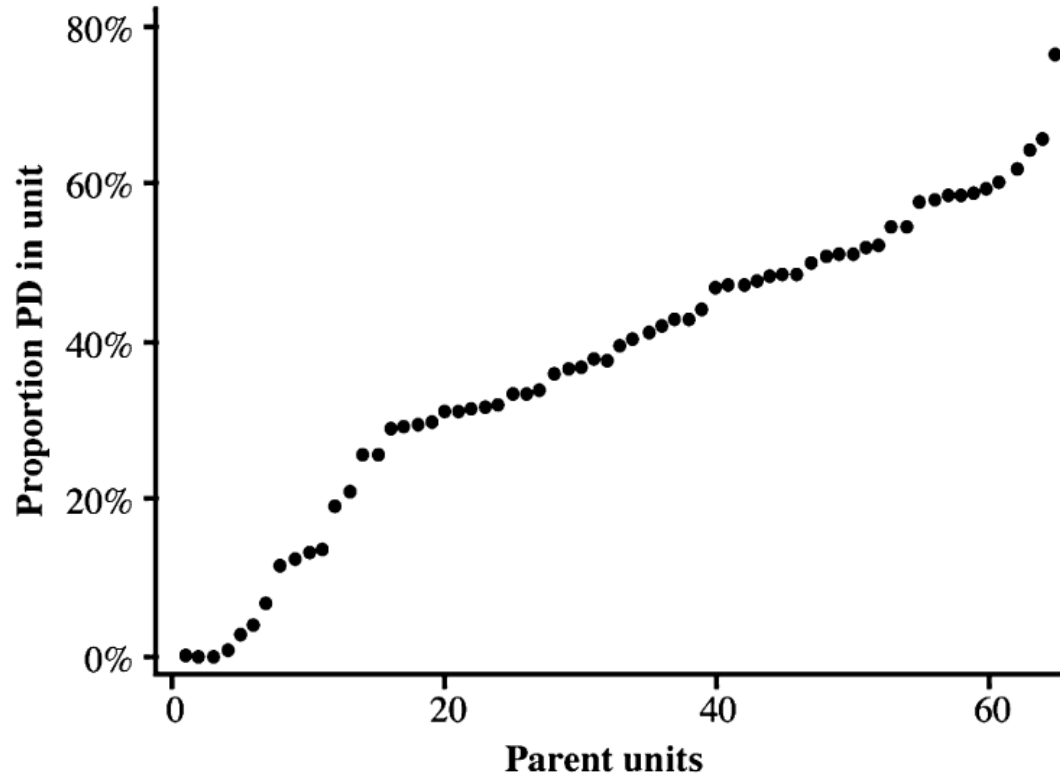


Time on peritoneal dialysis

Prevalent PD patients Australia 31 Dec 2015



Proportion of PD patients in unit



Darwin 2006

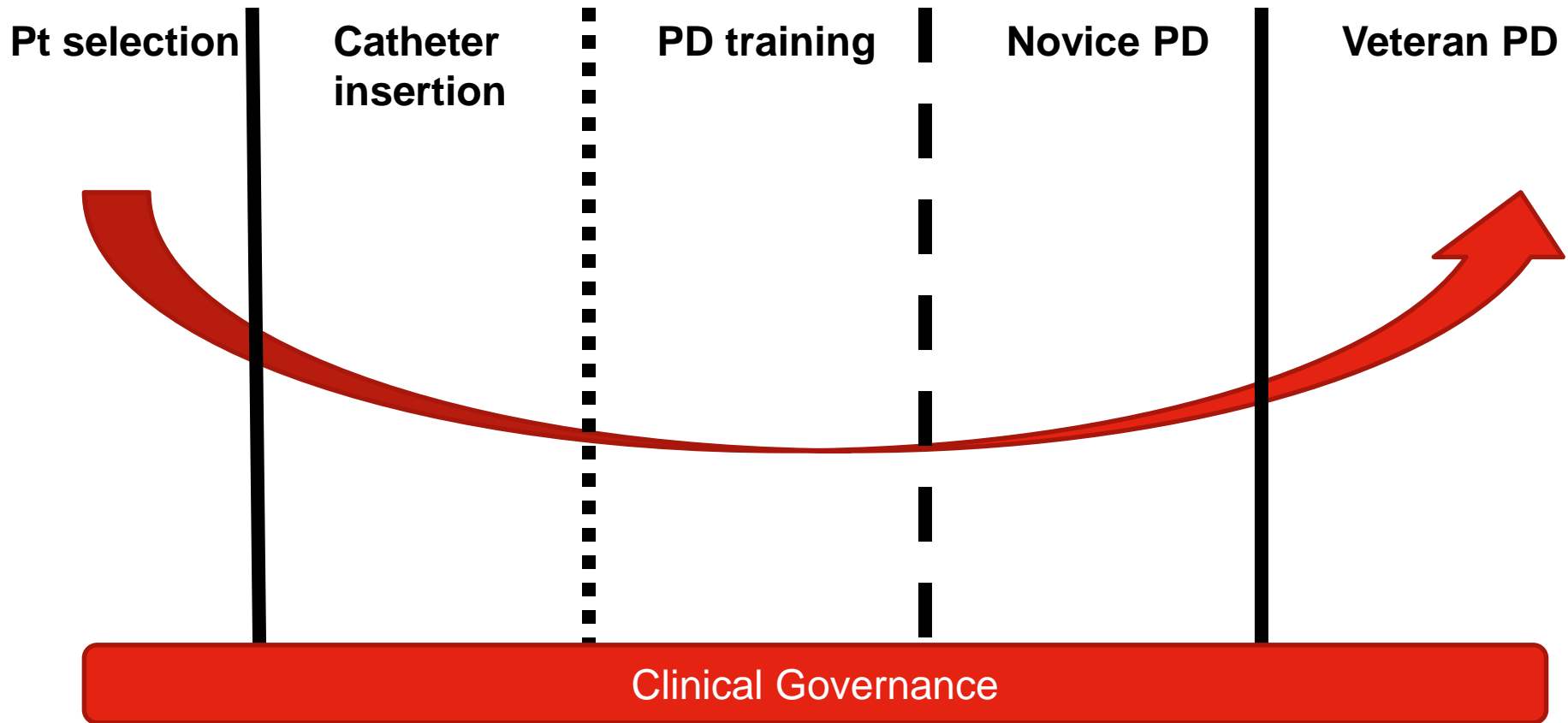
“Eminence-based” Medicine

V

Evidence-based Medicine



PD pathway





CHRONIC KIDNEY DISEASE GUIDELINES

DIALYSIS GUIDELINES

TRANSPLANT GUIDELINES

▶ ABOUT KHA-CARI

CURRENT PROJECTS

▶ GUIDELINE
PROCESS

PATIENTS & CARERS

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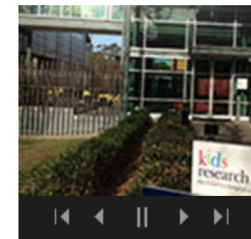
KHA-CARI Guidelines seeks to improve the quality of care and outcomes for patients with kidney disease in Australia & New Zealand by facilitating the development and implementation of clinical practice guidelines based on the best available evidence and effectiveness.

Role of the KHA-CARI Office

The main role of the KHA-CARI Office is:

- To support guideline writers through the guideline development and revision processes
- To organise peer and consumer review of new and revised guidelines
- To identify relevant trials in the literature for each Working Group (with the assistance of the Cochrane Renal Group)
- To obtain full text copies of papers as requested by guideline writers

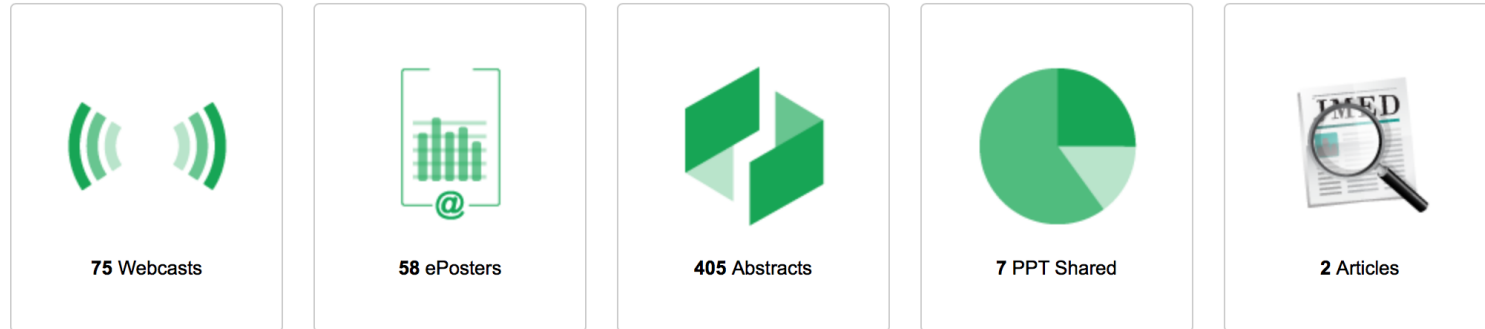
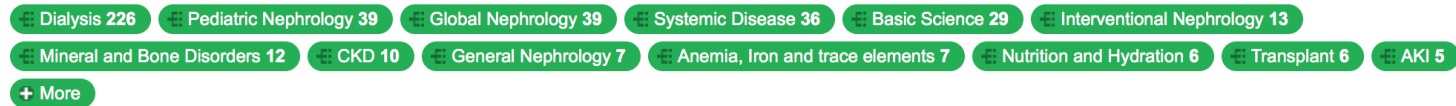
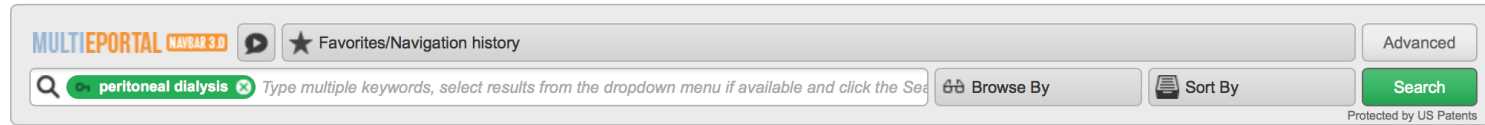
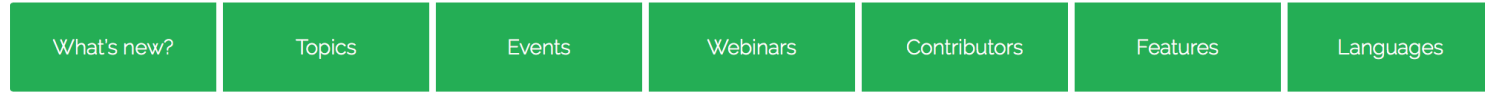
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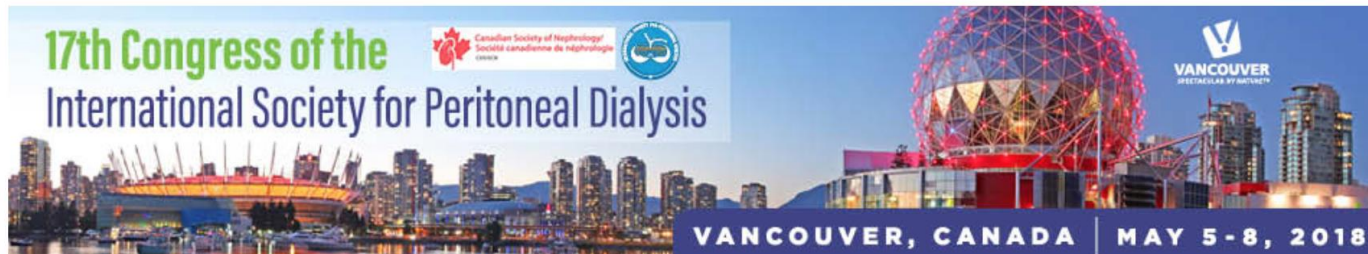
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ISPD GUIDELINE/RECOMMENDATIONS

A SYLLABUS FOR TEACHING PERITONEAL DIALYSIS TO PATIENTS AND CAREGIVERS

Ana E. Figueiredo,¹ Judith Bernardini,² Elaine Bowes,³ Miki Hiramatsu,⁴ Valerie Price,⁵ Chunyan Su,⁶
Rachael Walker,⁷ and Gillian Brunier⁸



ISPD GUIDELINES/RECOMMENDATIONS

ISPD CATHETER-RELATED INFECTION RECOMMENDATIONS: 2017 UPDATE

Cheuk-Chun Szeto,¹ Philip Kam-Tao Li,¹ David W. Johnson,² Judith Bernardini,³ Jie Dong,⁴ Ana E. Figueiredo,⁵ Yasuhiko Ito,⁶ Rumez Kazancioglu,⁷ Thyago Moraes,⁸ Sadie Van Esch,⁹ and Edwina A. Brown¹⁰



ISPD GUIDELINES/RECOMMENDATIONS

ISPD PERITONITIS RECOMMENDATIONS: 2016 UPDATE ON PREVENTION AND TREATMENT

Philip Kam-Tao Li,¹ Cheuk Chun Szeto,¹ Beth Piraino,² Javier de Arteaga,³ Stanley Fan,⁴ Ana E. Figueiredo,⁵
Douglas N. Fish,⁶ Eric Goffin,⁷ Yong-Lim Kim,⁸ William Salzer,⁹ Dirk G. Struijk,¹⁰
Isaac Teitelbaum,¹¹ and David W. Johnson¹²



