

Assisted peritoneal dialysis

BerlinerDialyseSeminar

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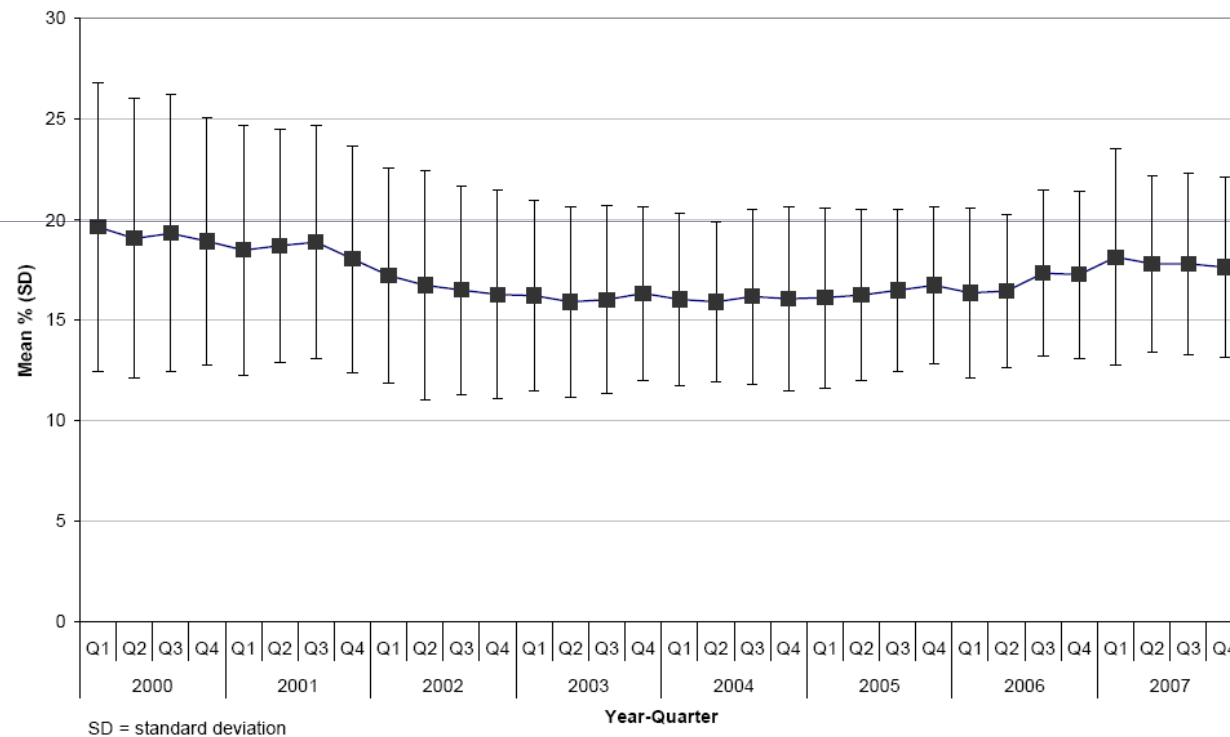


Objectives

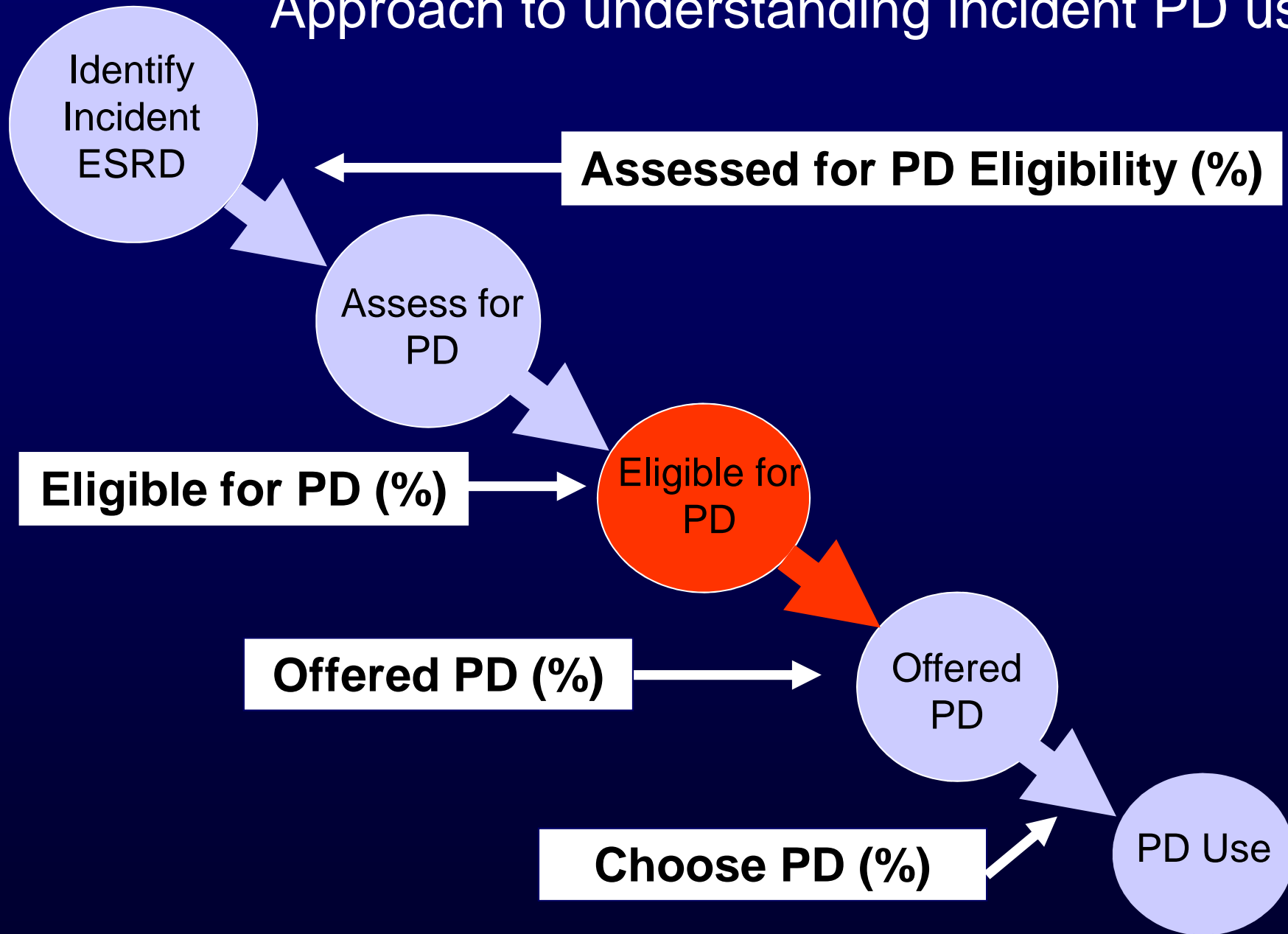
- To demonstrate how contraindications, barriers to self-care, and support are important drivers of PD utilization
- To demonstrate the impact of family and home care assistance
- To review cost implications of assisted PD
- To review patient outcomes on assisted PD

