Individualising the PD prescription

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ISPD guideline group: PD prescribing update

• Started meeting autumn 2017
• Global representation
• Discussions focused round
  - Need for patient-centred recommendations
  - Small solute removal important, but limitations in measurement due to inaccuracy of V in Kt/V, so should not be definitive target
  - Trials underpinning Kt/V urea target would not be graded as level A evidence today
  - PD population has changed – increase in older, multimorbid patients, and increased use of PD in lower and middle income countries
  - Very little high quality evidence, so updated recommendations will be series of papers with an overarching introductory paper summarizing recommendations from individual papers
International Society for Peritoneal Dialysis practice recommendations: Prescribing high-quality goal-directed peritoneal dialysis

Edwina A Brown¹, Peter G Blake², Neil Boudville³, Simon Davies⁴,⁵, Javier de Arteaga⁶, Jie Dong⁷, Fred Finkelstein⁸, Marjorie Foo⁹, Helen Hurst¹⁰, David W Johnson¹¹, Mark Johnson¹², Adrian Liew¹³, Thyago Moraes¹⁴, Jeff Perl¹⁵, Rukshana Shroff¹⁶, Isaac Teitelbaum¹⁷, Angela Yee-Moon Wang¹⁸, and Bradley Warady¹⁹
PD delivery – adequate or high quality

• ‘Adequate’ in Thesaurus
  - satisfactory, tolerable, acceptable, suitable

• Should PD delivery be just ‘adequate’?

• First decision by prescribing group therefore was to not use the term ‘dialysis adequacy’

• Updated recommendations will be titled “Prescribing high quality, goal-directed peritoneal dialysis’
Prescribing Peritoneal Dialysis For High Quality Care

Potential Elements To Consider

- Functional Status and Cognition
- Social (i.e. travel, employment, carer stress)
- Patient Reported Outcomes (i.e. QOL, symptoms)
- Residual Kidney Function
- Volume Status / Blood pressure / Cardiac Geometry
- Anemia
- Bone Mineral Disorder Parameters
- Electrolytes (i.e. acid-base, urate, sodium, potassium)
- Nutrition – Protein Energy Wasting
- Metabolic Parameters: (i.e. Body composition / Body Mass Index, lipids, glycaemic control)
- Markers of systemic peritoneal Inflammation
- Peritoneal membrane function
- Small Solute Clearance
- Clearance of other uremic toxins (i.e. middle molecules protein bound)

Potential Interventions in the context of available resources

Initial and longitudinal PD prescription interventions
- PD modality (APD vs. CAPD)
- PD exchange volume/frequency and length
- Treatment time and days per week
- Solution type(s)
- Cycler type and use of remote patient monitoring
- Connectology
- Tidal vs complete exchange

Consider Non-dialytic Factors/Interventions
- Comorbid disease/intercurrent illness
- Anemia management
- Nutritional management
- Physical activity and exercise
- Mood, anxiety disorders
- Bone mineral parameters
- Address care partner burnout, familial issues
- Non-dialytic acid base / Electrolyte correction
- Bowel function (especially constipation)
- Sexual function,
- Non-dialytic symptom management
- Treatment adherence

Evaluation

Shared Decision Making to Evaluate Interventions in context of Priorities and Goals of Care

Potential Goals of Care:
- Improve survival
- Extend time on PD therapy
- Increase in Life Participation Activities
- Symptom-specific improvement
- Reduce hospitalizations
- Prolong residual kidney function

Goals of Care Achieved

- NO
- YES
  - Consider HD
  - Consider non-dialytic management, comprehensive conservative care
DO I TELL HIM WHAT I WANT...?

DO I TELL HER WHAT TO CHOOSE...?
The aim of high quality goal-directed dialysis is to provide the best health outcome possible for an individual on peritoneal dialysis in terms of maintaining their clinical well-being, quality of life, ability to meet life goals and at the same time minimize treatment burden.