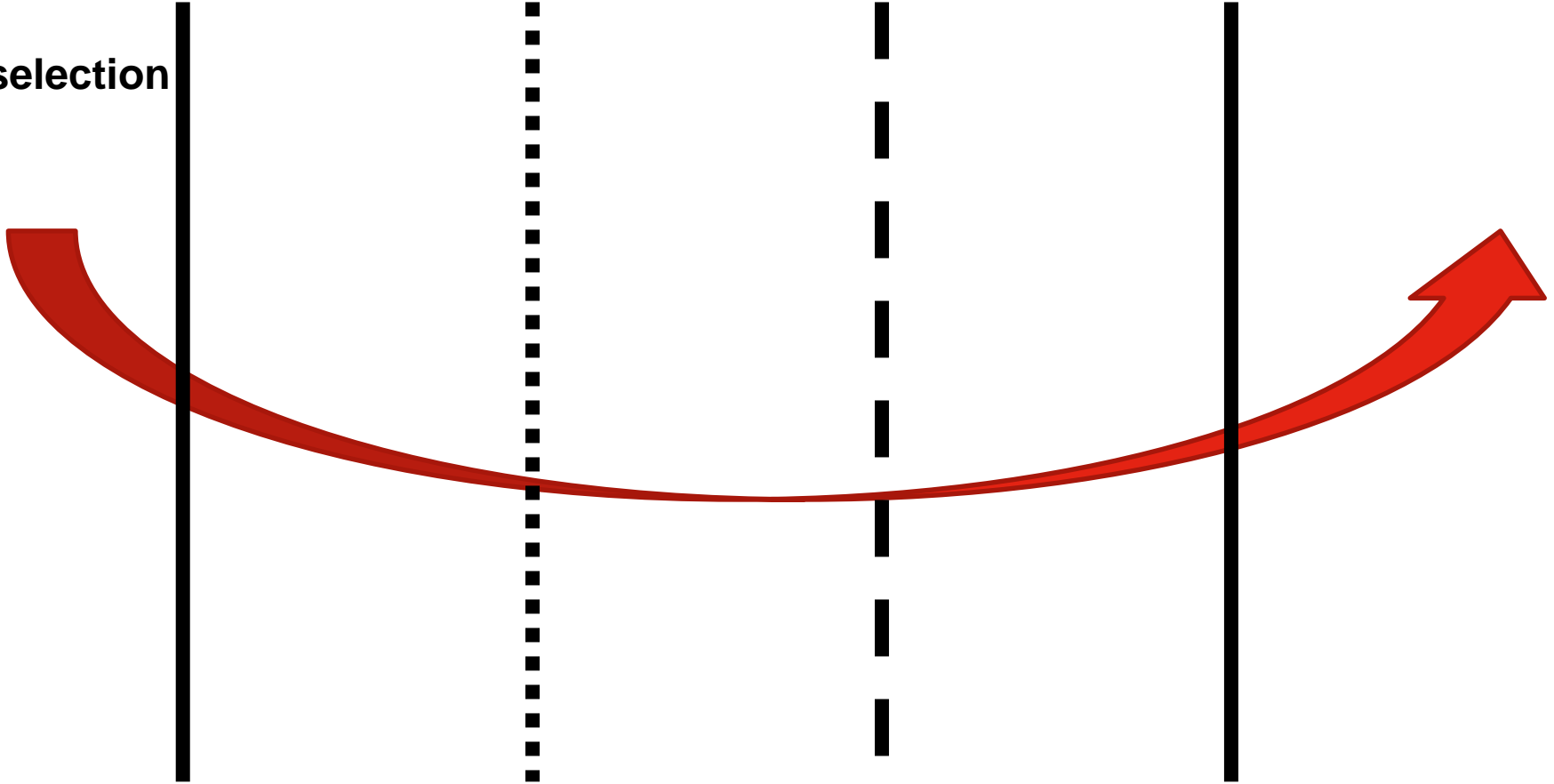
ISPD GUIDELINES/RECOMMENDATIONS

LENGTH OF TIME ON PERITONEAL DIALYSIS AND ENCAPSULATING PERITONEAL SCLEROSIS — POSITION PAPER FOR ISPD: 2017 UPDATE

Edwina A. Brown,¹ Joanne Bargman,² Wim van Biesen,³ Ming-Yang Chang,⁴ Frederic O. Finkelstein,⁵ Helen Hurst,⁶
David W. Johnson,⁷ Hideki Kawanishi,⁸ Mark Lambie,⁹ Thyago Proença de Moraes,¹⁰
Johann Morelle,¹¹ and Graham Woodrow¹²

PD pathway

Pt selection



Patient selection



Mr T.D

male

50yo

Rural location



PD: Making it happen

AJKD

Original Investigation

Patient Education and Peritoneal Dialysis Modality Selection: A Systematic Review and Meta-analysis



Pt-targeted pre-dialysis education:

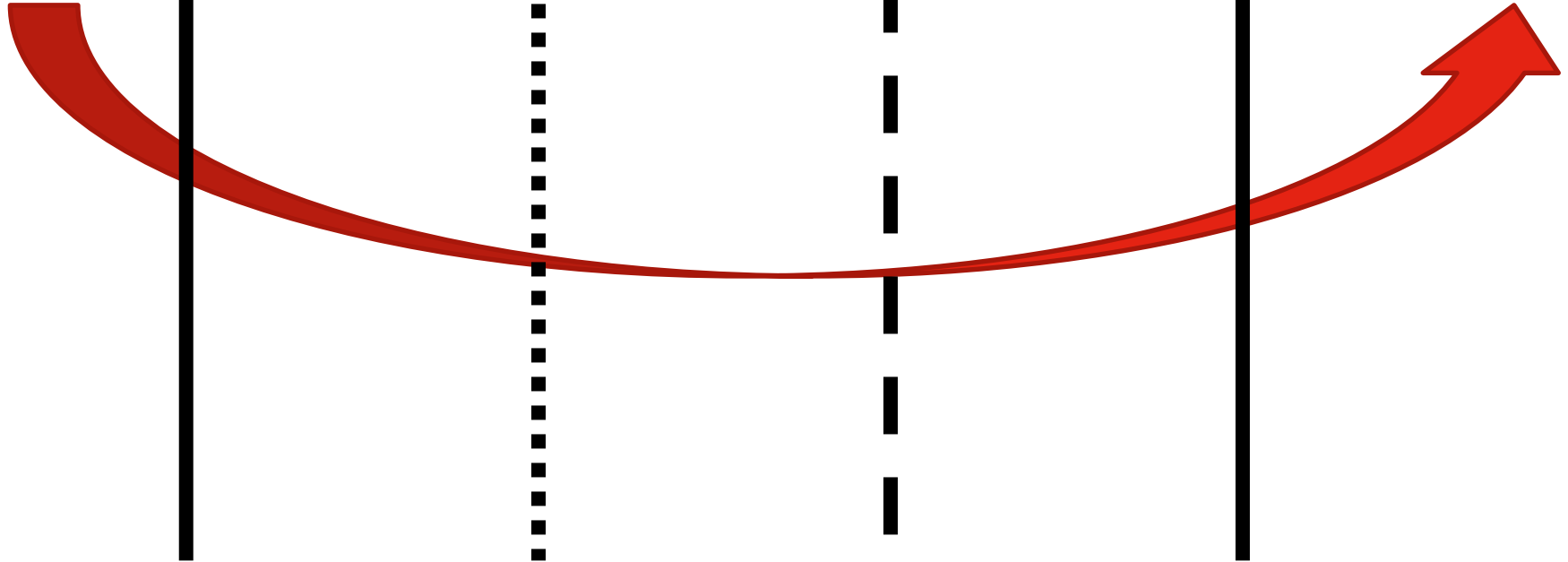
- Increases likelihood of choosing PD OR 2.2 (1.07-4.32)
- Increases likelihood of receiving PD OR 3.50 (2.82-4.35)

Devoe et al, AJKD 2016; 68(3): 422

PD pathway

Pt selection

Catheter
insertion





Preventing infections in PD: Screening for *S.aureus*

- We suggest screening for nasal *S. aureus* carriage prior to PD catheter insertion **(2D)**.
- If nasal carriage of *S. aureus* is found in PD patients, we suggest treating by topical nasal application of mupirocin **(1B)**.

Preventing infections in PD: what do we actually do? Screening for *S.aureus*

TABLE 2
Practice Patterns for Antibiotic Prophylaxis and Nasal Screening and Treatment in PD Patients

| | Characteristic | Response | <i>n</i> | % |
|---|--|-------------|----------|------|
| Practice patterns for the screening (<i>n</i> =133) and treatment (<i>n</i> =85) of nasal <i>S. aureus</i> carriers | Swab for nasal <i>S. aureus</i> | Yes | 85 | 63.9 |
| | Treat identified carriers | Yes | 76 | 88.4 |
| | Length of antibiotic treatment (<i>n</i> =72) | Single dose | 1 | 1.3 |
| | | 3–7 days | 23 | 31.9 |
| | | 2 weeks | 13 | 18.1 |
| | | 3–6 weeks | 10 | 13.9 |
| | | 3 months | 15 | 20.8 |
| | | Other | 10 | 13.9 |

64% screen for *S.aureus*, but treatment length is variable



CATHETER PLACEMENT

- We recommend that prophylactic antibiotics be administered immediately before catheter insertion **(1A)**.
- No technique of catheter placement has been demonstrated to be superior to another for the prevention of catheter-related infections **(not graded)**.

Preventing infections in PD: what do we actually do?

Antibiotics at the time of catheter insertion

TABLE 2
Practice Patterns for Antibiotic Prophylaxis and Nasal Screening and Treatment in PD Patients

| Characteristic | | Response | <i>n</i> | % |
|---|---------------------------------------|--------------------|----------|------|
| Practice patterns for antibiotic prophylaxis at Tenckhoff catheter insertion (<i>n</i> =133) | Give antibiotic at catheter insertion | Yes | 127 | 95.5 |
| | Timing of antibiotic administration | Prior to surgery | 31 | 24.4 |
| | | At time of surgery | 92 | 72.4 |
| | | Other ^a | 4 | 3.2 |
| | Antibiotic given | Vancomycin | 30 | 22.6 |
| | | Cephalosporin | 118 | 88.7 |
| | | Gentamicin | 7 | 5.3 |
| | | Penicillin | 1 | 0.8 |
| | | None | 4 | 3.0 |
| | | Other | 6 | 4.5 |

Mostly cephalosporin at time of surgery

Insertion of PD Catheters: Who & How?

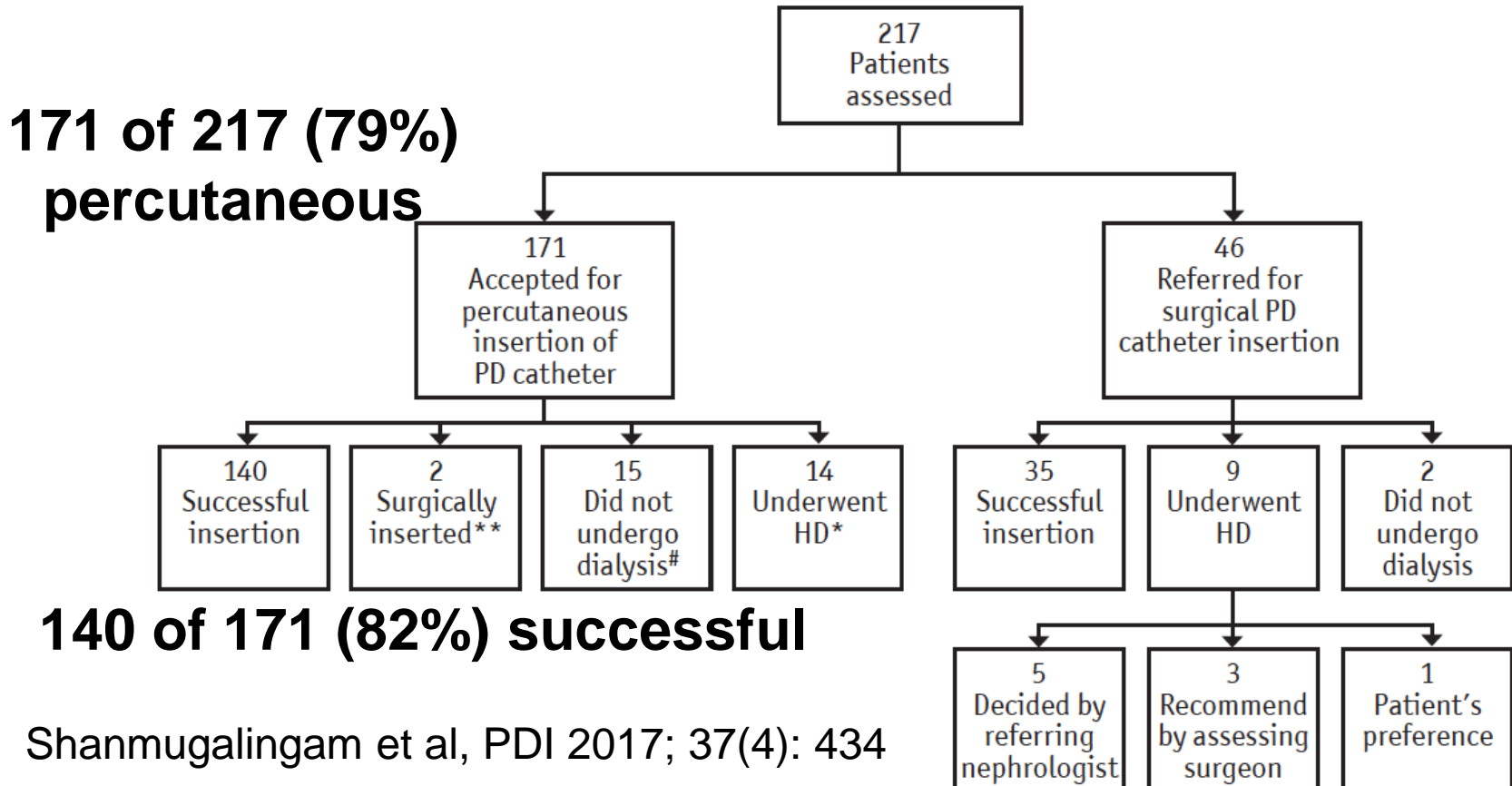
Surgeon?