PD prevalence is flat since the PD Initiative was announced in Ontario, Canada

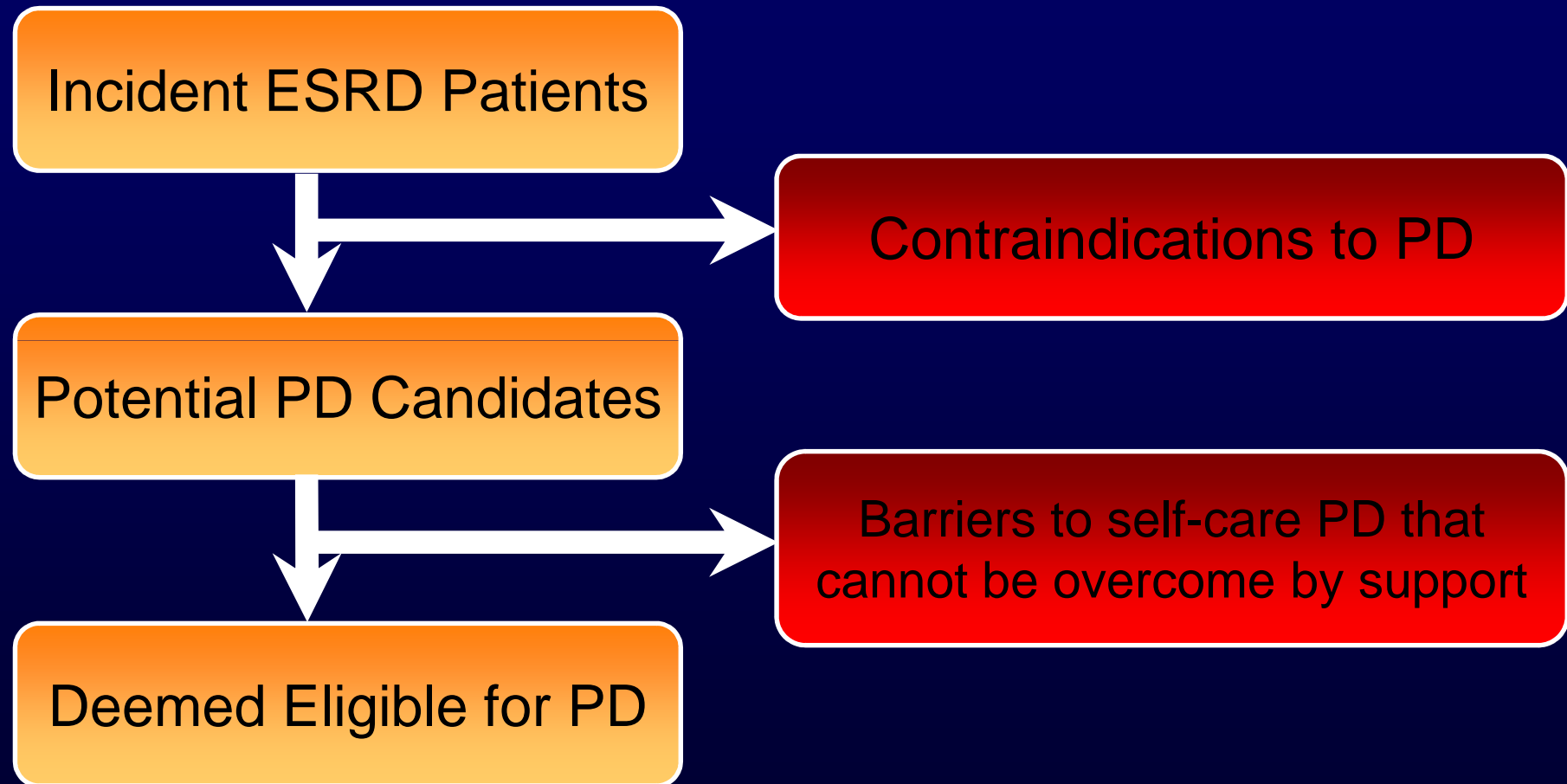
Figure 11. Mean percentage (SD) of prevalent dialysis outpatients treated with peritoneal dialysis among Local Health Integration Networks by quarter, 2000Q1-2007Q4



Approach to understanding incident PD use



Framework for PD eligibility



Contraindications to PD

Table 1: Medical and social contraindications to peritoneal dialysis

	Count (%)
Patients assessed for PD	497
Medical conditions	
Obesity	24 (4.8)
Abdominal scarring	22 (4.4)
Ascites	6 (1.2)
Diverticulitis	5 (1.0)
Abdominal hernia	5 (1.0)
Inflammatory bowel disease	4 (0.8)
Ileostomy	3 (0.6)
Colostomy	3 (0.6)
Abdominal aortic aneurysm	3 (0.6)
Abdominal surgery, planned in the future	3 (0.6)
Bowel cancer	3 (0.6)
Gastric tube	2 (0.4)
Ileal conduit	2 (0.4)
Polycystic kidneys	2 (0.4)
Ischemic gut	2 (0.4)
Other	7 (1.4)
Social conditions	
Residence did not permit PD	13 (2.6)
Employment did not permit PD	1 (0.2)
Total	110 (22)

Contraindications were in the opinion of the attending nephrologist and/or multidisciplinary team.