**Recommendation 1**

PD should be prescribed using shared decision-making between the person doing PD/ their caregivers and the care team with the aim of achieving realistic care goals to maximise quality of life and satisfaction for the individual, minimise their symptoms and provide high quality care.

Brown EA et al. Perit Dial Int (in press)
PD can be prescribed in a variety of ways and should take into account local resources, the person’s wishes regarding lifestyle and the family’s/caregivers’ wishes if they are providing assistance.

Facility % patients prescribed APD by country

Wang A et al. Perit Dial Int (in press)
High quality PD prescription should be guided by a number of assessments

- Assessments include:
  - person’s well-being and life participation
  - volume status
  - nutritional status
  - anaemia management
  - small solute removal
  - bone and mineral management

Brown EA et al. Perit Dial Int (in press)
The person’s perception of their health-related quality of life should be assessed routinely

- Assessing the patient's perception of their HRQOL needs to be integrated into routine care assessments (PRACTICE POINT)

- Utilizing PROMs to assess the patients' experience, symptoms, and domains of difficulty requires that appropriate approaches be utilized, such as the incorporation of various questionnaires into routine patient care, addressing a wide variety of domains. (PRACTICE POINT)

- Treatment should be adjusted and modified based on patients’ HRQOL, including symptom management, adjustments in dialysis treatment regimens, and clearly defining the goals of care. (PRACTICE POINT)
International Society for Peritoneal Dialysis Practice Recommendations: Small solute clearance

a. Small solute clearance should be routinely measured using $K_t/V_{\text{urea}}$ or Creatinine Clearance to provide a quantitative measure of the amount of dialysis delivered. This can guide the amount of dialysis prescribed, while recognising the limitations of accuracy of these measurements in individuals (PRACTICE POINT)

b. There is no specific clearance target that guarantees sufficient dialysis for an individual. Increasing small solute clearance to a $K_t/V > 1.7$ may improve uremia-related symptoms, if present, but there is only low certainty evidence showing that increasing urea clearance has any impact on quality of life, technique survival or mortality (PRACTICE POINT)

Brown EA et al. Perit Dial Int (in press)
International Society for Peritoneal Dialysis
Practice Recommendations: Small solute clearance

c. The presence of residual kidney function at the start of PD may enable individuals to start on a low dose prescription that may be increased incrementally as residual kidney function declines or as clinically indicated. This may allow patients more time for life participation, less treatment burden and better quality of life (PRACTICE POINT)

d. If symptoms, nutrition and volume are all controlled, no PD prescription change is needed for the sole purpose of reaching an arbitrary clearance target (PRACTICE POINT)

Brown EA et al. Perit Dial Int (in press)
Residual kidney function should be determined for all individuals doing PD and management should focus on preserving this function.

- RKF is important component of overall well-being and survival
- RKF is best assessed by averaging urinary clearances of creatinine and urea
- Caution should be taken to avoid volume depletion and hypotension as this may adversely affect RKF
- Use of ACEi/ARB may preserve RKF
- Avoid nephrotoxic agents

Chen CH et al. Perit Dial Int (in press)
In low and lower middle income countries or regions, every effort should be made to conform to the framework of these statements, taking into account resource limitations.

- Initial PD prescription should take into consideration amount of residual kidney function (RKF) and be aimed at achieving euvolemia, clinical and biochemical well-being of patients at lowest cost. **PRACTICE POINT**

- All efforts be made to preserve RKF and peritoneal membrane function and thereby maintain PD ultrafiltration without intensifying PD prescription **PRACTICE POINT**

- Greater emphasis on low cost adjunctive management eg., dietary and life-style modification to avoid need to intensify PD prescription **PRACTICE POINT**

Liew A. Perit Dial Int (in press)
In low and lower middle income countries or regions, every effort should be made to conform to the framework of these statements, taking into account resource limitations

- Measure PET and Kt/V only if tests do not compromise affordability of PD. If unavailable or unaffordable, reasonable to assess quality of PD prescription using clinical, biochemical parameters and clinical well-being of patients **PRACTICE POINT**