Nephrologist?



Insertion of PD Catheters: Who & How: Liverpool group



Insertion of PD Catheters: Who & How: Liverpool group

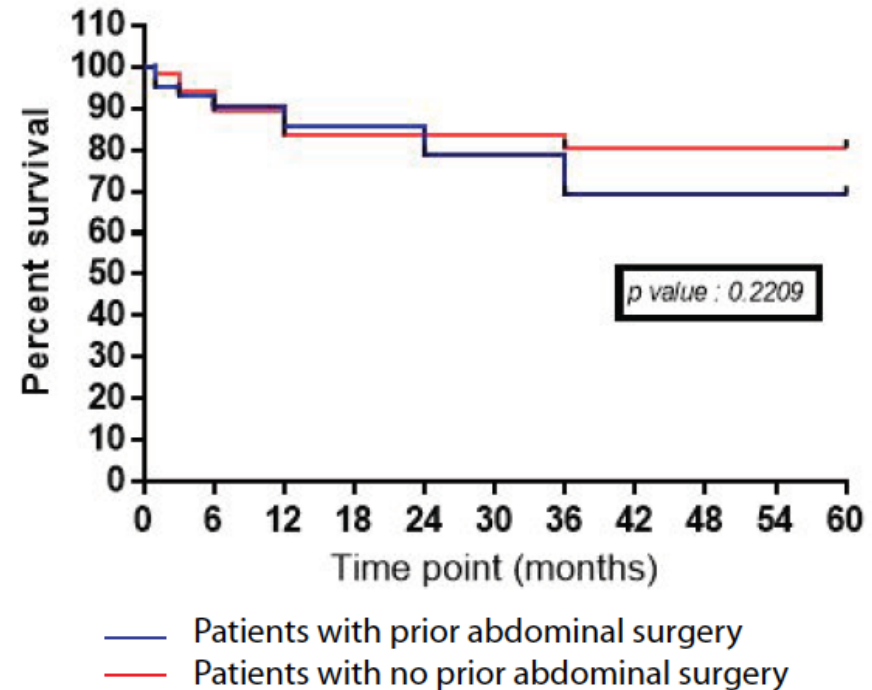
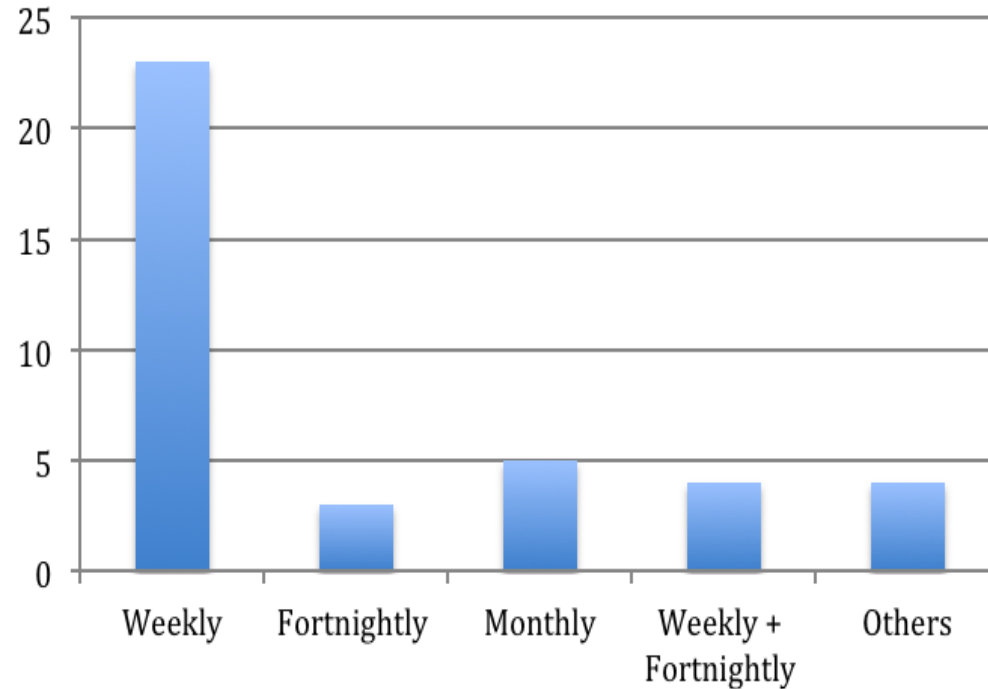


Figure 1 — Transverse view of the medial edge of (L) rectus abdominis at level of umbilicus. Note the normal double layers of peritoneum, and measurement of abdominal wall thickness of 4.18 cm.

How often should you flush the catheter: actual practice



When can you start PD?

Royal Brisbane & Rockhampton

| | | |
|--------------|---------------|---------------|
| – RCT, n=122 | Catheter leak | |
| – Week 1 | 28.2% | |
| – Week 2 | 9.5% | |
| – Week 4 | 2.4% | P=0.001 (ITT) |

Urgent start PD (within 2 weeks): Higher leakage & catheter migration

Single centre, matched case control study (not RCT)

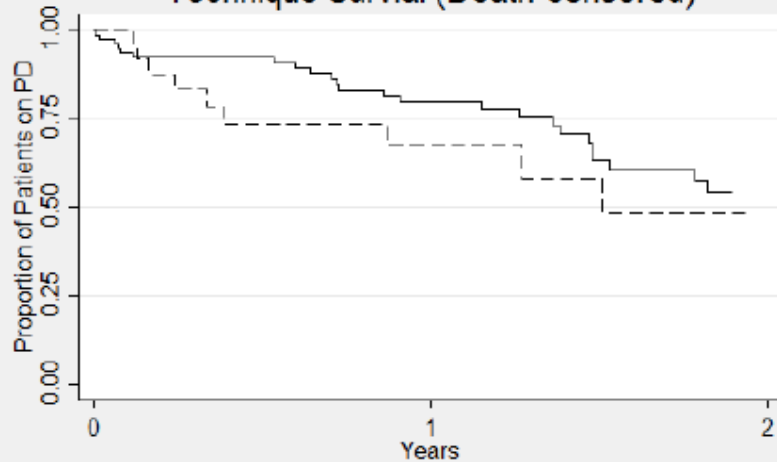
TABLE 2
Complications Within 4 Weeks of Catheter Insertion

| | All (N=104) | USPD (N=26) | CSPD (N=78) | P value |
|---------------------|----------------|----------------------|----------------|---------|
| Leak | 4 (4%) | 3 (12%) | 1 (1%) | 0.047 |
| Catheter blockage | 1 (1%) | 1 (4%) ^a | 0 (0%) | 0.25 |
| Catheter migration | 6 (6%) | 3 (12%) | 3 (4%) | 0.16 |
| Exit-site infection | 14 (14%) | 4 (15%) ^b | 10 (13%) | 0.92 |
| Peritonitis | 3 (3%) | 0 (0%) | 3 (4%) | 0.57 |

USPD = urgent-start peritoneal dialysis; CSPD = conventional-start peritoneal dialysis.

Urgent start PD (within 2 weeks): but overall outcomes no different

Technique Survival (Death-censored)

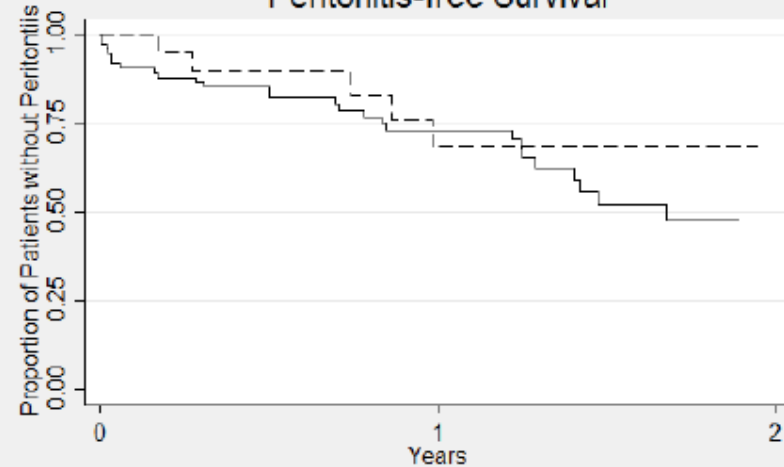


Number at risk

| | | | |
|------|----|----|----|
| CSPD | 78 | 44 | 15 |
| USPD | 26 | 11 | 2 |

— Conventional Start PD - - - - Urgent Start PD

Peritonitis-free Survival



Number at risk

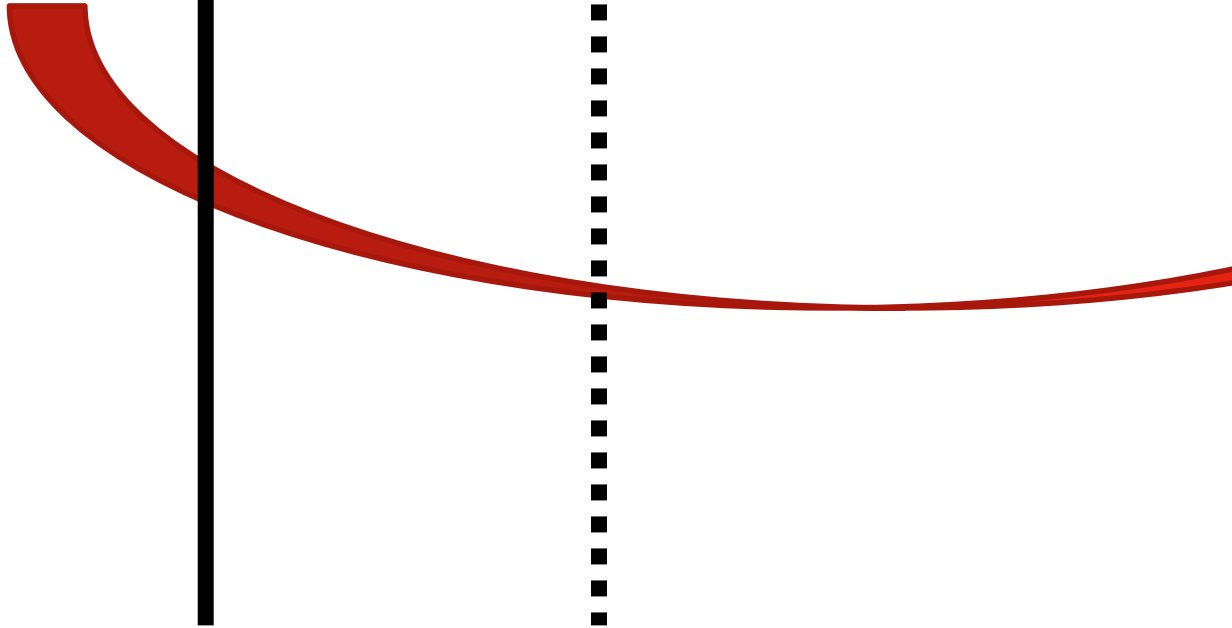
| | | | |
|------|----|----|---|
| CSPD | 78 | 33 | 8 |
| USPD | 26 | 9 | 1 |

— Conventional Start PD - - - - Urgent Start PD

Pt selection

**Catheter
insertion**

PD training



Factors the impact on PD success

Patient preference for PD^{38,39}

Body weight (usually BMI 20–30 kg/m²).⁴⁰ Abdominal obesity may preclude

Motivation to perform home self-care treatment

Training – ability to retain and recall information. Language/need for an interpreter may be a barrier⁴¹

Adequate manual dexterity for bag changes

Sufficient strength to handle bags (especially APD)

Visual acuity – although visually impaired may be trained

Absence of medical and surgical contraindications e.g. previous abdominal surgery with adhesions³⁸

Time commitment for PD

Desire to travel³⁹ – easier with PD compared with HD

Social worker assessment – finance, work, family, community

Support person availability – demand on other members of household may be a barrier^{39,42}

