Professional Standards in Peritoneal Dialysis

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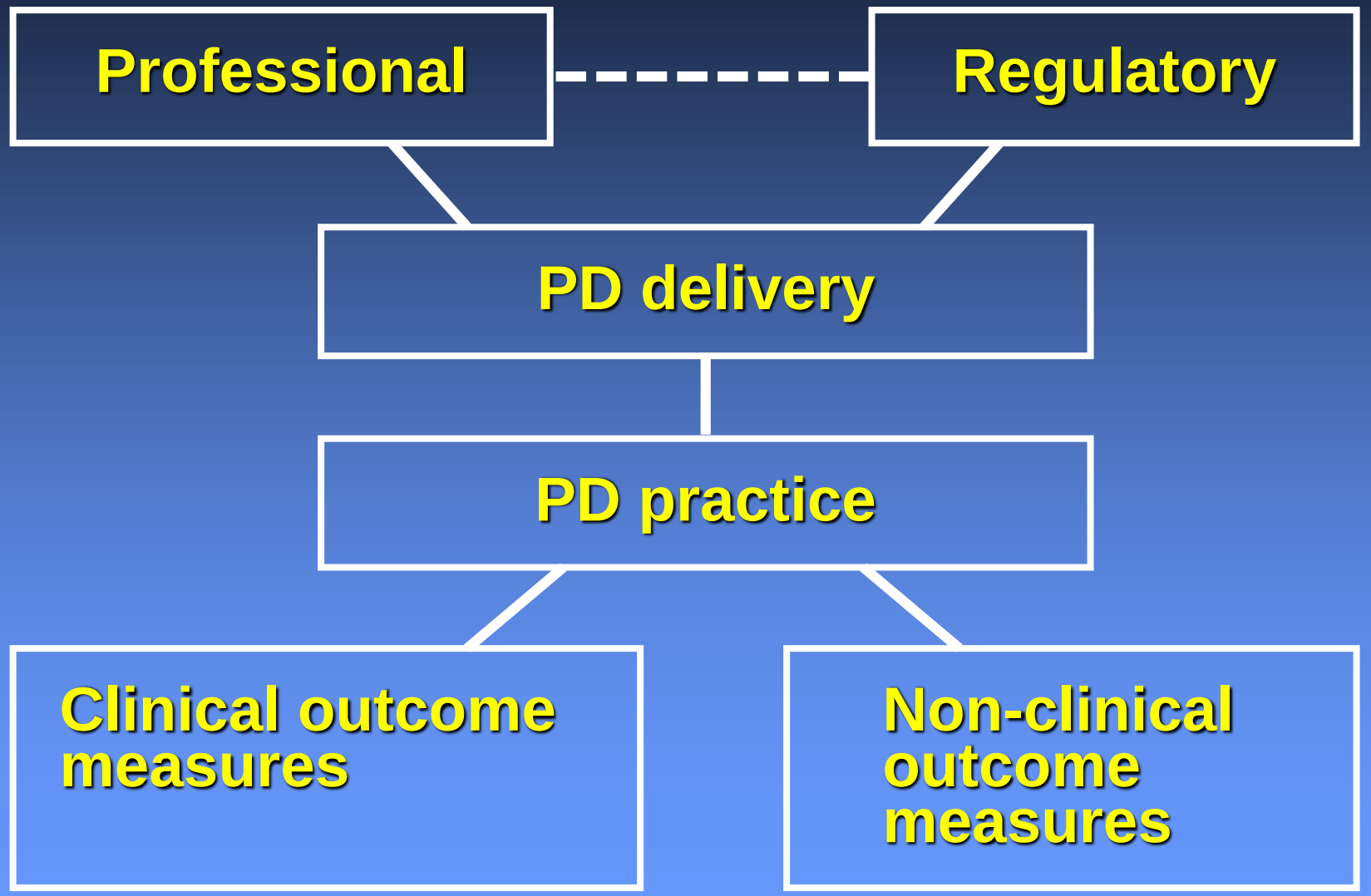
Disclosures

- Travel grants from Baxter and Fresenius Medical

Standards in PD



ISPD and other guidelines

Consensus expert recommendations

- **Guide best practice globally**
- **Should be adapted to local conditions**
- **Published evidence**
- **Expert practice**
- **Asian & Australasian representation – China, India, Malaysia/Indonesia?**

How well does your local population fit the PD populations used to derive guidelines?

Is local data available to guide you?

Local PD priorities

Clinical

- PD uptake, penetrance
- Technique failure, drop-out/exit from PD
- Transplant
- Mortality – CVD, DM, elderly
- Peritonitis & PD catheter infections
- Hospitalization
- Quality of life