Barriers to self-care

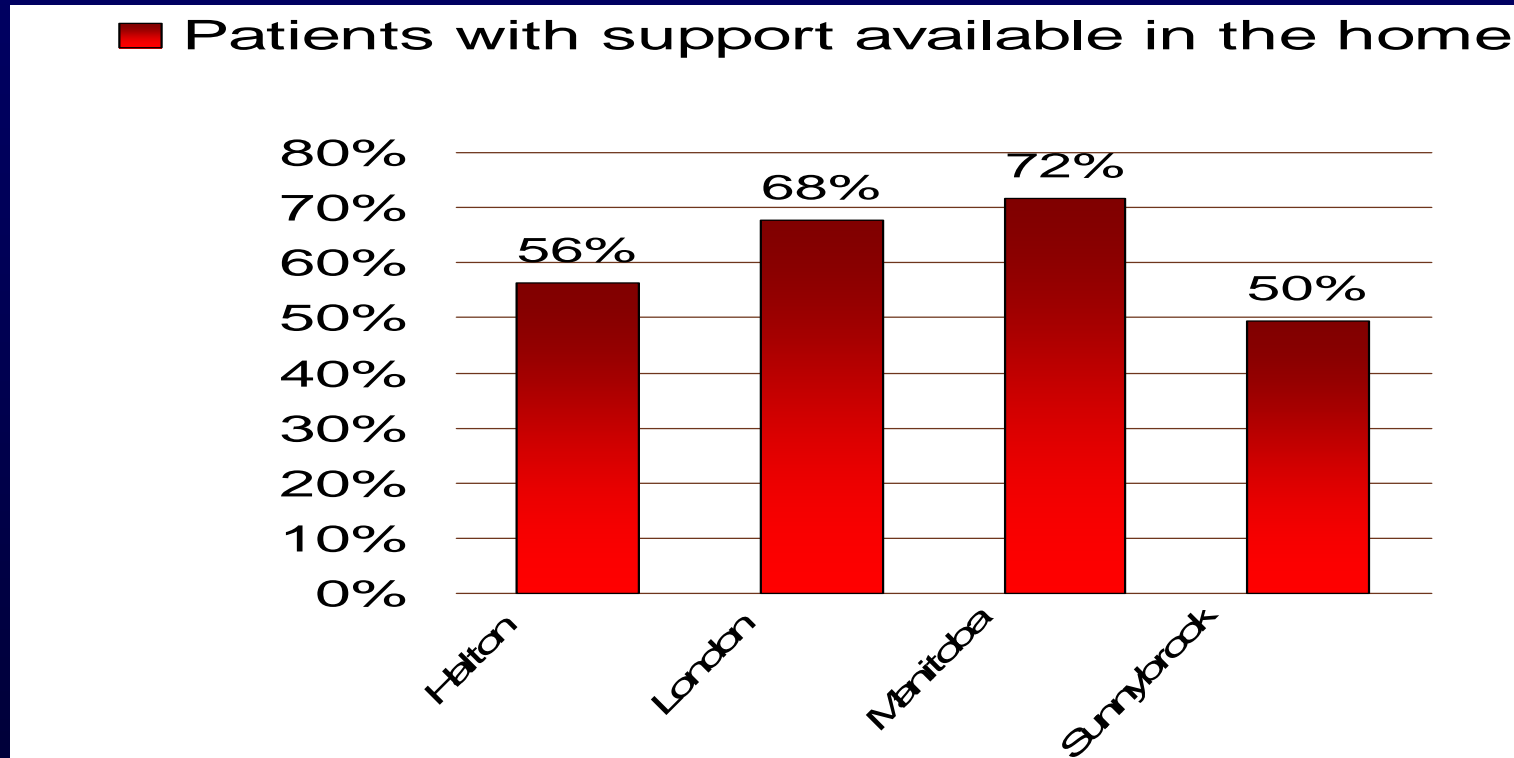
	No support	Support
Patients, N	157	229
Physical		
Decreased strength, %	33	35
Decreased manual dexterity, %	27	28
Decreased vision, %	21	21
Decreased hearing, %	12	8
Immobility, %	13	18
Poor health/frailty, %	7	10
Poor hygiene, %	3	1
Cognitive		
Psychiatric condition, %	4	6
Dementia/Poor memory, %	6	4
Language barrier, %	8	11
Non-compliance, %	7	10
Other (a)	6	4
No barriers, %	39	34
Any physical barrier, %	53	55
Any cognitive barrier, %	26	31
Physical and cognitive barrier, %	18	20

Barriers are very prevalent in the non-contraindicated population

(a) Other includes aphasia, learning disability, poor motivation, and denial about ESRD.