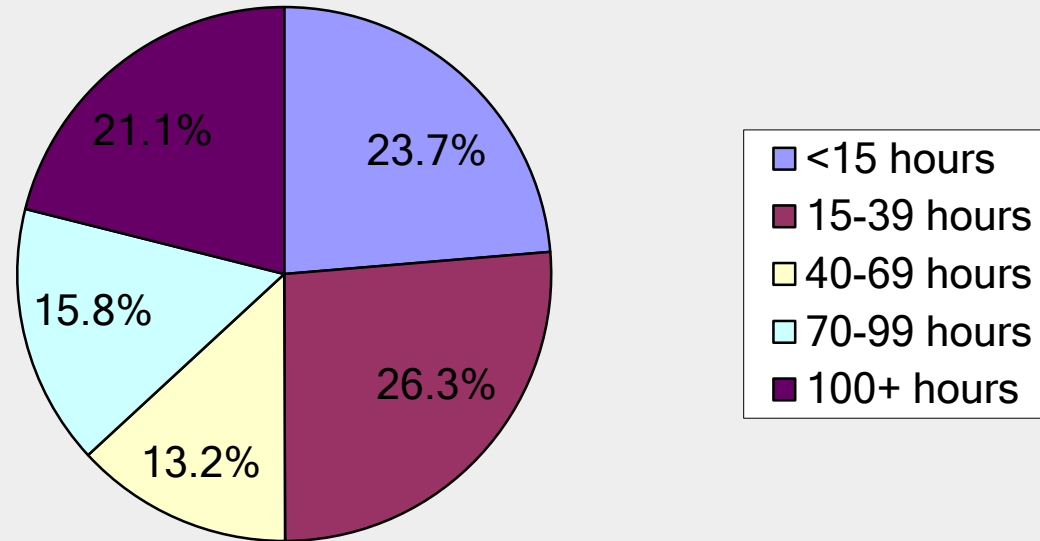
Clean and clear area for bag changes

Adequate storage area with access for supply, delivery

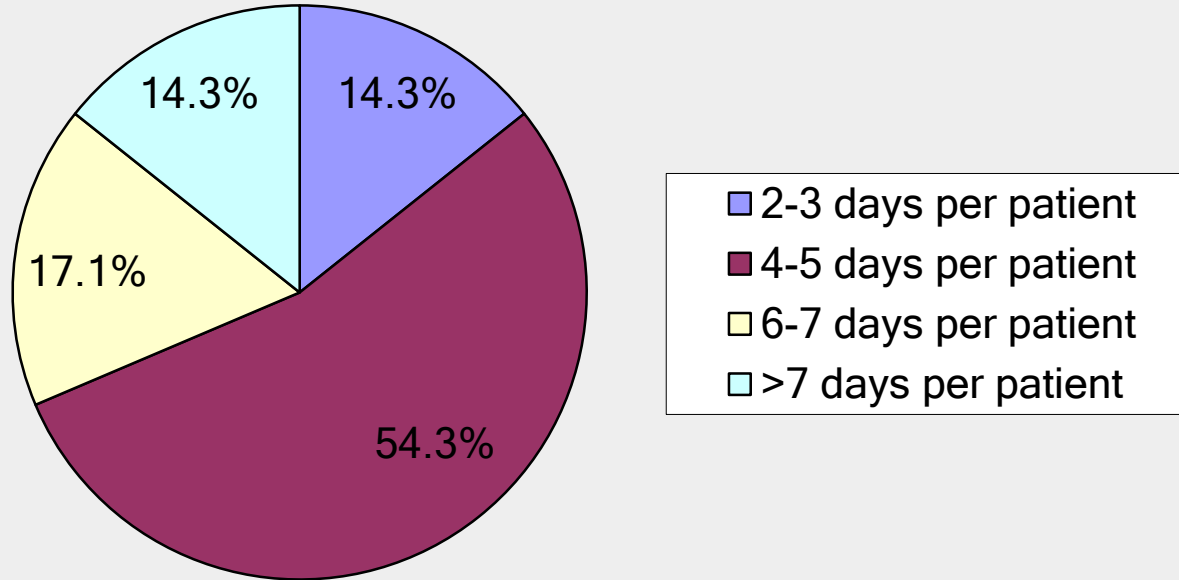
Good access between storage and bag change area

Jose et al, Nephrology 2011

On average, how many hours does your unit spend on training a new PD nurse to become competent in training PD patients?



What is the average duration of patient training prior to PD initiation at home?



PD training practices by PDOPPS country

| 164 facilities | Australia | Canada | Japan | UK | US |
|---------------------------------------|-----------|--------|-------|-----|-----|
| Number of facilities | 14 | 20 | 26 | 32 | 68 |
| When training occurs | | | | | |
| Prior to PD catheter insertion | 7% | 5% | 62% | 3% | 3% |
| 1 week after PD catheter insertion | 0% | 30% | 27% | 9% | 19% |
| 2-3 weeks after PD catheter insertion | 64% | 65% | 0% | 72% | 63% |
| Other | 29% | 0% | 12% | 16% | 15% |
| Training location | | | | | |
| Facility only | 43% | 84% | 100% | 31% | 53% |
| Combination of home and facility | 57% | 16% | 0% | 50% | 47% |
| Home only | 0% | 0% | 0% | 19% | 0% |
| Duration of training, days | | | | | |
| 2-3 | 15% | 22% | 39% | 39% | 14% |
| 4-5 | 69% | 56% | 17% | 52% | 29% |
| 6-7 | 8% | 17% | 13% | 10% | 30% |
| >7 | 8% | 6% | 30% | 0% | 27% |

PD training practices by PDOPPS country

| | Australia | Canada | Japan | UK | US |
|--|-----------|--------|-------|------|------|
| Number of facilities | 14 | 20 | 26 | 32 | 68 |
| Final training assessment | | | | | |
| Procedure demonstration | 93% | 100% | 100% | 100% | 100% |
| Written test | 29% | 30% | 8% | 9% | 87% |
| Oral test | 50% | 40% | 24% | 34% | 69% |
| Other | 7% | 5% | 0% | 3% | 10% |
| Number of nurses training one patient | | | | | |
| One nurse | 64% | 95% | 28% | 81% | 97% |
| Several nurses | 36% | 5% | 72% | 19% | 3% |

Original Article

Impact of patient training patterns on peritonitis rates in a large national cohort study

Ana Elizabeth Figueiredo¹, Thyago Proença de Moraes², Judith Bernardini³, Carlos Eduardo Poli-de-Figueiredo¹, Pasqual Barretti⁴, Marcia Olandoski² and Roberto Pecoits-Filho², on Behalf of the BRAZPD Investigators

¹School of Nursing, Nutrition and Physiotherapy (FAENFI) and School of Medicine, Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre, Brazil, ²Pontifícia Universidade Católica do Paraná (PUCPR), Curitiba, Brazil, ³Pittsburgh University, Pittsburg, USA and ⁴UNESP, Botucatu, Brazil

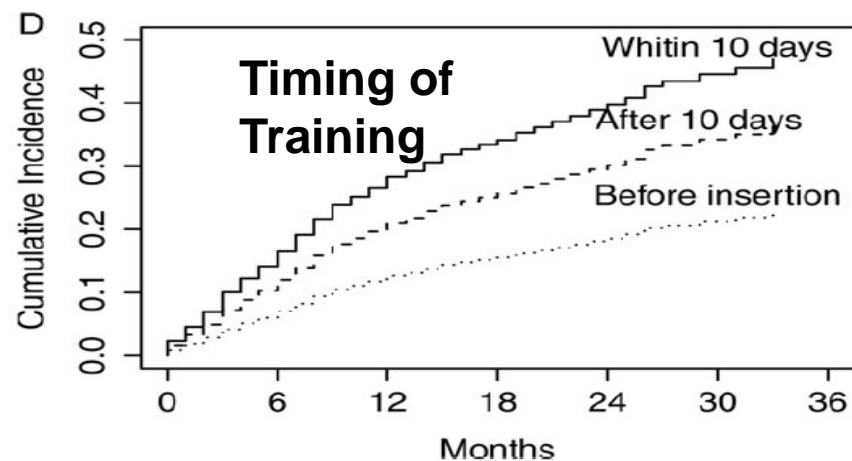
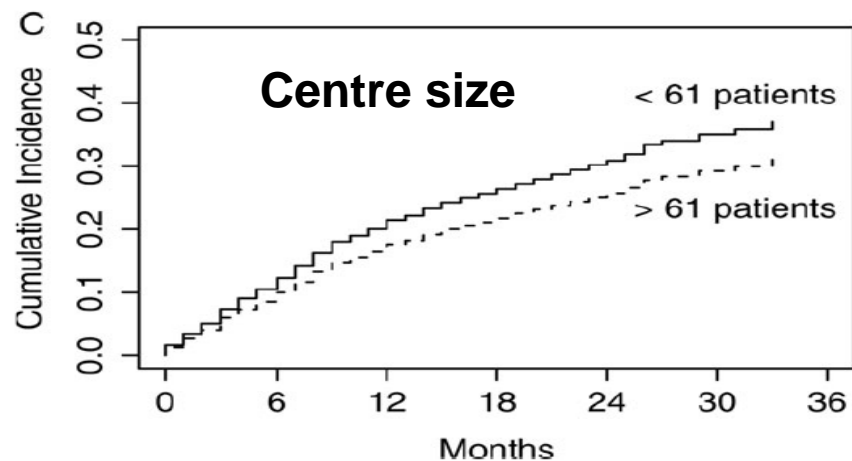
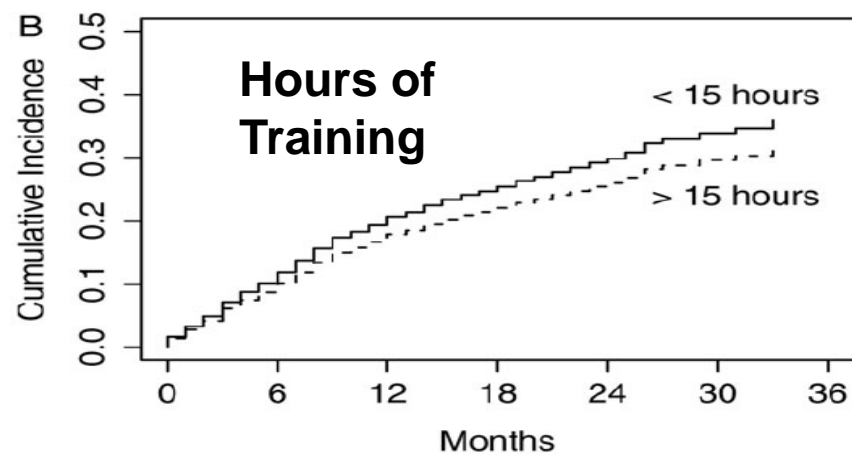
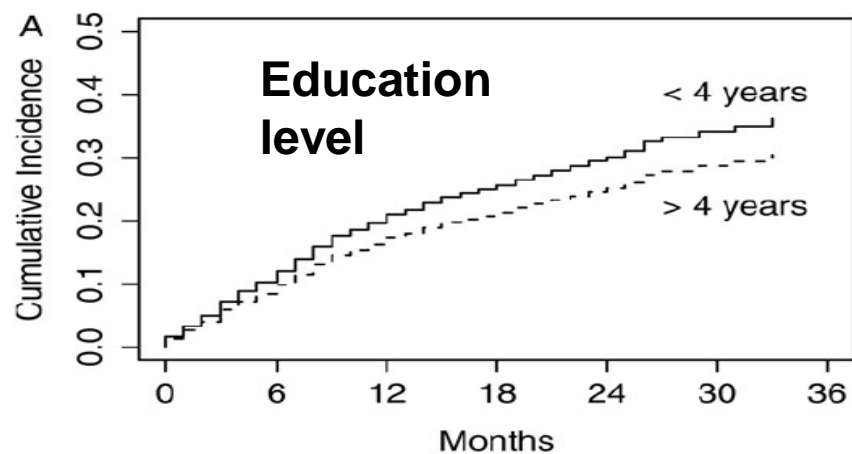


FIGURE 1: Cumulative incidence failure for time to first peritonitis according to education level (A), hours of training (B), center size (C) and timing of training (D) estimated by Fine and Gray model.

ISPD GUIDELINES/RECOMMENDATIONS

A SYLLABUS FOR TEACHING PERITONEAL DIALYSIS TO PATIENTS AND CAREGIVERS

Ana E. Figueiredo,¹ Judith Bernardini,² Elaine Bowes,³ Miki Hiramatsu,⁴ Valerie Price,⁵ Chunyan Su,⁶
 Rachael Walker,⁷ and Gillian Brunier⁸

Pontificia Universidade Católica do Rio Grande do Sul,¹ Porto Alegre, Brazil; University of Pittsburgh,² Pittsburgh, PA, USA; King's College Hospital NHS Foundation Trust,³ London, United Kingdom; Kwassui Women's University,⁴ Nagasaki, Japan; Atlantic Health Sciences Corporation,⁵ Saint John, New Brunswick, Canada; Peking University Third Hospital,⁶ Beijing, China; Hawke's Bay District Health Board,⁷ New Zealand, University of Sydney, Sydney, Australia; and University of Toronto,⁸ Toronto, Ontario, Canada



Checklist to be used with the learner to review learning at the end of each day and preview activities planned for the next day.
Identify date **each time** a topic is covered or reviewed. Note: shaded areas to be left empty.

| Topic | Introduced by nurse | Reviewed by nurse | Demonstrations by nurse | Supervised practices by nurse | Proficiency demonstrated by learner | Comments |
|---|------------------------|----------------------|----------------------------|-------------------------------------|---|----------|
| Establish rapport | | | | | | |
| Course overview | | | | | | |
| Vital signs/weight | | | | | | |
| Documentation | | | | | | |
| Exit-site care | | | | | | |
| Asepsis | | | | | | |
| Hand hygiene | | | | | | |
| CAPD exchange | | | | | | |
| APD therapy | | | | | | |
| Catheter inflow/outflow | | | | | | |
| Residual renal function | | | | | | |
| Fluid balance | | | | | | |
| Peritonitis | | | | | | |
| Procedural prophylaxis | | | | | | |
| Emergency procedures for contamination | | | | | | |
| Record keeping | | | | | | |
| Trouble shooting | | | | | | |
| Testing (oral/written) | | | | | | |
| Potassium balance | | | | | | |
| Constipation | | | | | | |
| Ordering supplies | | | | | | |
| Clinic visits | | | | | | |
| Vacation arrangements | | | | | | |
| Employment, hobbies | | | | | | |
| Home visits | | | | | | |
| Safety and communication with home unit: | | | | | | |