Non-clinical

Guidelines only help us with some of these

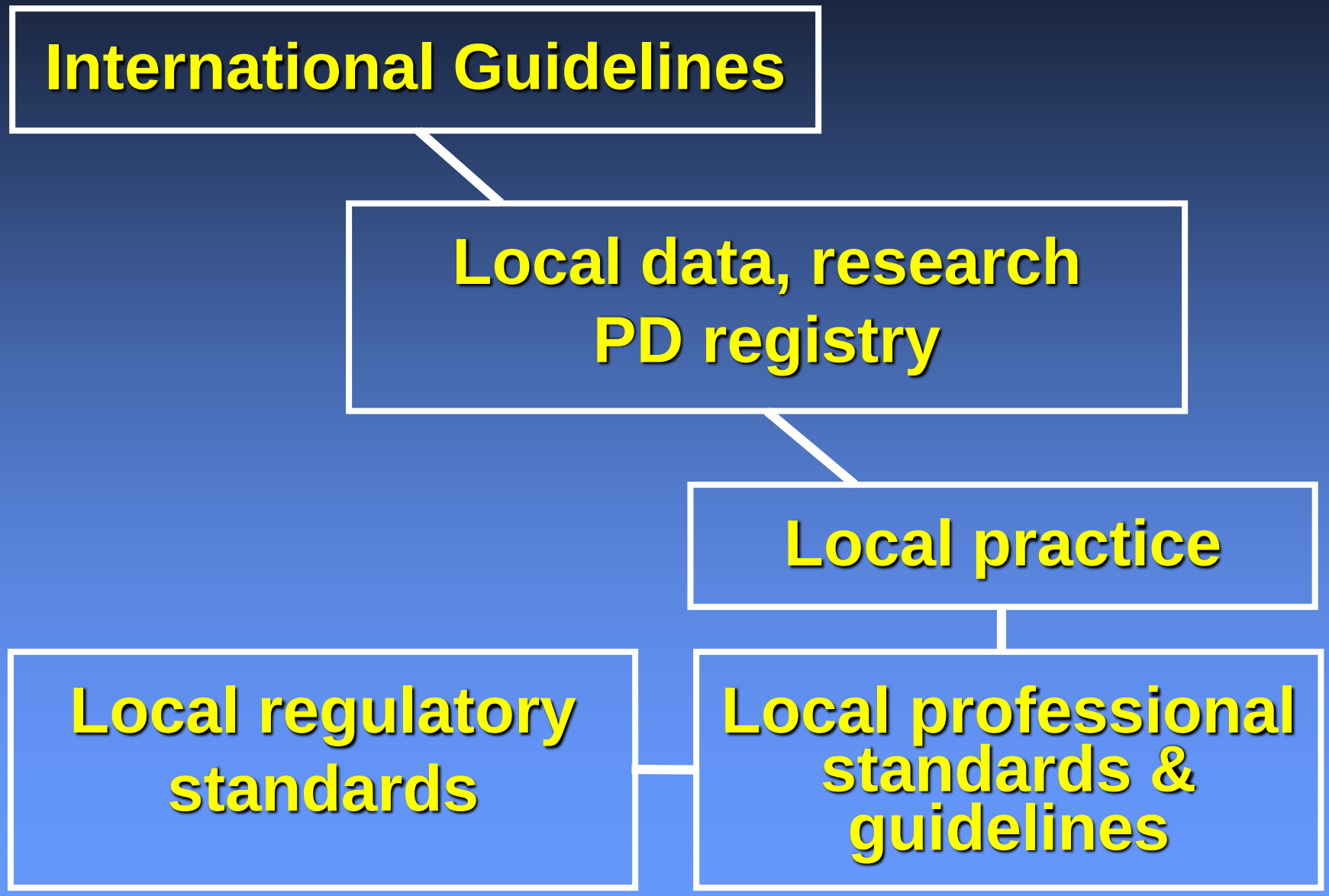
Guideline and Practice gap

International Guidelines

?

Local practice

Knowledge and Practice gap



Data

Data in PD

- Indispensable for clinical, administrative, regulatory compliance, funding, reform