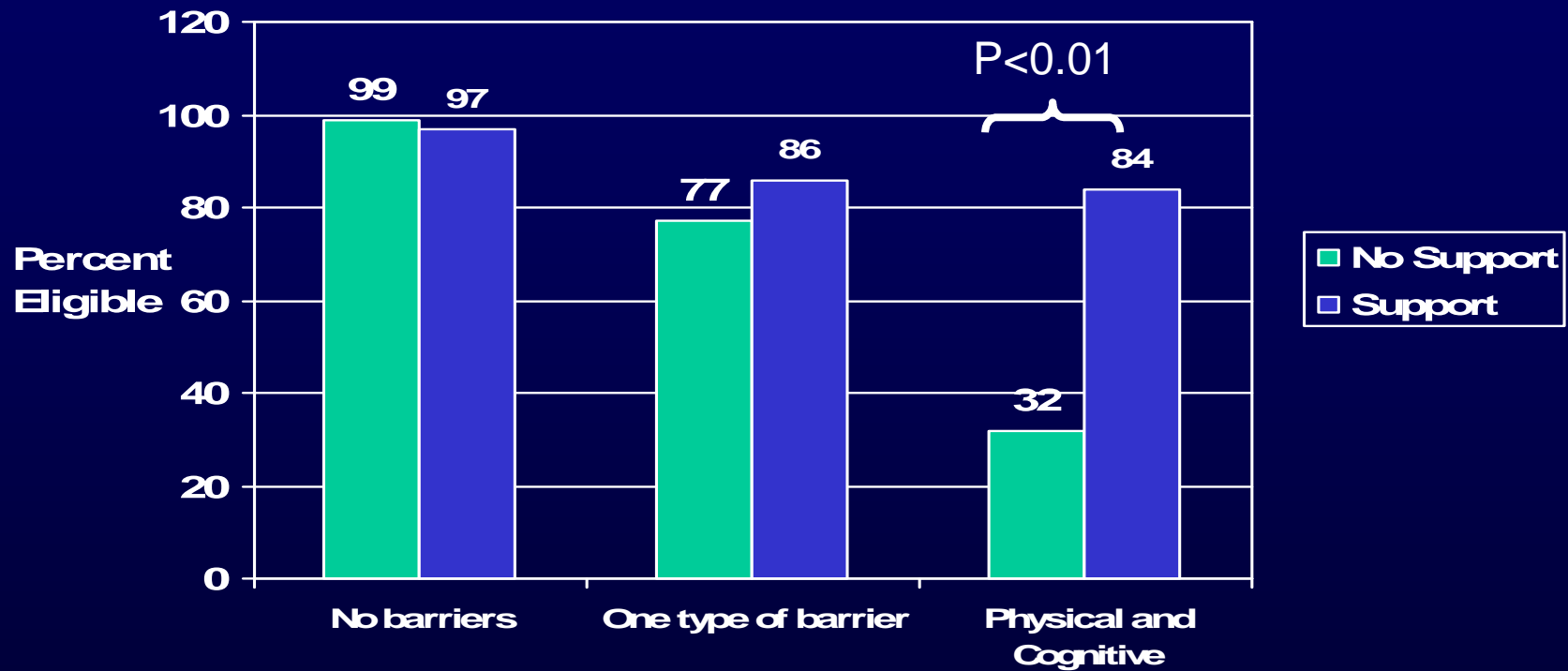
Importance of Support

Family/caregiver support available to assist with PD in the Home



Median age	75.5	64.5	59	70
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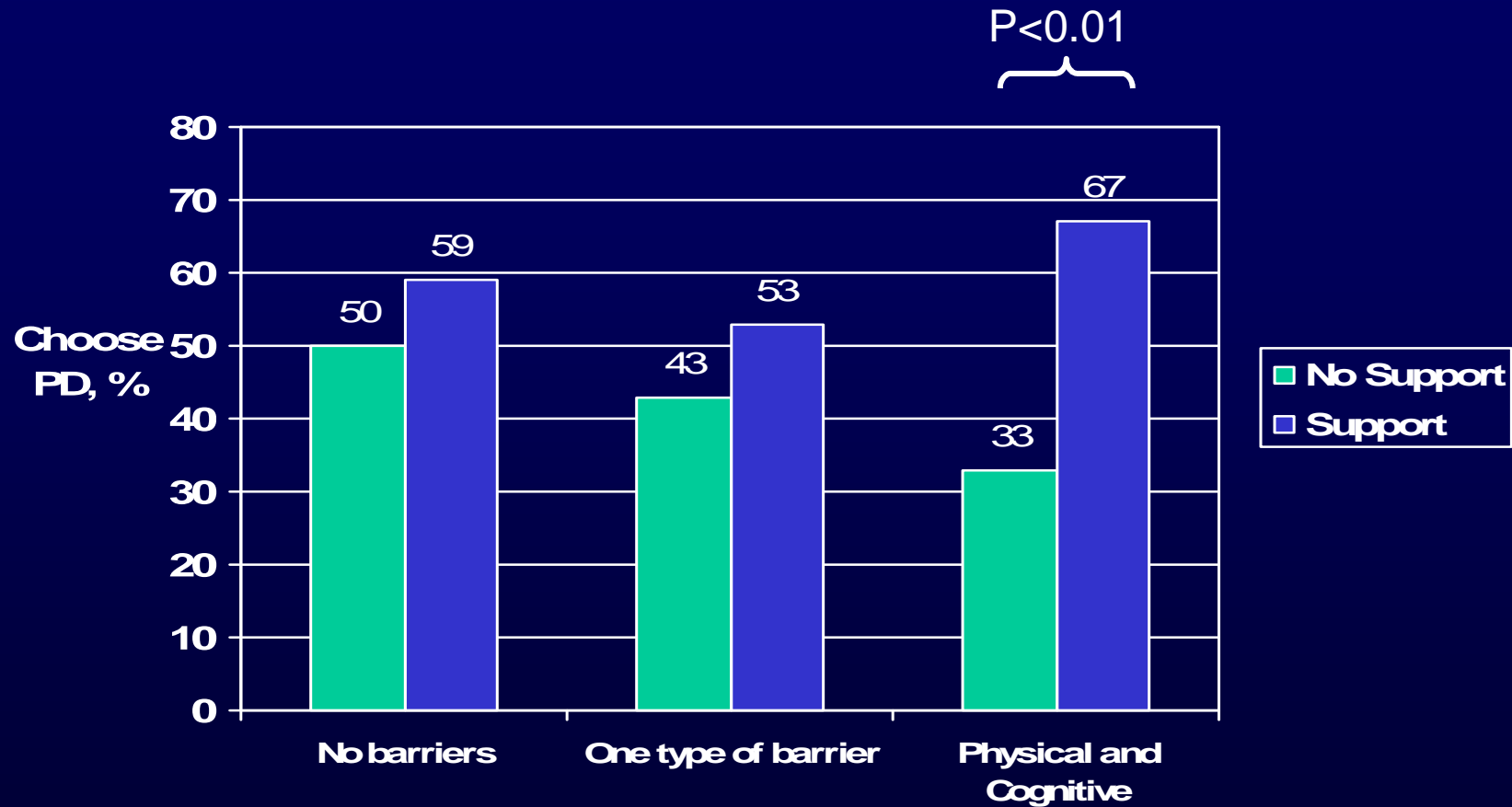
Effect of support on PD eligibility