**

A Targeted Education ApproaCH to improve Peritoneal Dialysis outcomes

**The HOME Network
&
AKTN PD Working Group**

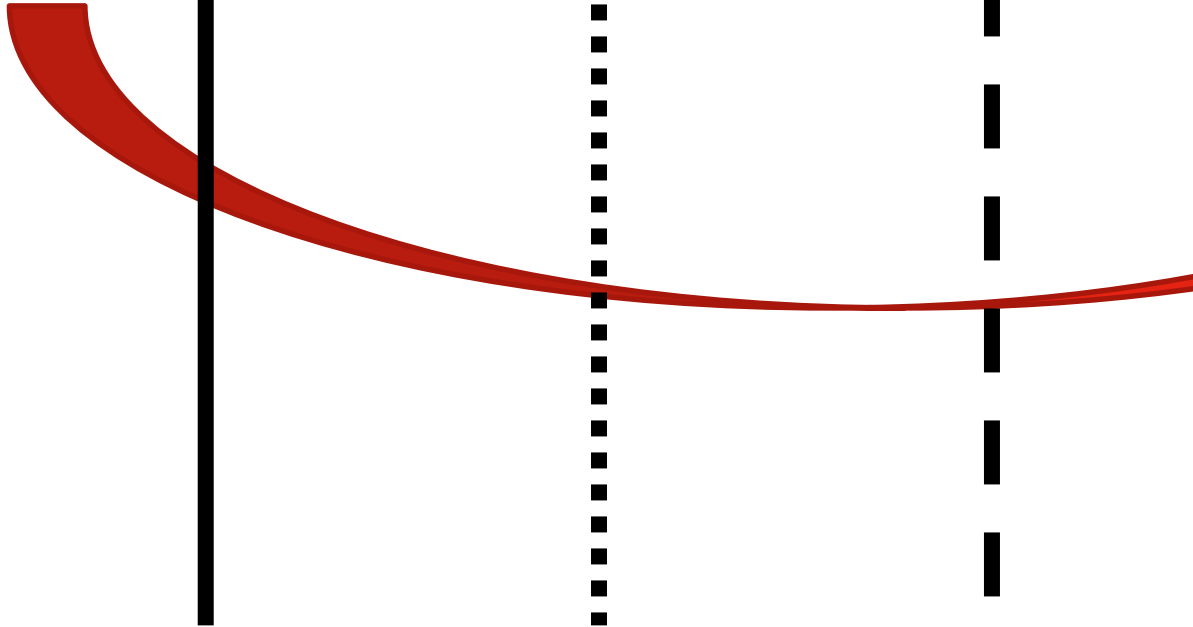
PD pathway

Pt selection

Catheter
insertion

PD training

Novice PD



Patient perspectives on prevention and treatment of peritonitis

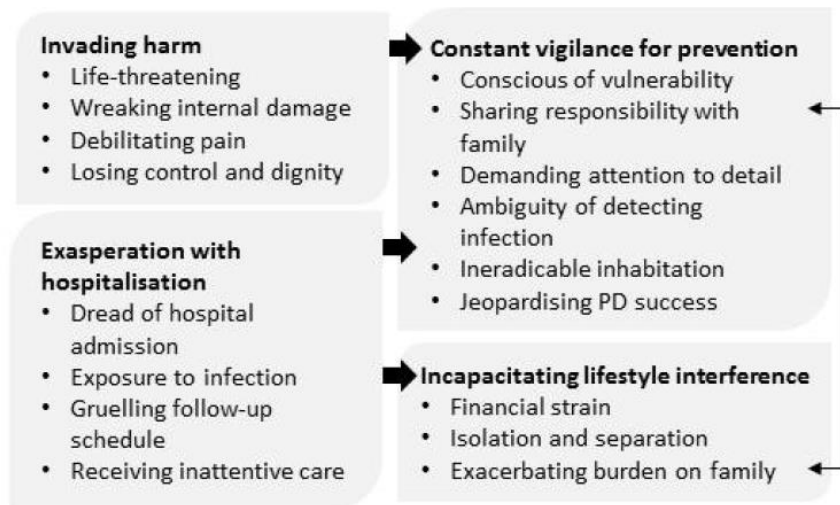


Figure 1 — Thematic schema representing patient perspectives on the prevention and treatment of peritonitis in peritoneal dialysis.

TABLE 3
Suggestions for Clinical Practice

| Domain | Suggested strategies and action |
|-------------------------------------|--|
| Information, education and training | <p>Provide more frequent retraining for patients</p> <p>Provide a home visit by a PD nurse (e.g. in the first week of dialysis at home, 3 months after starting dialysis, following a PD-related infection)</p> <p>Allow family members/carers to attend training with the patient</p> <p>Develop educational materials for family members/carers</p> <p>Educate general hospital staff about the PD method and importance of infection prevention</p> |
| Psychological support | <p>Offer referral to psychological services after a peritonitis episode</p> |
| Technical/clinical support | <p>Provide a PD nurse or nephrologist on call who can visit patients when they are admitted to a general ward or the ICU</p> <p>Have renal unit make up the dialysis bags with antibiotics for patients to use</p> <p>Make it possible for patients who work to attend for tests and dialysis bag collection before and after normal work hours</p> |
| Social support | <p>Offer patients access to child care associated with the hospital during the peritonitis treatment period</p> <p>Offer patients access to free or low-cost parking at the renal unit/hospital during the peritonitis treatment period</p> |

PD = peritoneal dialysis; ICU = intensive care unit.

Exit site care



TOPICAL ANTIBACTERIAL AND ANTISEPTIC AGENTS

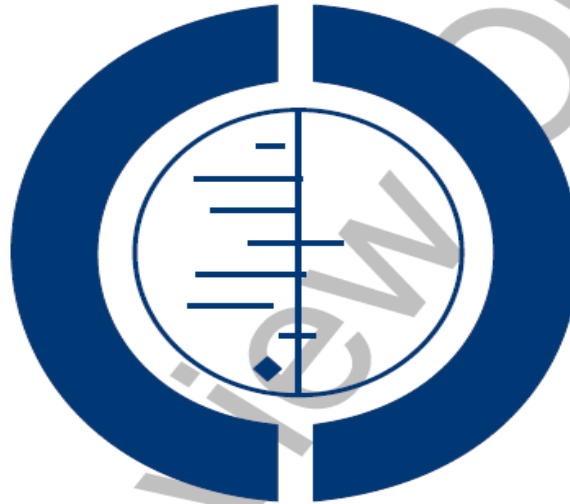
- We recommend daily topical application of antibiotic cream or ointment to the catheter exit site **(1A)**.
- We suggest that no cleansing agent has been shown to be superior with respect to preventing catheter-related infections **(2B)**.

OTHER ASPECTS OF EXIT-SITE CARE

- We recommend that the exit site be cleansed at least twice weekly and every time after a shower **(1C)**.
-

Antimicrobial agents for preventing peritonitis in peritoneal dialysis patients (Review)

Campbell D, Mudge DW, Craig JC, Johnson DW, Tong A, Strippoli GFM, Hodson EM



**THE COCHRANE
COLLABORATION®**

Worth reading.....

2017

Preventing infections in PD: what do we actually do?

Exit site care

TABLE 2
Practice Patterns for Antibiotic Prophylaxis and Nasal Screening and Treatment in PD Patients

| | Characteristic | Response | <i>n</i> | % |
|---|-------------------------|---------------------------------|----------|------|
| Practice patterns for care of the exit site (<i>n</i> =133) | Exit-site care practice | Mupirocin ointment ^b | 79 | 59.4 |
| | | Antibacterial wash | 43 | 32.3 |
| | | Betadine wipes | 31 | 23.3 |
| | | Soap and water | 36 | 27.1 |
| | | Other | 27 | 20.3 |



SECONDARY PREVENTION

- We recommend anti-fungal prophylaxis when PD patients receive antibiotic courses to prevent fungal peritonitis **(1B)**.
-

Preventing infections in PD: what do we actually do? Antifungal prophylaxis

TABLE 3
Practice Patterns for Antifungal Prophylaxis in PD Patients

| | Characteristic | Response | <i>n</i> | % |
|---|-----------------------|--|----------|------|
| Practice patterns for antifungal prophylaxis with an antibiotic course (<i>n</i> =133) and length of treatment (<i>n</i> =93) | Give antifungal agent | Yes | 93 | 69.9 |
| | Duration of treatment | Same duration as the antibiotics | 55 | 59.1 |
| | | For 3 days longer than the antibiotics | 37 | 39.8 |

PD = peritoneal dialysis.



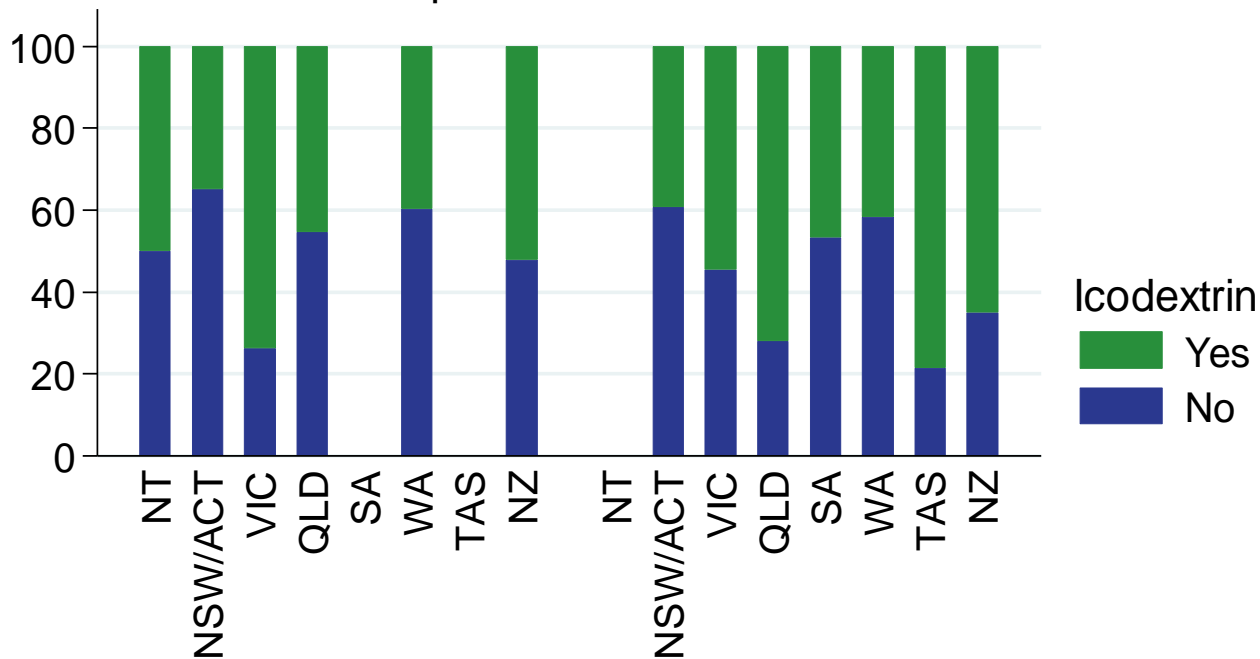
Preventing Peritonitis: Fluid choice

DIALYSIS SOLUTION

- The committee has no specific recommendation on the choice of dialysis solution for prevention of peritonitis.
-

Icodextrin use by state and country

Prevalent patients December 2015



CAPD

APD

Proportions not presented if <10 patients

Treatment for peritoneal dialysis-associated peritonitis (Review)

Ballinger AE, Palmer SC, Wiggins KJ, Craig JC, Johnson DW, Cross NB, Strippoli GFM



**THE COCHRANE
COLLABORATION®**

2014



ISPD GUIDELINES/RECOMMENDATIONS

ISPD PERITONITIS RECOMMENDATIONS: 2016 UPDATE ON PREVENTION AND TREATMENT

Philip Kam-Tao Li,¹ Cheuk Chun Szeto,¹ Beth Piraino,² Javier de Arteaga,³ Stanley Fan,⁴ Ana E. Figueiredo,⁵
Douglas N. Fish,⁶ Eric Goffin,⁷ Yong-Lim Kim,⁸ William Salzer,⁹ Dirk G. Struijk,¹⁰
Isaac Teitelbaum,¹¹ and David W. Johnson¹²

PD pathway

Pt selection

Catheter
insertion

PD training

Novice PD

Veteran PD



Clinical Governance



Clinical Governance

INFECTION RATE

- We recommend that every program should monitor, at least on a yearly basis, the incidence of catheter-related infections **(1C)**.
 - We suggest that the rate of catheter-related infection should be presented as number of episodes per year **(not graded)**.
-

Performance Indicators – HD & PD



New Haemodialysis Patients and First Access - Adult

01 Apr 2016 - 30 Jun 2016

From the Real Time ANZDATA Database

PUBLISHED 18 August 2016

This information is provided as it is reported to ANZDATA with no express or implied guarantee of accuracy or quality. The reporting arrangements provide additional information to units on key performance indicators. Units should use these data to monitor clinical practice and outcomes.