- PD programmes should monitor outcomes of these clinical interventions, focusing on inexpensive clinical indicators, to determine efficacy, trends and progression and for international comparison **PRACTICE POINT**

Liew A. Perit Dial Int (in press)
For those who are old, frail or have a poor prognosis, there may be a quality of life benefit from a modified dialysis prescription to minimise the burden of treatment

1. PD is only one component of overall care. **PRACTICE POINT**
2. Care needs should be determined after appropriate geriatric and palliative care assessments **PRACTICE POINT**
3. Management should focus on quality of life and symptom control. **PRACTICE POINT**
4. Residual kidney function enables PD prescription to be reduced; this enables reduction in treatment burden in line with other existing multimorbidity guidelines **PRACTICE POINT**
5. Goals of care should be determined by shared decision making with the patient and family **PRACTICE POINT**

Brown EA, Hurst H Perit Dial Int (in press)
## Recognising ‘failing to thrive’ patients on PD

<table>
<thead>
<tr>
<th>Factor</th>
<th>Assessment methods</th>
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<tbody>
<tr>
<td>Poor patient well-being</td>
<td>Ask the patient</td>
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<td></td>
<td>Hospitalisation rate</td>
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<tr>
<td></td>
<td>Questionnaires to assess quality of life, symptoms, depression</td>
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<tr>
<td>Poor volume control</td>
<td>Patient assessment</td>
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<td></td>
<td>Recording of achieved ultrafiltration by patient</td>
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<td></td>
<td>Measurement of urine output</td>
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<td>Poor solute removal</td>
<td>Blood tests</td>
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<td></td>
<td>Small solute clearance (Kt/Vurea; creatinine clearance)</td>
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<td></td>
<td>Nutrition assessment</td>
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<tr>
<td>Non-dialysis factors:</td>
<td>Frailty assessment</td>
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<tr>
<td>Comorbidities, frailty, poor nutrition</td>
<td>Cognitive function assessment</td>
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<td>Hospitalisation rate</td>
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Factors that may support an increase in dialysis delivery

<table>
<thead>
<tr>
<th>Factor</th>
<th>Suggests need to change dialysate type or increase prescription</th>
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<tbody>
<tr>
<td><strong>Clinical features</strong></td>
<td>Uraemic symptoms (recognising there could be other causes of individual symptoms)</td>
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<td>Symptomatic volume overload</td>
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<td>Poor nutritional status</td>
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<td>Hospitalisation related to uraemia or volume overload</td>
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<tr>
<td><strong>Small solute removal</strong></td>
<td>Low Kt/V (&lt;1.7) and/or creatinine clearance (&lt;50 L/week/1.73m²)</td>
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<tr>
<td><strong>Residual kidney function</strong></td>
<td>Decline in urine output and/or renal small solute removal</td>
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<tr>
<td><strong>Biochemical features</strong></td>
<td>Hyperkalaemia</td>
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<td></td>
<td>Hyperphosphataemia</td>
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<td>Low plasma bicarbonate</td>
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**KDIGO: Potential targets for goal-directed dialysis**

Dialysis initiation, modality choice, access and prescription: conclusions from a KDIGO Controversies Conference

C T Chan et al, Kid Int (2019)
Examples of individualised prescriptions

• **Incremental PD** – starting with residual kidney function – 2-3 exchanges 5-6 days/week; as RKF declines, increasing in stages to 3 exchanges x 7 and then 4 exchanges (most but not all patients then switch to APD ) depending on blood results and symptoms; Kt/V useful guide

• **Frail elderly** – CAPD (often assisted), 2 exchanges 5 days/week; 1 icodextrin (2 for volume control); may increase to 6 or 7 days if symptoms depending on patient/family wishes

• **Work**– different prescriptions work and non-work days; can be mixture of CAPD and APD dependent on patient discussions
Bartolo: Care and government of the sick (1440-1443)
SIENA – Pilgrim’s Hall, Ospedale di S Maria della Scala