Univariate association between support and PD, $p=0.03$

Interaction between barriers and support, $p=0.02$

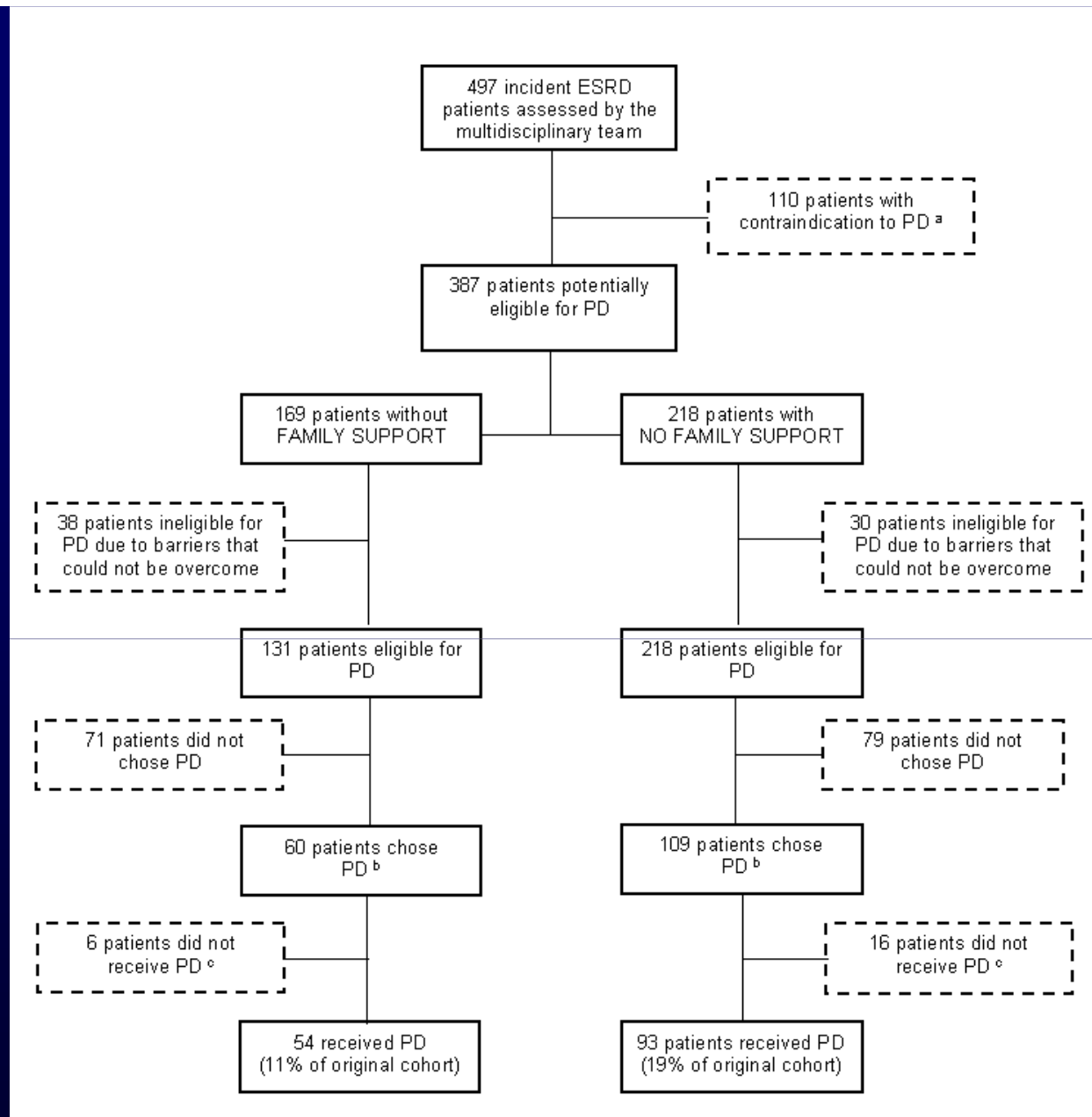
Effect of support on PD choice



Choice was defined as PD catheter attempt or insertion prior to or within 6 months of starting dialysis