Centre-Specific Peritonitis Rates - Adult

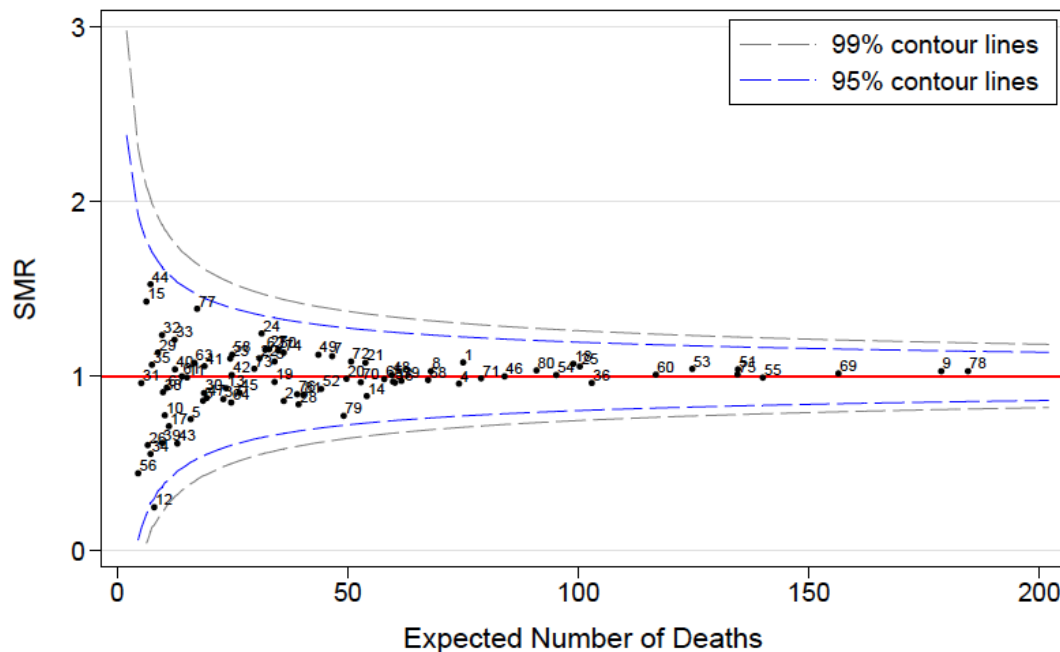
01 Apr 2016 - 30 Jun 2016

From the Real Time ANZDATA Database

PUBLISHED 18 August 2016

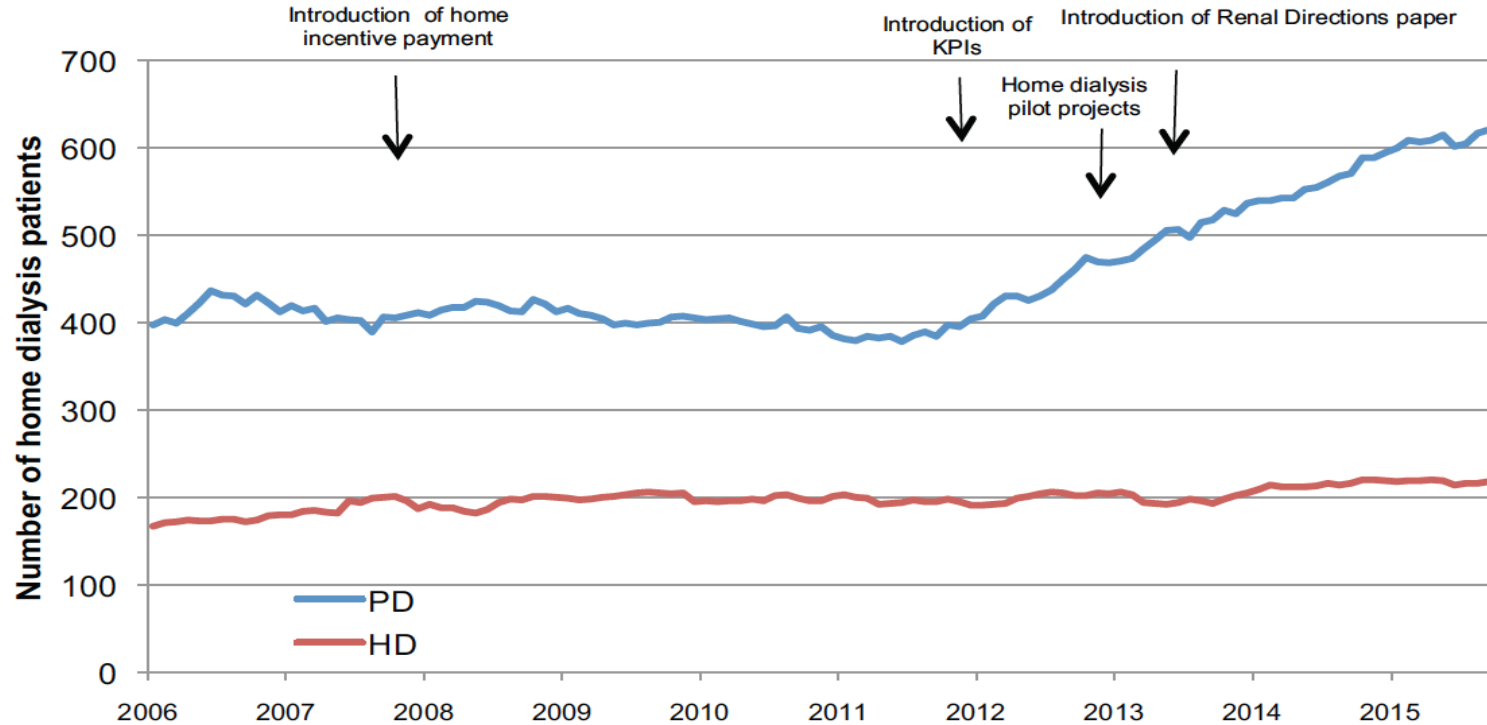
This information is provided as it is reported to ANZDATA with no express or implied guarantee of accuracy or quality. The reporting arrangements provide additional information to units on key performance indicators. Units should use these data to monitor clinical practice and outcomes.

Identified hospital report - Dialysis



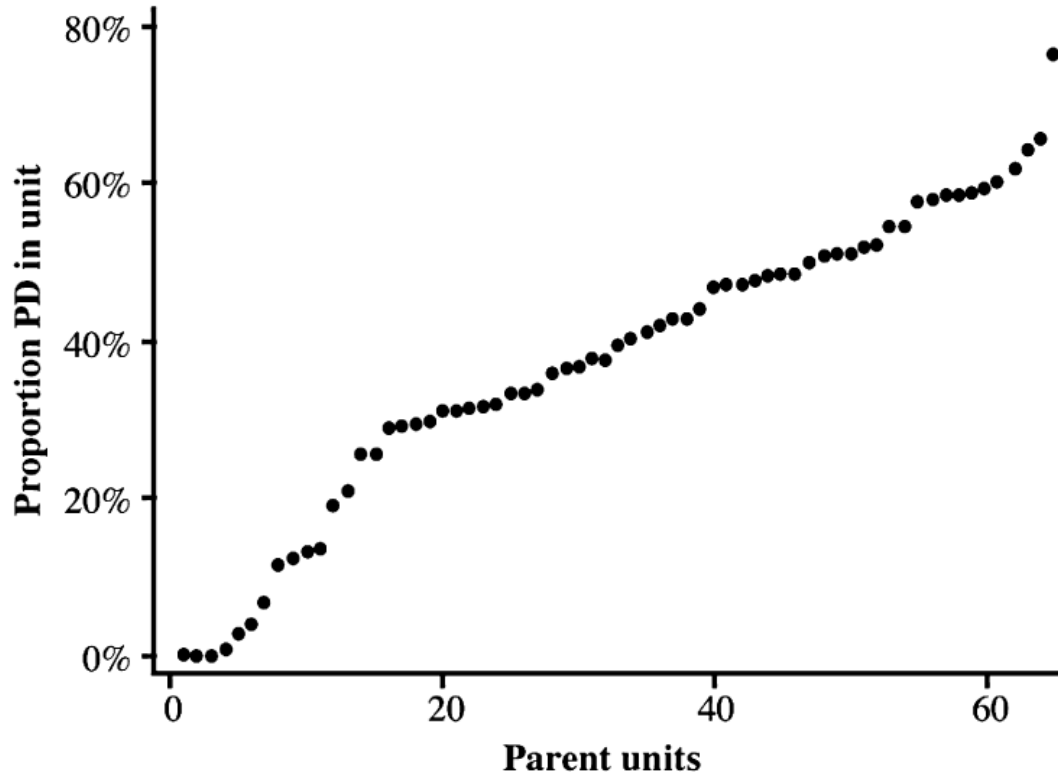
Observations with missing values are dropped from the model

KPIs and uptake of PD: Victoria



KPI-3: Proportion of dialysis patients who are 35% dialyzing at home, both incident and (incident and prevalent rates prevalent)

Clinical Practice Variation: Proportion of PD patients in unit



Clinical practice variation:

**Evidenced-based
Eminence-based
Experience-based**

- Local practice patterns differ in individual renal units
- Lack of high quality evidence for clinical nephrology practice
 - Lack of clinical trials