- Database
- Software

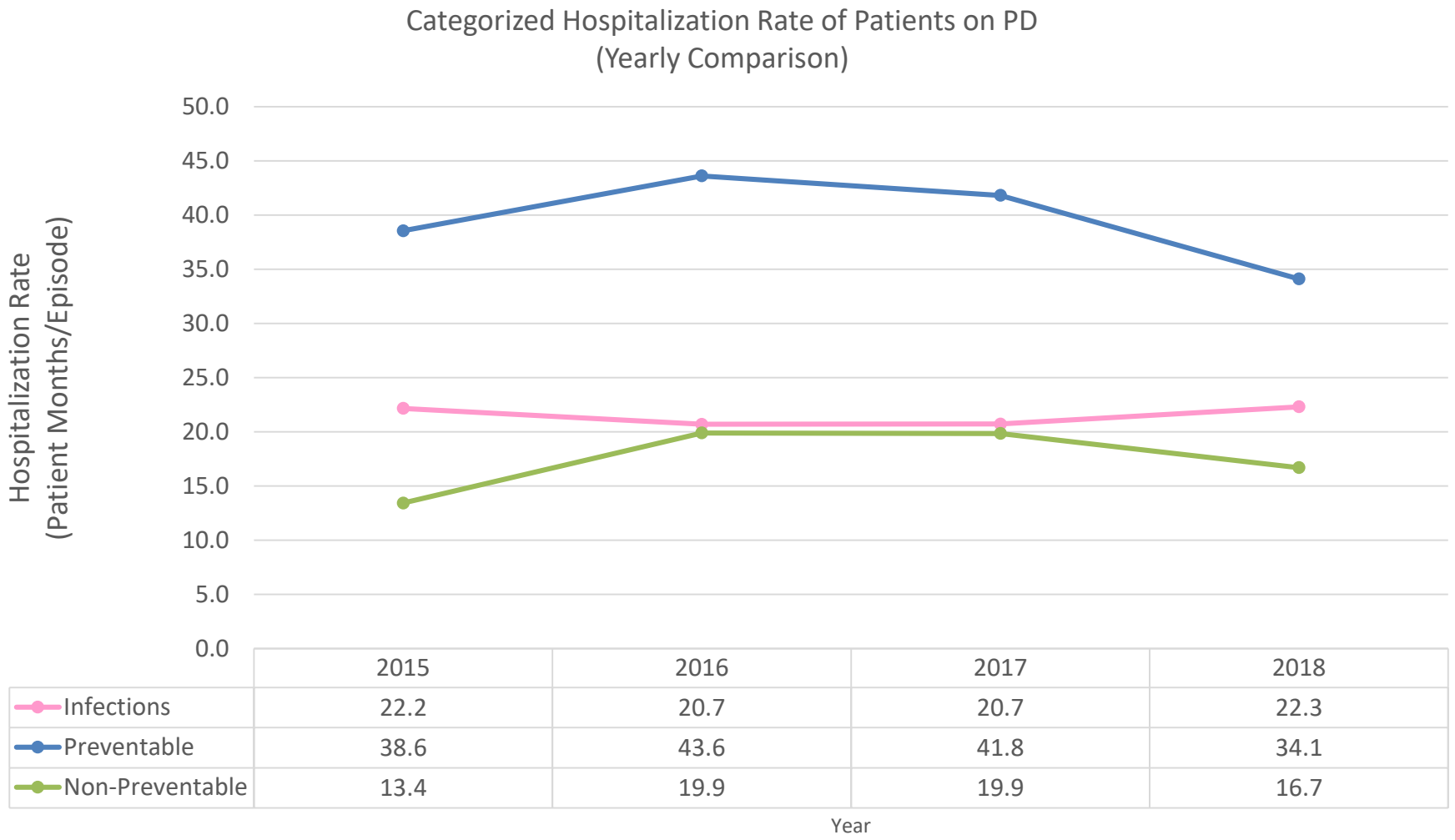
- Data entry – who does it, and who pays for it?
- Analysis

- Data protection
- External agencies
- Legal aspects

Causes of Drop-Out

Cause	2015	2016	2017	2018
Deceased	54%	43%	27%	45%
Peritonitis	20%	36%	42%	24%
PD catheter-related infection	4%	2%	4%	5%
PD catheter dysfunction	9%	0%	7%	2%
Conversion to HD – Technique Failure	11%	12%	5%	11%
Conversion to HD – Elective	2%	0%	2%	6%
Transplant	0%	5%	11%	5%
Others	0%	2%	2%	2%

Patient months between hospitalization, by category



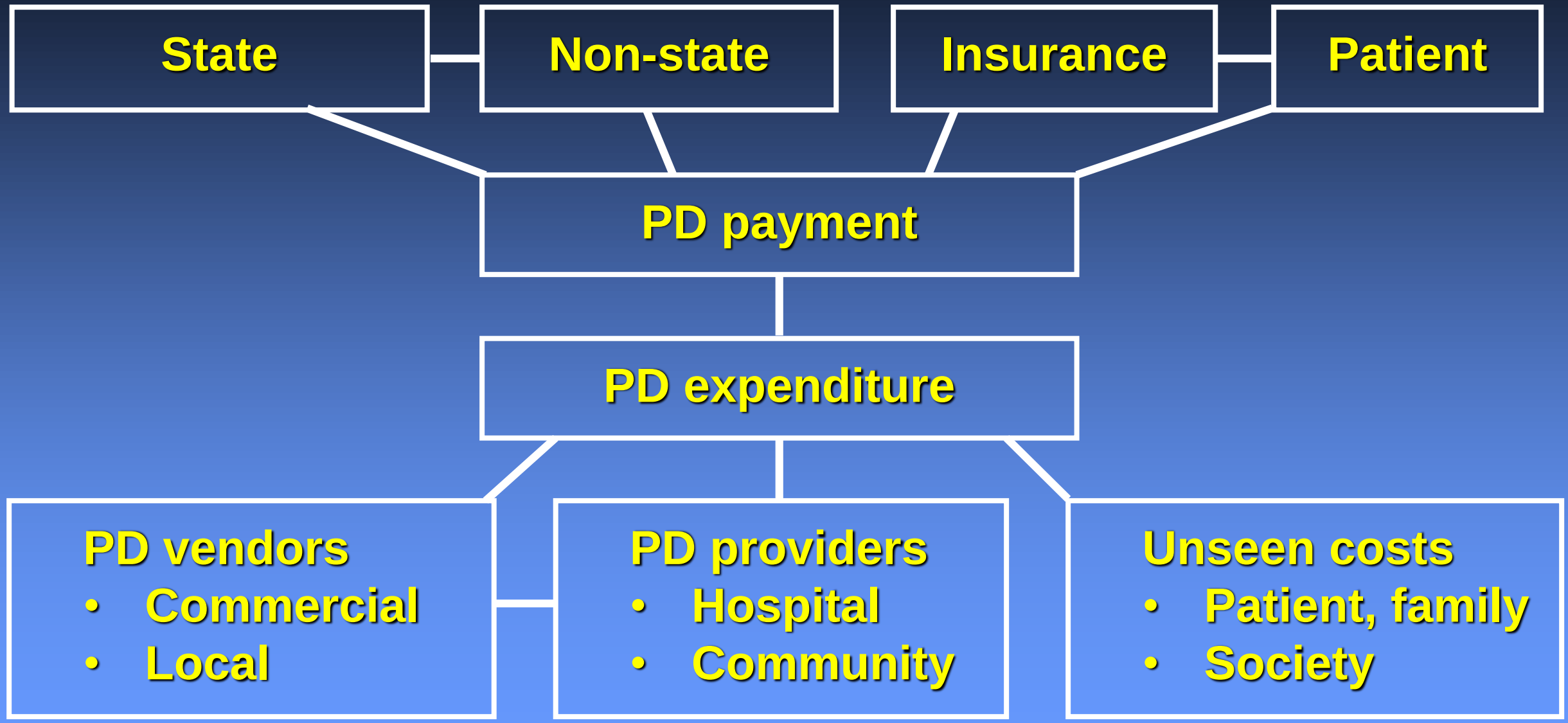
	2015	2016	2017	2018
Infections	22.2	20.7	20.7	22.3
Preventable	38.6	43.6	41.8	34.1
Non-Preventable	13.4	19.9	19.9	16.7