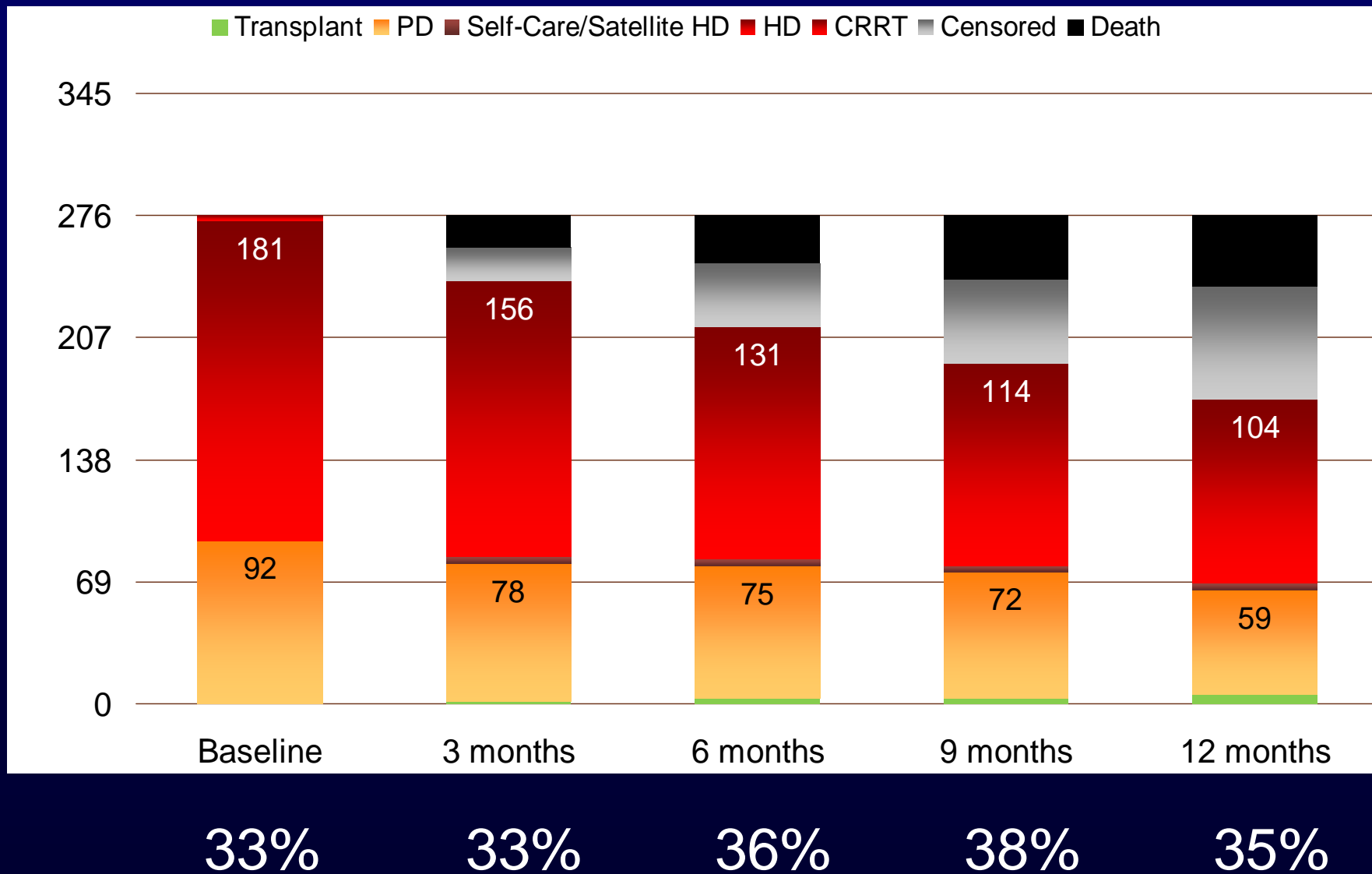
Univariate association between support and PD, $p=0.03$

Interaction between barriers and support, $p=0.02$



$$11\% + 19\% = 30\%$$

PD use over time: Sunnybrook Experience



Home care nursing assistance

The availability of home care increases eligibility for PD

Table 2 | Eligibility, choice, and use of PD according to availability of home care

	Region with home care	Region with no home care
Patients	83	51
Age, median	75 ^a	66
Male, N (%)	42 (51) ^b	35 (68)
Predialysis care, N (%)	60 (74)	21 (78)
Hospital start, N (%)	29 (57)	35 (42)
Conditions acting as barriers, median	3	2
Eligible for PD, N (%)	66 (80) ^c	33 (65)
Choose PD if they were eligible, %	39 (59)	19 (58)
Received PD as chronic modality	39 (47)	19 (37)

provision of self-care PD.

Choose PD was defined as an attempt or insertion of a PD catheter.

^aP=0.02.

^bP=0.04.

^cP=0.06 compared to region with no home care (unadjusted); P=0.01 adjusted for differences in age, sex, predialysis care, and number of conditions acting as barriers to PD between the regions.

Forms of home care assistance

- To reinforce training and ensure safety
- Additional supervision
- Respite care during intervening illness in self-care patient
- Supplemental care for families (reduce burn-out)
- Chronic support ongoing support

Logistics of providing of home care assistance

- Identify region of support
- Train a critical mass of nurses
- Provide assistance liberally when program starts to maintain skills of home care nurses
- Home care nurses and PD nurses should communicate regularly +/- supervision of exchanges in the home
- Match nurses to patients where possible
- Encourage disconnection by patients

The mean visit rate can be low enough to make assisted PD cost-effective

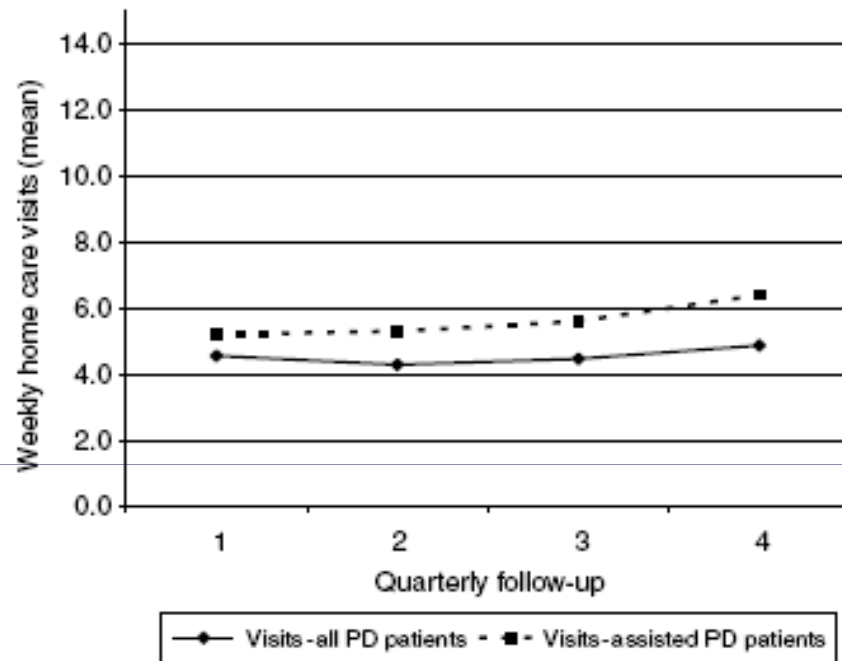


Figure 1 | Weekly rate of home care nursing visits. The rate of home care visits is indicated in the total PD population living in the region of home care assistance (solid line) and the subgroup of patients who received assistance at some point (dashed line). The home rate was stable over time and below the maximum rate available, which were 14 visits per week.