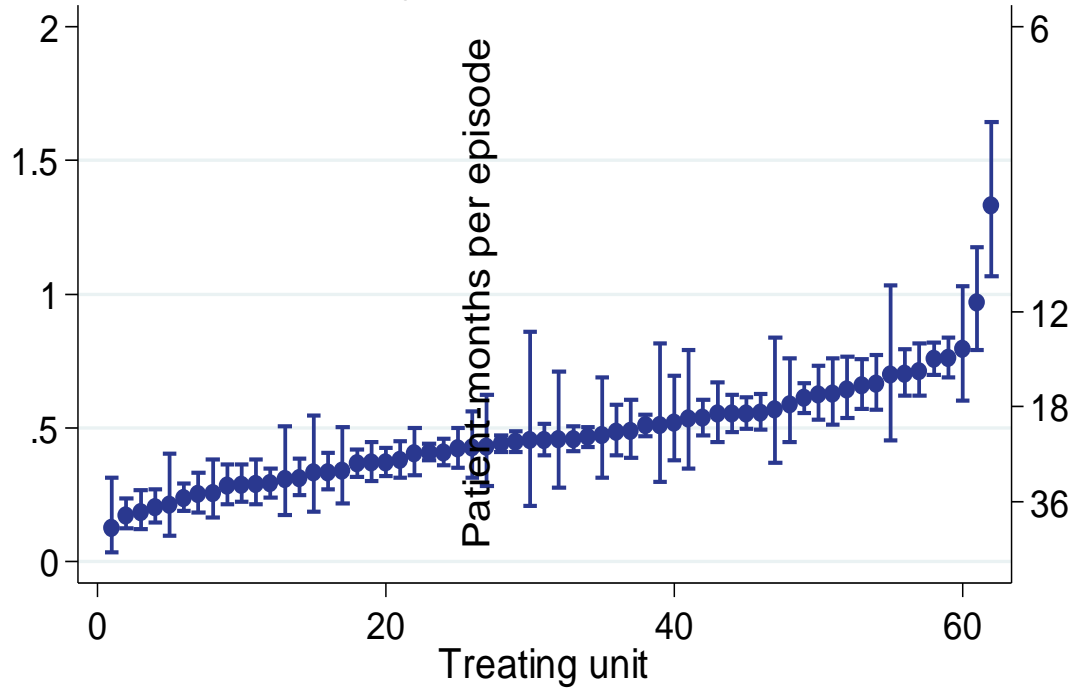
“Albatross” model

Each renal unit doing
its' own thing

Clinical practice variation: observational data

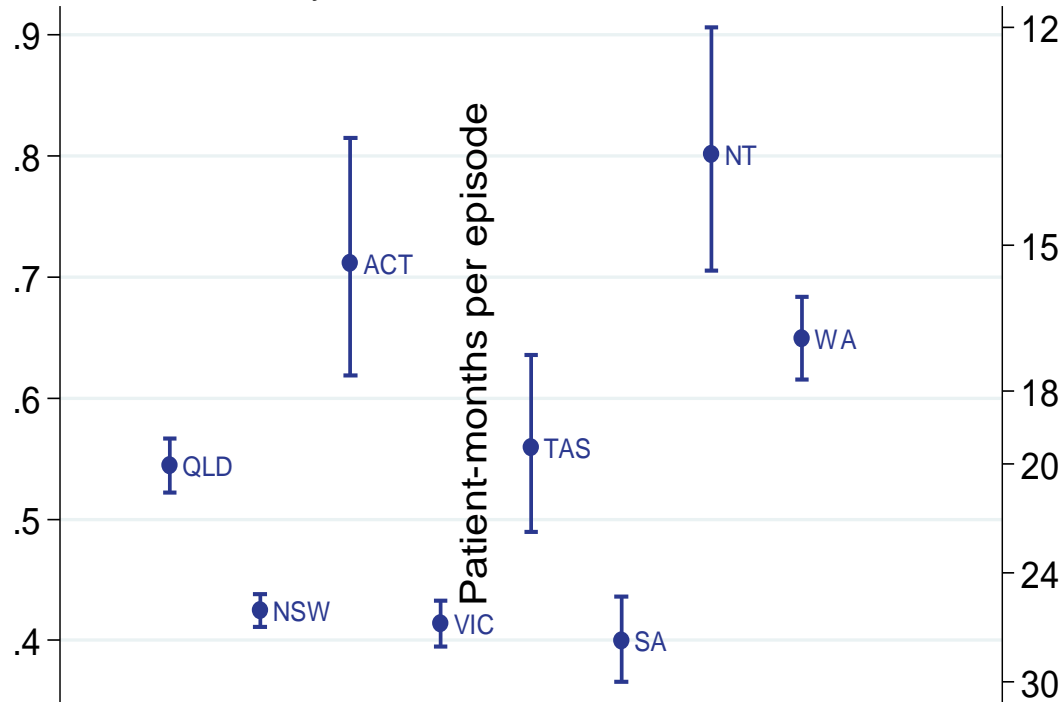


PD peritonitis rate By treating unit, Australia 2006-2015



Excludes units with <10 person-years PD over 2006-2015

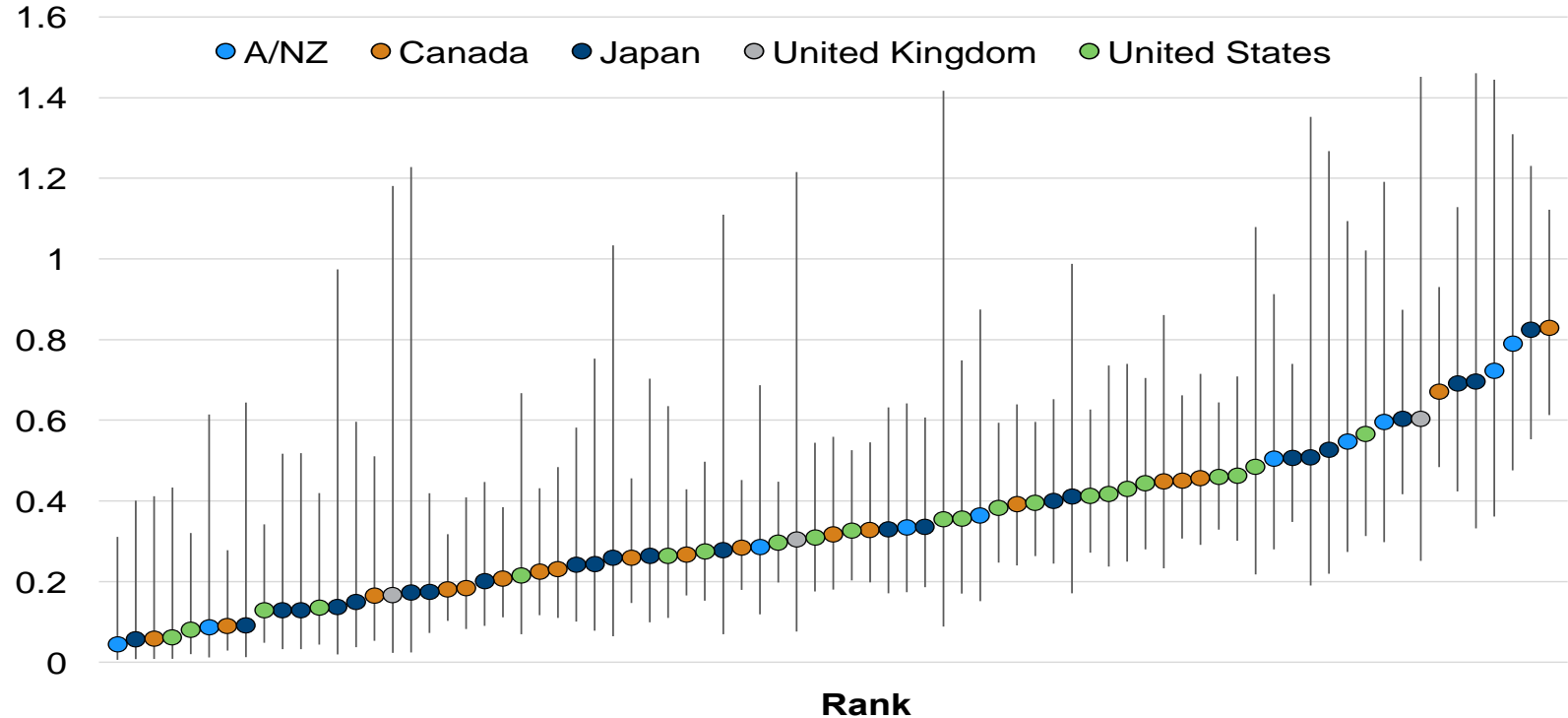
PD peritonitis rate By state, Australia 2006-2015



2016 ANZDATA Annual Report, Figure 5.23

Facility peritonitis rates*

Peritonitis rate (95% CI), events per patient year



*Restricted to facilities with at least 5 patient years of follow-up (n=79)

Variation: We often blame the patient

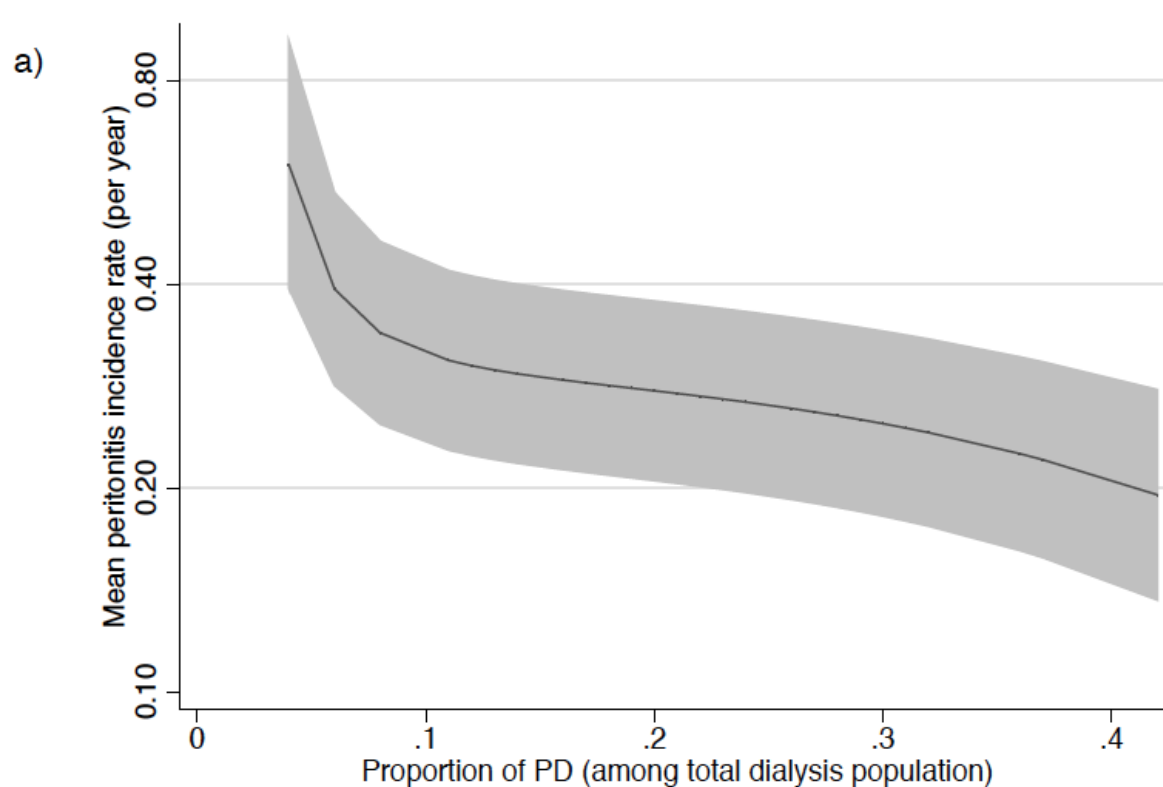


ORIGINAL ARTICLES

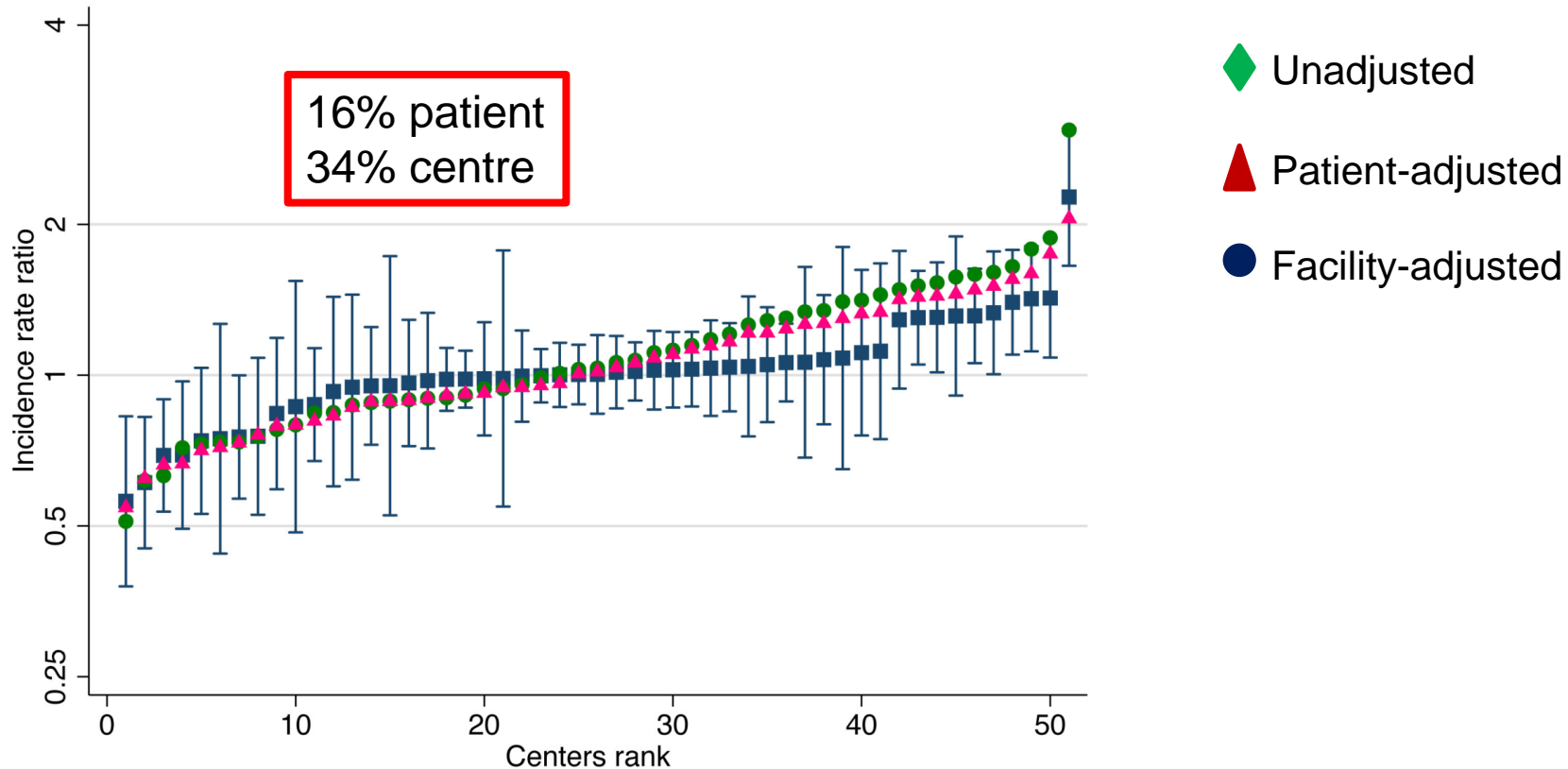
CENTER-SPECIFIC FACTORS ASSOCIATED WITH PERITONITIS RISK—A MULTI-CENTER REGISTRY ANALYSIS

Annie-Claire Nadeau-Fredette,^{1,2,3} David W. Johnson,^{1,2,4} Carmel M. Hawley,^{1,2,4} Elaine M. Pascoe,⁵
Yeoungjee Cho,^{1,2,4} Philip A. Clayton,^{2,6,7} Monique Borlace,⁸ Sunil V. Badve,^{1,2} Kamal Sud,^{7,9}
Neil Boudville.¹⁰ and Stephen P. McDonald^{2,8,11}