Hospitalization Categories

Infections	Preventable	Non-Preventable
• Access Related Infection • Non-Access related Infection	• Blood pressure-related • Dialysis related – Fluid Overload • Dialysis related – Others	• Access related Non-Infection • Cardiovascular disease • Cerebrovascular disease • Other heart disease • PVD • Others

Funding for PD

Funding


State
Non-state
Insurance
Patient
PD payment
PD expenditure
PD vendors
• Commercial
• Local
PD providers
• Hospital
• Community
Unseen costs
• Patient, family
• Society

PD funding

- Country-specific
- PD first, PD preferred or PD ‘last’
- Payers – who?
- Bundled or Itemized
- ESRD care vs RRT modality-specific reimbursement

- Cost of PD – to system and patient, review / rebasing
- Financial controls influence care
  - Examples: Icodextrin, biocompatible fluids, non-Ca phosphate binders
- Healthcare funding review and reform

- CADTH. Dialysis Programs in Canada: Implementation Considerations and Funding Practices https://www.cadth.ca/dv/dialysis-programs-canada-implementation-considerations-and-funding-practices
- CMS. ESRD reimbursement. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ESRDpayment/index.html
- Wish, D. et.al., Rebasing the Medicare payment for dialysis: rationale, challenges, and opportunities. CJASN 2014. 9(12):2195-202
- Neil, N. et. Al., The financial implications for Medicare of greater use of peritoneal dialysis. Clin Therapeutics 2009. 31(4):880-8

US and Canadian dialysis

	United States	Canada
Health care spending (/capita)	5,274	3,572
% Gross domestic product	14.6	9.3
$ per patient with ESRD (US $)	60,337	45,094
Incidence of ESRD (/million)	340	158
Crude mortality rate (/100 patient-years)	19.0	16.1
Peritoneal dialysis use (%)	7.7	18.8
Home hemodialysis use (%)	0.6	1.9

Mendelssohn D and Wish, JB. Dialysis Delivery in Canada and the United States: A View From the Trenches. American Journal of Kidney Diseases, Vol 54, No 5 (November), 2009: pp 954-964

Clinical performance measures
Regulatory

Center for Medicare & Medicaid Services, CMS, USA

- Conditions for Coverage, CfCs
- Home, center and hospital-based dialysis
- Nursing home PD
- Accreditation and training of PD staff
- Clinical decision-making authority
- Audits – informal and formal
- Patient's own PD caregiver
- Communication
- Emergency staffing, care, supplies
- Reporting data
- Compliance
- Inspections

DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard, Mail Stop C2-21-16
Baltimore, Maryland 21244-1850

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Center for Clinical Standards and Quality/Quality, Safety & Oversight Group

Ref: QSO 18-22-ESRD

DATE: August 10, 2018

- https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/QSO18-22-ESRD.pdf

Clinical Performance Reporting – PD, CMS-821

- Amputations
- No body composition or hydration status measure

- Adequacy
  - Kt/V
  - CrCl
  - RRF
  - PD prescription
- Anemia – Hb, ESA, iron indices
- Albumin

21D. Weekly Kt/V_{urea} (dialysate and urine clearance)	____ . _____ _____
21E. Method by which V above was calculated: Check one. (If unknown please call lab.)	❑ %BW ❑ Hume ❑ Watson ❑ Other _____
21F. Weekly Creatinine Clearance (dialysate and urine clearance)	__ __ __ . __ L/wk
21G. Is this Creatinine Clearance corrected for body surface area, using standard methods? (See instructions on page 6)	❑ Yes ❑ No ❑ Unknown

20. PERITONEAL DIALYSIS ADEQUACY: The remainder of this form lists a series of questions regarding adequacy measurements for this patient. Please answer questions 20A and B FOR EACH TWO-MONTH TIME PERIOD indicated. Then continue to pages 3 and 4.