Annual cost of PD = \$34,919

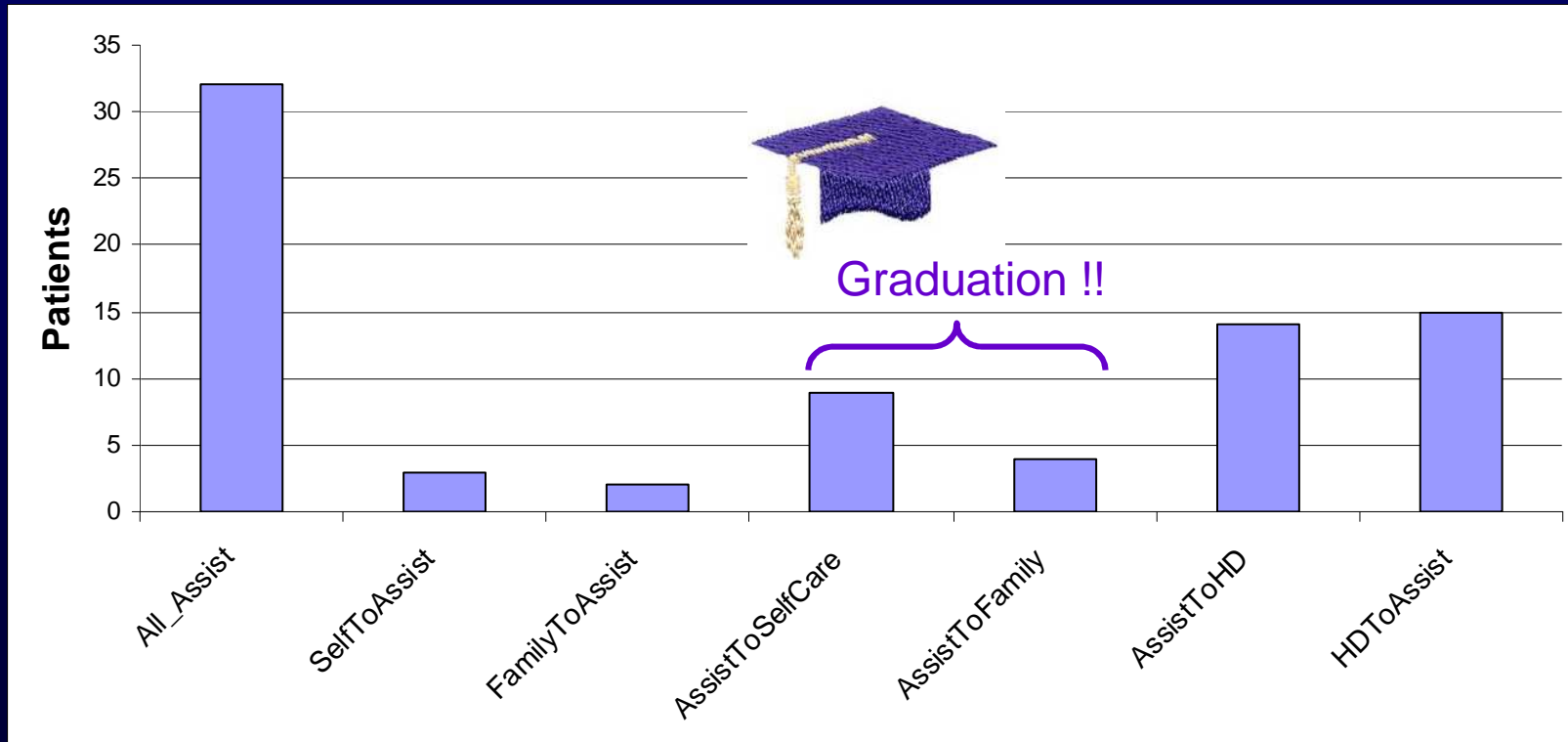
Annual cost of HD = \$66,353

Additional **operating** cost of \$12,000 per patient-year at \$50.00 per visit (all RNs)

Lee H et al. Cost analysis of ongoing care of patients with end-stage renal disease: the impact of dialysis modality and dialysis access. *Am.J.Kidney Dis.* 40 (3):611-622, 2002.

Oliver MJ et al. Home care assistance and the utilization of peritoneal dialysis. *Kidney Int.* 71 (7):673-678, 2007.

Modality Switches in Assisted PD Patients



Use of Assisted PD

- Of the 54 patients without family support who received PD therapy, 26 (48%) performed self-care PD and 28 (52%) received home care assisted PD.
- Of the 93 patients with family support who received PD, 33 performed self-care PD (36%), 24 (26%) received family assisted PD, 28 (30%) received home care assisted PD, and 8 (32%) received both family assisted PD and home care assisted PD (not mutually exclusive).

Outcomes of assisted patients

Assisted PD patients are older than self-care patients

Table 1. Main characteristics of incident French metropolitan APD patients who started a PD treatment between January 2000

All APD <i>n</i> = 1624	Non-assisted patients <i>n</i> = 1265 (78%)	Home nurse-assisted patients <i>n</i> = 232 (14%)	Home family-assisted patients <i>n</i> = 127 (8%)		
55.3 ± 17.4	51.1 ± 15.9	72.6 ± 12.2	65.2 ± 16.4		
4 (2–15)	4 (2–14)	7 (2–15)	6 (2–11)		
Centre size ^b	<20 patients	637 (39.2%)	528 (82.9%)	70 (11.0%)	39 (6.1%)
	20–30 patients	370 (22.8%)	265 (71.6%)	76 (20.5%)	29 (7.9%)
	>30 patients	617 (37.9%)	472 (76.5%)	86 (13.9%)	59 (9.6%)
Peritonitis rate (One episode per 'n' patient-months)		1/34	1/33	1/36	1/45
Probability of being peritonitis free (95% CI)	at 24 months	58.1% (54.9–61.3%)	59.3% (55.8–62.9%)	54.4% (45.7–63.1%)	69.8% (59.6–80.1%)
	at 36 months	45.3% (40.8–49.8%)	45.6% (40.3–50.9%)	39.8% (29.2–50.4%)	52.1% (36.2–67.9%)
Home visit ^c	Yes	967 (59.5%)	760 (60.1%)	130 (56.0%)	77 (60.6%)
	No	657 (40.5%)	505 (39.9%)	102 (44.0%)	50 (39.4%)