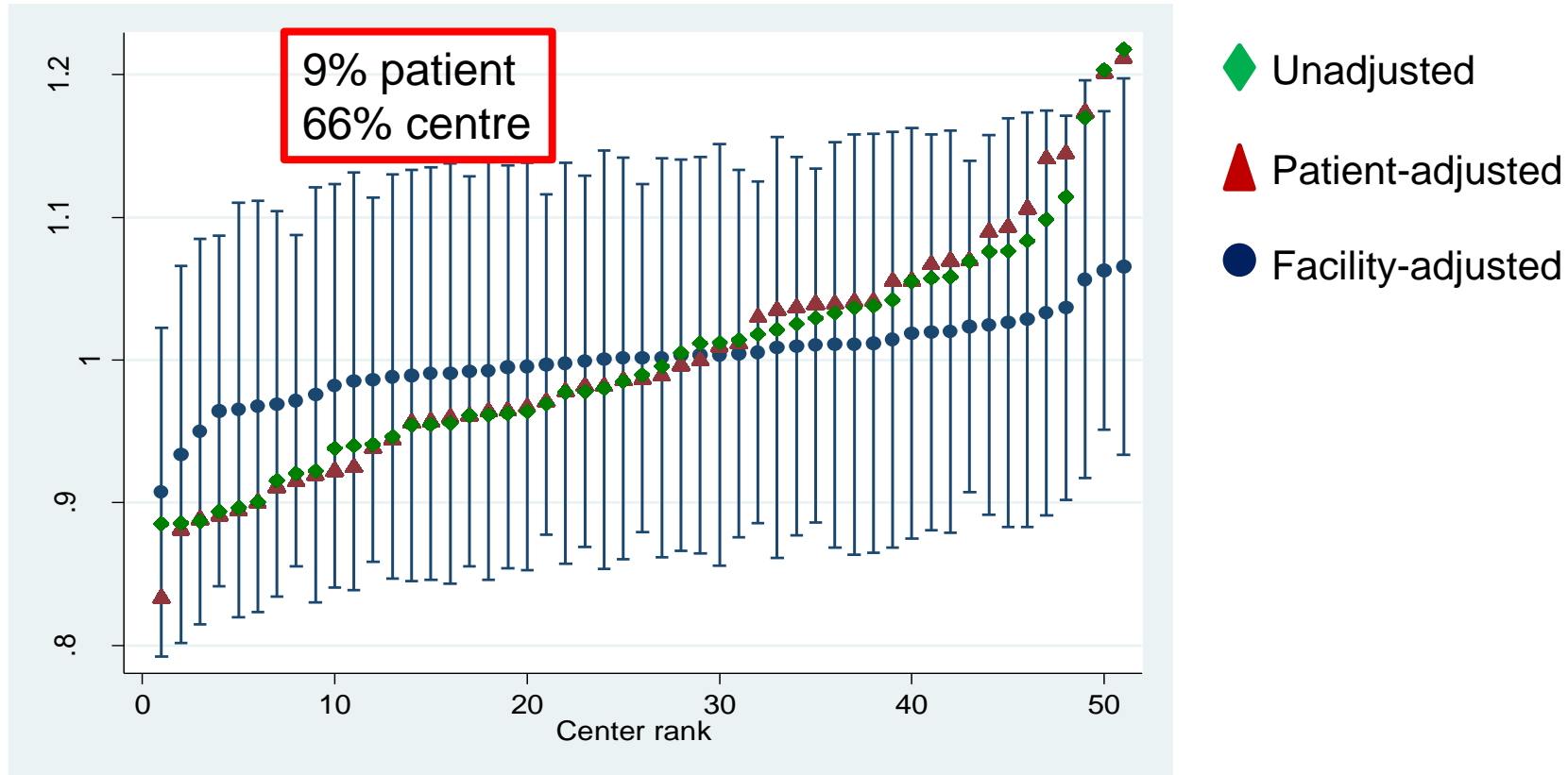
A greater use of PD = less peritonitis



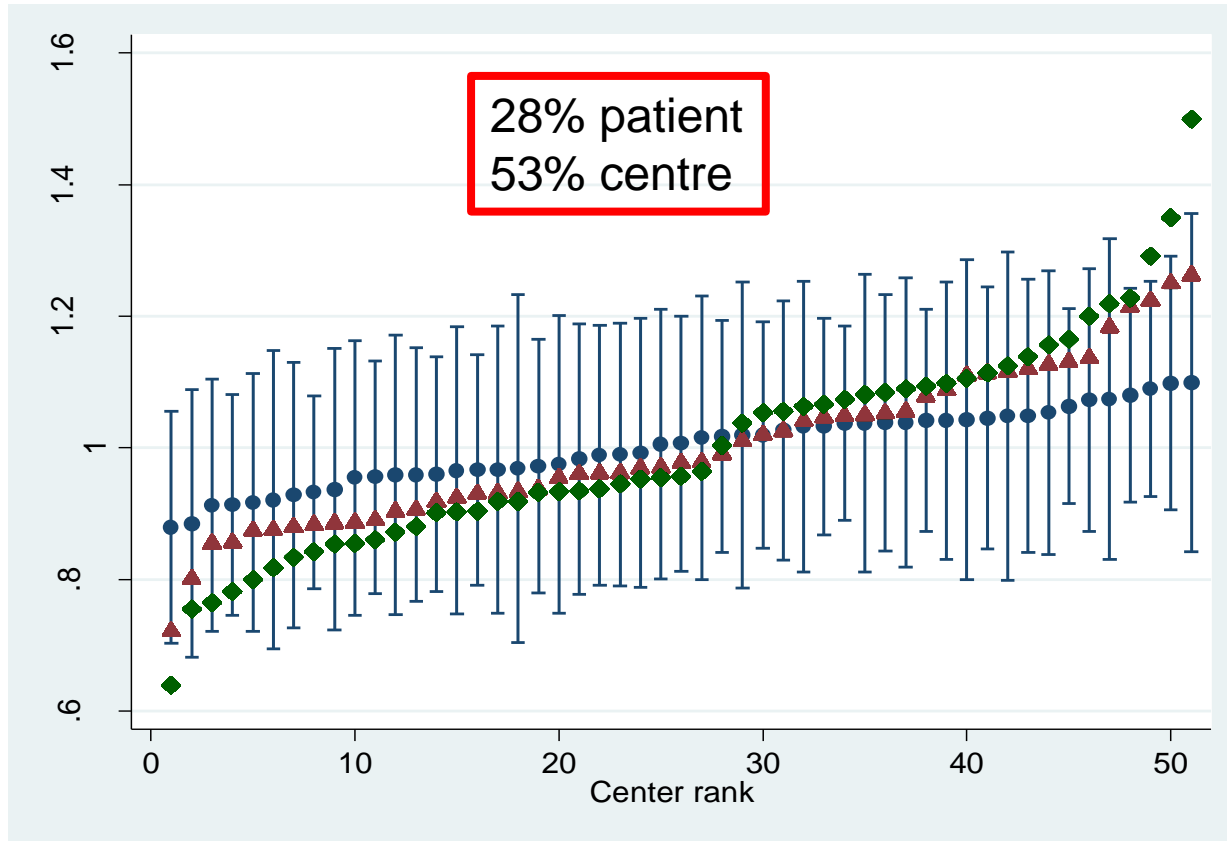
Centre Variation in Peritonitis Rates



Centre Variation in Peritonitis Cure



Centre Variation in Technique Failure



Collaboration: to create new knowledge



**Individual unit practice
“Albatross Model”**



**Collaboration between units
“Duck model” (flying-V)**

Review Article

Peritoneal dialysis practice in Australia and New Zealand: A call to action

MATTHEW D JOSE,¹ DAVID W JOHNSON,² DAVID W MUDGE,² ANDERS TRANÆUS,³ DAVID VOSS,⁴
ROWAN WALKER⁵ and KYM M BANNISTER⁶

¹Department of Nephrology, Royal Hobart Hospital & Menzies Research Institute, Hobart, Tasmania, ²Department of Nephrology, University of Queensland at Princess Alexandra Hospital, Brisbane, Queensland, ⁵Department of Nephrology Royal Melbourne Hospital, Melbourne, Victoria, and ⁶Central Northern Adelaide Renal and Transplantation Service, Royal Adelaide Hospital, Adelaide, South Australia, Australia; and ³Baxter Healthcare Asia Pacific, Shanghai, China; and ⁴Renal Department, Middlemore Hospital, Otahuhu, Auckland, New Zealand

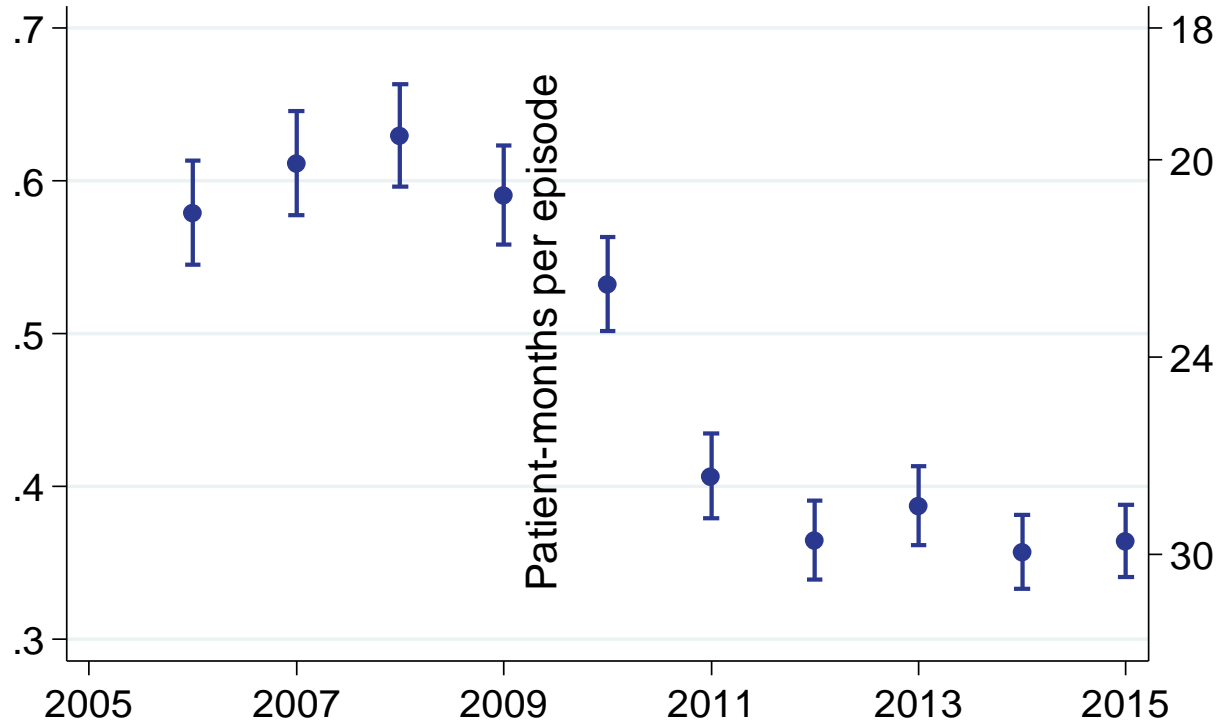
Review Article

Peritoneal dialysis practice in Australia and New Zealand: A call to sustain the action

DAVID W MUDGE,¹ NEIL BOUDVILLE,² FIONA BROWN,³ PHILIP CLAYTON,⁷ MICHELLE DUDDINGTON,⁸ STEPHEN HOLT,^{4,5} DAVID W JOHNSON,¹ MATTHEW JOSE,¹⁰ WALAA SAWEIRS,¹¹ KAMAL SUD,⁹ DAVID VOSS¹² and ROWAN WALKER⁶

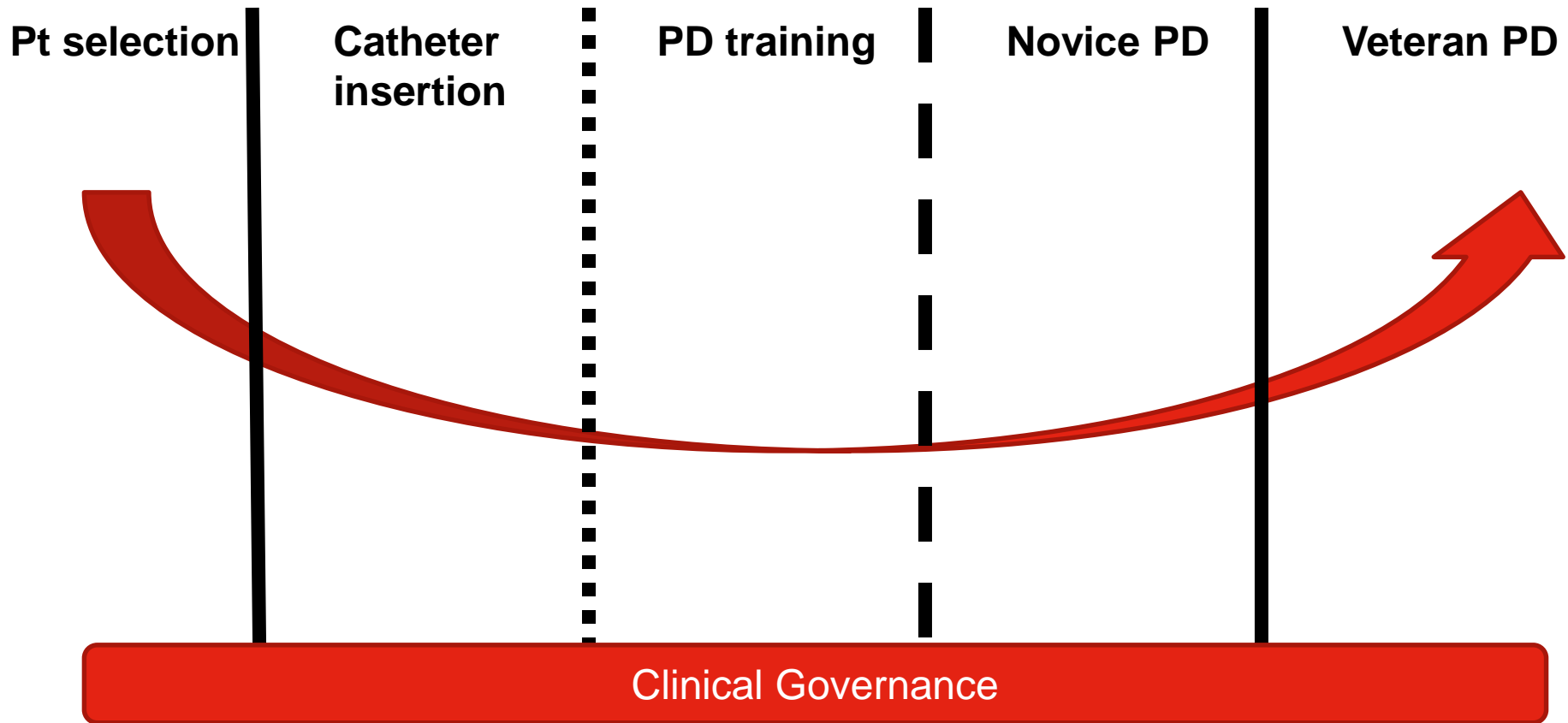
¹Department of Nephrology, University of Queensland at Princess Alexandra Hospital, Brisbane, Queensland, Australia, ²School of Medicine and Pharmacology, Sir Charles Gairdner Hospital, Perth, Western Australia, Australia, ³Monash Medical Centre, Melbourne, Victoria, Australia, ⁴Royal Melbourne Hospital, Melbourne, Victoria, Australia, ⁵Department of Medicine, University of Melbourne, Melbourne, Victoria, Australia, ⁶Department of Renal Medicine, The Alfred Hospital, Melbourne, Victoria, Australia, ⁷Department of Renal Medicine, Royal Adelaide Hospital, Adelaide, South Australia, Australia, ⁸Baxter Healthcare, Sydney, New South Wales, Australia, ⁹Nepean Clinical School, and Department of Renal Medicine, Nepean Hospital, University of Sydney, Sydney, New South Wales, Australia, ¹⁰Department of Nephrology, Royal Hobart Hospital & Menzies Institute for Medical Research, University of Tasmania, Hobart, Tasmania, Australia, ¹¹Renal Unit, Whangarei Hospital, Whangarei, New Zealand, and ¹²Renal Department, Middlemore Hospital, Auckland, New Zealand

PD peritonitis rate Australia 2006-2015



2016 ANZDATA Annual Report, Figure 5.22

PD pathway





A good outcome?



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- Professor Neil Boudville
- Dr Yeoungjee Cho
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- many New Zealanders



Questions ?



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