- https://www.cms.gov/Medicare/CMS-Forms/CMS-Forms/Downloads/CMS821.pdf
- https://www.cms.gov/Medicare/CMS-Forms/CMS-Forms/CMS-Forms-Items/CMS019471.html?DLPage=1&DLEntries=10&DLFilter=2005%20CMS%20821&DLSort=0&DLSortDir=ascending
- https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/ESRDQIP/Downloads/ESRD-Manual-v30.pdf

Clinical Performance Reporting – PD, CMS-821

care represented by those data. For PY 2019, the clinical measures will include adequacy of dialysis (a composite of adult hemodialysis, adult peritoneal dialysis, pediatric hemodialysis, and pediatric peritoneal dialysis), vascular access (prevalence of AVFs and catheters > 90 days), hypercalcemia, National Healthcare Safety Network bloodstream infections (outcomes, not just reporting), standardized hospital

- **QIP penalties**
- **Dialysis Facility Compare www.medicare.gov/dialysisfacilitycompare**

- Blankschaen SM, Saha S, Wish JB. Management of the Dialysis Unit. Core Curriculum in Nephrology 2016. AJKD 2016 https://www.cms.gov/Medicare/CMS-Forms/CMS-Forms/Downloads/CMS821.pdf
- https://www.cms.gov/Medicare/CMS-Forms/CMS-Forms/CMS-Forms-Items/CMS019471.html?DLPage=1&DLEntries=10&DLFilter=2005%20CMS%20821&DLSort=0&DLSortDir=ascending

Implications

- Reliance on Kt/V, CrCl to measure PD adequacy
- Pitfalls of Kt/V

- Increasing PD prescription time, volume to raise Kt
- Cost
- Impact on patient – time on dialysis, ability to work, quality of life

- Conversion from PD to HD
- Patients with no HD option - ?

Clinical performance measures Professional

Clinical outcome measures

- PD Guidelines
- PD targets
  - Adequacy
    - Kt/V, CrCl
    - new multicomponent measure
  - UF
  - Laboratory measures
  - Complication rates – infections

- Mortality
- Hospitalization – PD-related, preventable
- Patient-centered or patient-reported outcomes

PD Catheter placement

PD catheter placement standards

- We recommend an audit of catheter insertion outcomes on at least an annual basis as part of a multidisciplinary meeting of the PD team, including attendance of access operators when feasible (1B)
- We suggest clinical goals specific for the PD access procedure include (2C):
  - Catheter patency at 12 months of > 95% for advanced laparoscopic placement and > 80% for all other catheter insertion methods
  - Exit-site/tunnel infection within 30 days of catheter insertion: < 5%
  - Peritonitis within 30 days of catheter insertion: < 5%
  - Visceral injury (bowel, bladder, solid organ): < 1%
  - Significant hemorrhage requiring transfusion or surgical intervention: < 1%
- We suggest that incidences of pericatheter leaks within 30 days of catheter insertion be recorded separately for early PD starts (< 14 days) and late starts (≥ 14 days) (not graded)

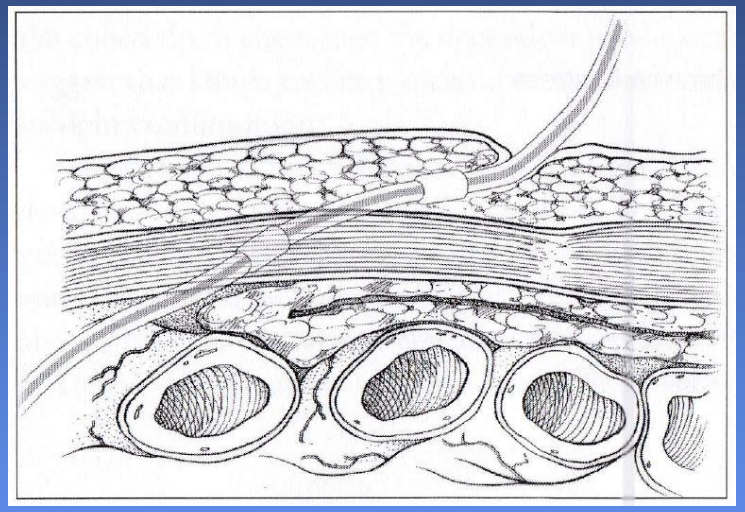
Crabtree et.al., ISPD Guidelines: Creating And Maintaining Optimal Peritoneal Dialysis Access In The Adult Patient: 2019 Update. Perit Dial Int 2019