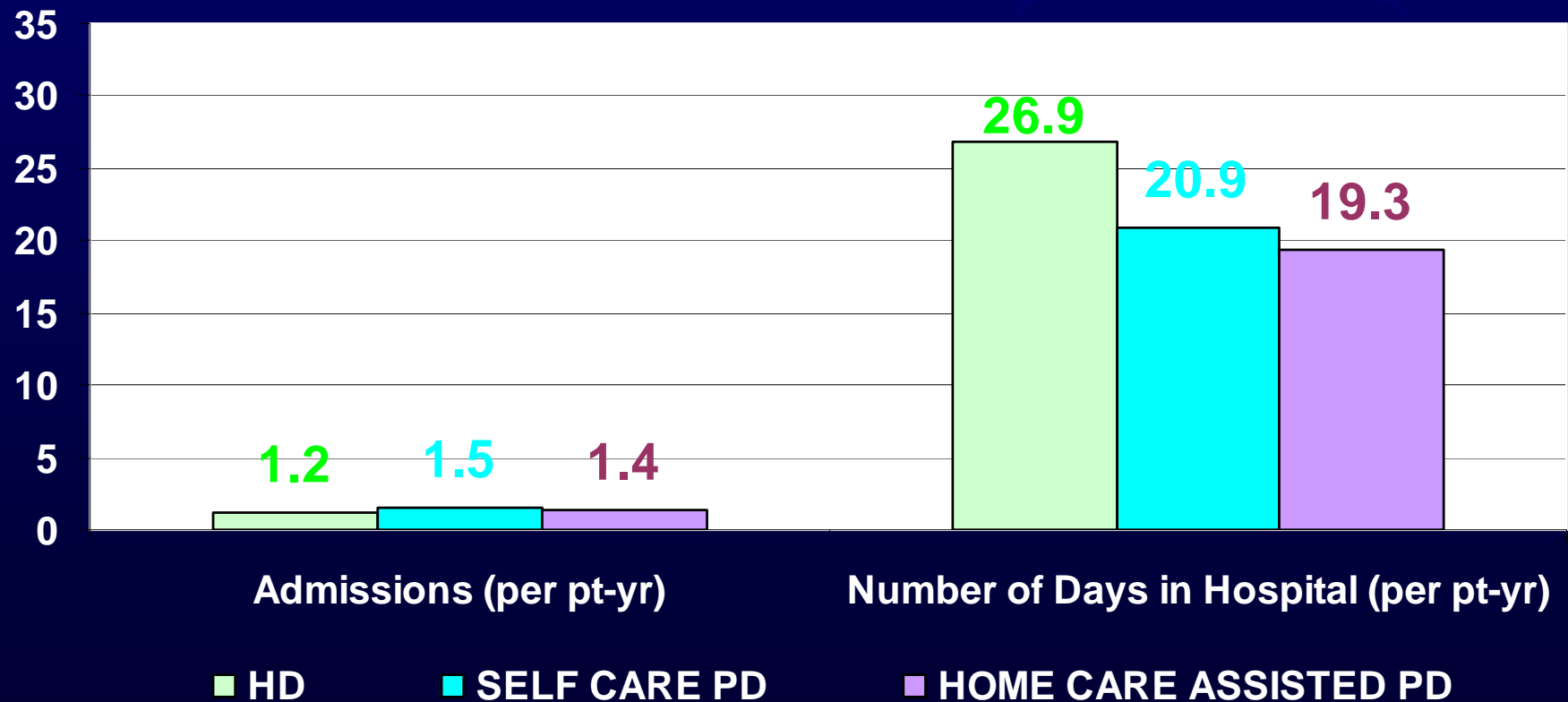
^aCharlson index is evaluated at initiation of treatment.

^bCentre size is defined by the number of incident patients who started PD between 2000 and 2004.

^cTraining Centre make home visits or not.

Equal rates of hospitalization in PD compared to HD patients

Hospitalization Rates



*3-group comparison

Adjusted for Age, Sex, DM, Predialysis Care, IP Start

p-value = 0.4892

Invasive access procedures

Table 2: Access Procedure Rates by Modality Choice

	Choose PD	Choose HD
Patients, Total	58	43
Follow-up, years	94.3	75.4
Access Procedures, Total	137	147
Procedure Rate per patient-yr	1.45	1.97

- The access procedure rate in the self-care PD group was 1.54 per patient-yr and in the assisted PD group was 1.23 per patient-yr

Outcomes of PD assistance

Outcome	Result
Technique Survival	58-86% at one year
Peritonitis Rate, one episode	One episode per 28-36 months
Hospitalizations,	1.4 to 4.8 per patient-year
Hospital Days	23.5 to 45.6 per patient-year
Patient Survival	83% at one year

Conclusions

- Approximately one fifth of the incident ERSD population was considered contraindicated to PD by their multidisciplinary team which creates a “hard cap” on PD utilization
- Availability of support significantly increased PD eligibility, PD choice and therefore PD utilization.
- Approximately half of the PD patients were assisted at some point (family and/or home care)
- The mean, not the maximum, number of home care visits determines the operating cost of assisted PD. Capital costs for HD units must also be considered when comparing the costs of assisted PD to incentre HD
- Assisted PD patients are much older and have higher comorbidity than self-care patients so the rates of adverse events is high. However, it is not clear if they are worse than self-care PD if properly adjusted their higher age and comorbidity

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