Infection Control

PD related infections

Catheter-related infection

- Exit Site Infection, ESI
- Tunnel Tract infection, abscess



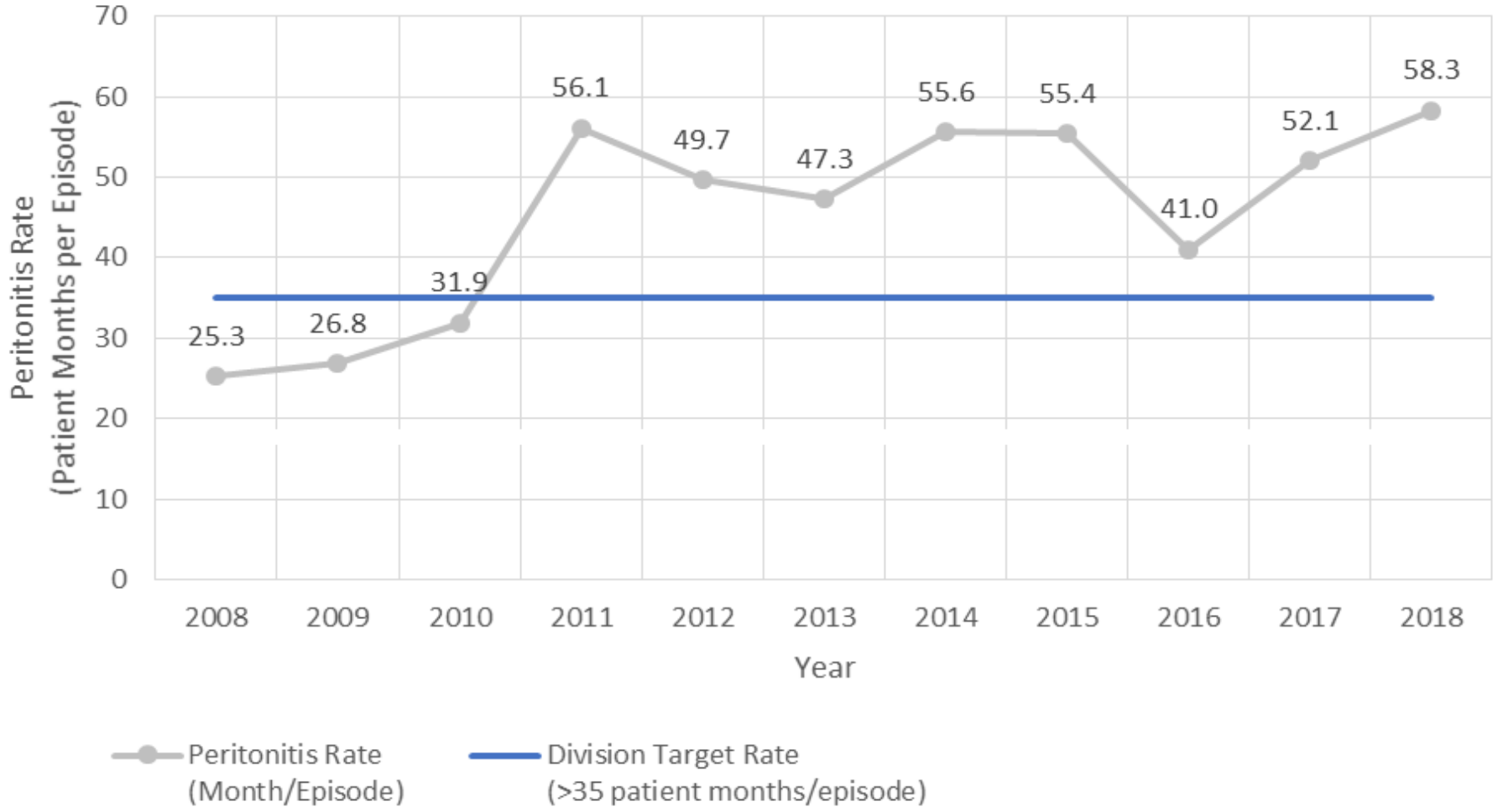
Peritonitis

Peritonitis

Peritonitis rates

Rate, episodes per patient year	Rate, patient months per episode	Center	Period, PD population	Reference
0.5	24	ISPD Guideline	2016	Li et al., Perit Dial Int 2016; 36:481
0.186	64.5	Tokai University Hospital, Kanagawa, Japan	2001-2011 192	Nishina et al., Clin Exp Nephrol 2014; 18(4):649
0.192	62.5	Renji Hospital, Shanghai, China	2005-2009	Fang et al., Perit Dial Int 2014; 34:S35
0.206	58.3	NUH	2018	unpublished

Peritonitis Rate
Patient months per episode

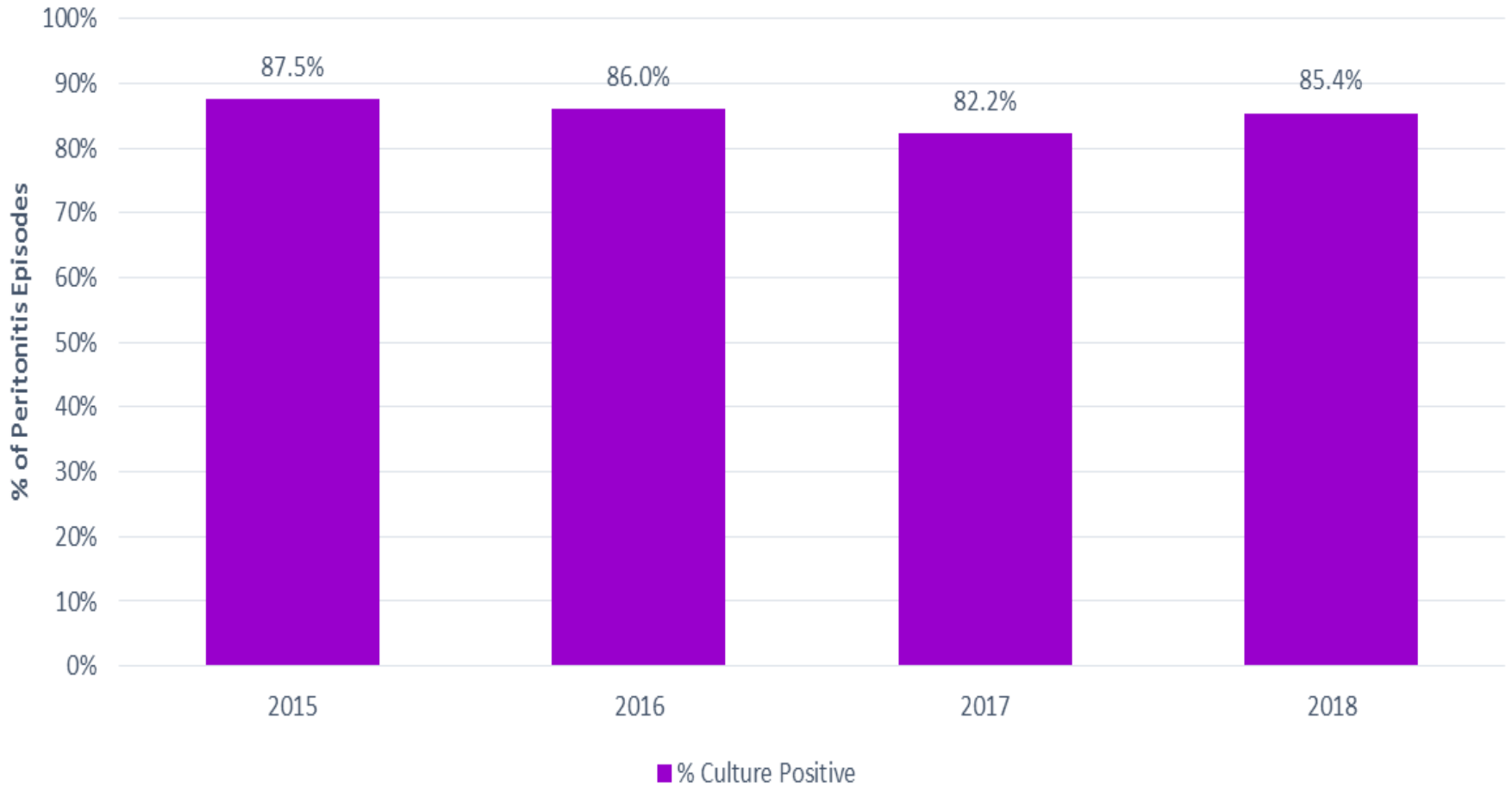


Culture-negative peritonitis

ISPD recommends <15% rate

Li et.al., ISPD Guidelines: Peritonitis. Perit Dial Int 2016; 36:481

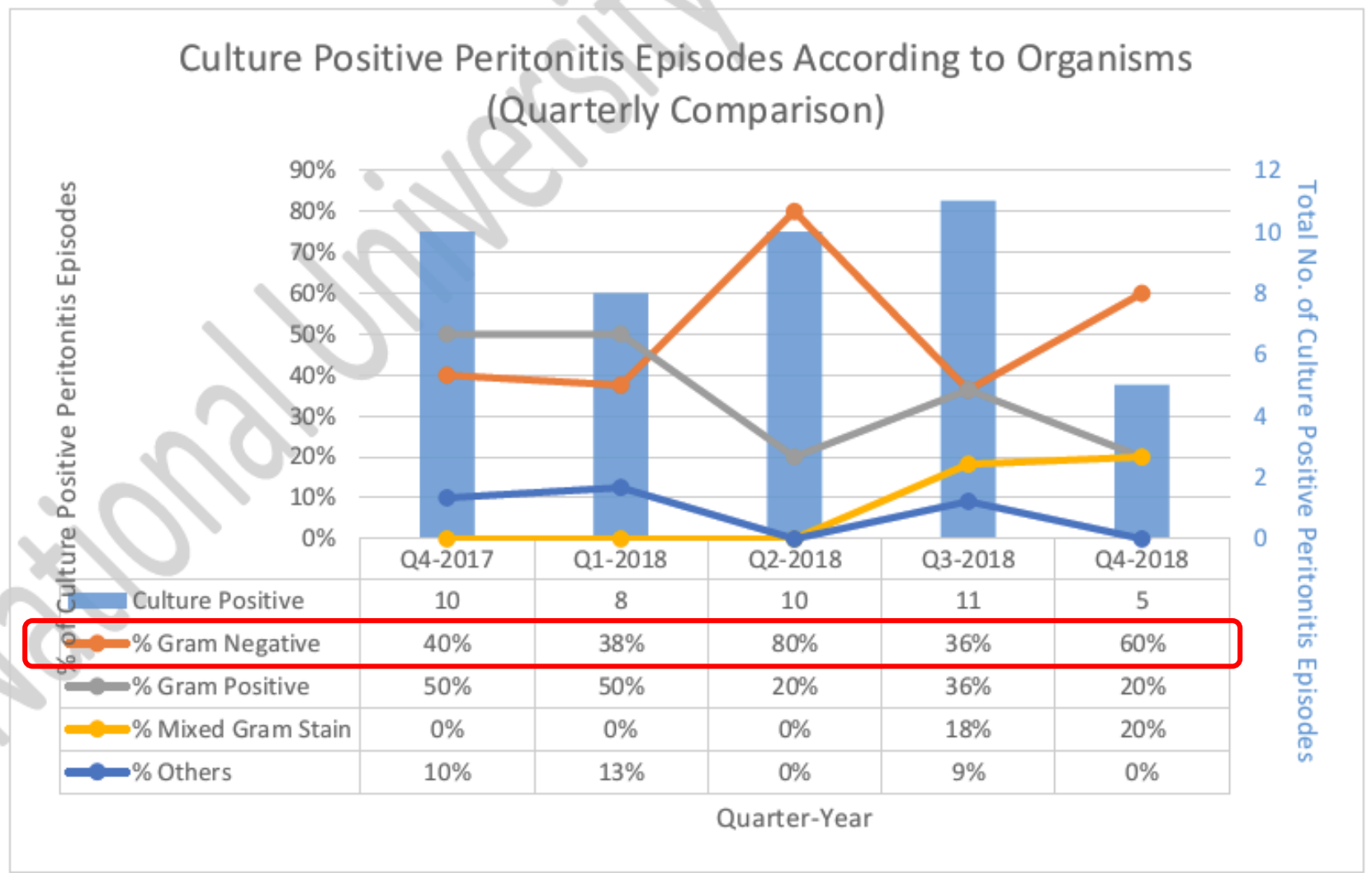
Peritonitis – culture-positive rate



Culture-negative peritonitis – local data influences treatment

NUH culture positive microbiology trend:

- Gram negative > Gram positive



	Q4-2017	Q1-2018	Q2-2018	Q3-2018	Q4-2018
Culture Positive	10	8	10	11	5
% Gram Negative	40%	38%	80%	36%	60%
% Gram Positive	50%	50%	20%	36%	20%
% Mixed Gram Stain	0%	0%	0%	18%	20%
% Others	10%	13%	0%	9%	0%

Retraining to reduce peritonitis

ISPD 2016 – PD Retraining

TABLE 2
Indications for PD Re-Training

- Following prolonged hospitalization
- Following peritonitis and/or catheter infection
- Following change in dexterity, vision, or mental acuity
- Following change to another supplier or a different type of connection
- Following other interruption in PD (e.g. period of time on hemodialysis)

Li et.al., ISPD Guidelines: Peritonitis. Perit Dial Int 2016; 36:481

Catheter-related infections

Catheter infections – exit site, ESI and tunnel infections

ISPD 2017

- **PD programs should monitor ESI and tunnel tract infection rates**
- **Continuous quality improvement**
- **Local analysis and interventions**

Episodes per year (patient year of exposure)

Insufficient data to recommend a target

*Szeto et. al., ISPD Catheter-related infection recommendations: 2017 Update. PDI 2017

Blood-borne infections

Hepatitis B, C, HIV screening - hemodialysis

Annex 1. New dialysis screening protocols for Blood Borne Diseases** at renal dialysis centres

Pre-Dialysis status	Before admission	3 monthly [2 – 4 monthly*]	6 monthly
All patients	Anti-HBs, HBsAg, Anti-HBc (Total)^, ALT, Anti-HCV HIV Ag-AB	ALT	
a) HBV-susceptible [i.e. i) HBsAg, anti-HBs and anti HBc (total) negative; or ii) HBsAg, anti-HBs negative, and anti HBc (total) positive and HBV DNA negative] b) HBV-immune (Anti-HBs pos. (≥10 mIU/mL) and HbsAg, anti-HBc negative; anti-HBc positive and anti-HBs >100)		HBsAg & anti-HBs	
Anti-HCV negative		Anti –HCV#	
Anti-HIV negative			HIV Ag-AB

Ministry Of Health,Singapore. Revised screening protocols for blood borne diseases for renal dialysis centres. Circular 16/2019

Quality Improvement

Clinical Quality Improvement, CQI

- Peritonitis rates
- Culture negative peritonitis rates
- Exit-site infection rates
- Catheter problems and catheter survival rates
- Technique failure rates and causes

- QOL, patient satisfaction,
- Functional measures

- Other domains: adequacy measures, anemia, mineral & bone, BP, volume control, lipids, diabetes control, hypoglycemia rates

- Hospitalization rates and causes
- Mortality

- ISPD guidelines
- KDOQI Clinical Practice Guidelines Peritoneal Dialysis Adequacy – Quality Improvement Programs. 2006

Process Quality Improvement

- Work efficiency – outpatient, inpatient
- Productivity
- Value driven outcomes
- Resource utilization

- Staffing
- Funding / Income
- Cost recovery

- Coordination – hospital and community PD resources

Guidelines

1. International Society for Peritoneal Dialysis, ISPD. https://ispd.org/ispd-guidelines/
2. UK Renal Association. https://renal.org/guidelines/
3. UK NICE guidelines.
   - Overview. https://www.nice.org.uk/guidance/qs72
   - Quality standards. https://www.nice.org.uk/guidance/qs72/chapter/Introduction
   - Home based dialysis. https://www.nice.org.uk/guidance/qs72/chapter/Quality-statement-5-Homebased-dialysis
   - Laparoscopic PD catheter insertion, 2007.
     - Overview: https://www.nice.org.uk/guidance/ipg208
     - Guidance: https://www.nice.org.uk/guidance/ipg208/chapter/2-The-procedure
4. CARI. http://www.cari.org.au/Dialysis/dialysis_guidelines.html
5. ERBP. http://www.european-renal-best-practice.org/
   - Guidelines: https://academic.oup.com/ndt/issue/20/suppl_9
6. KDIGO. https://kdigo.org/guidelines/
7. KDOQI.http://kidneyfoundation.cachefly.net/professionals/KDOQI/guideline_upHD_PD_VA/index.htm

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Thank you!

Questions?