A MULTIDISCIPLINARY APPROACH PROGRAM FOR QUALITY IMPROVEMENT IN PERITONEAL DIALYSIS PATIENTS: FOCUSING ON FLUID STATUS CONTROL USING BODY COMPOSITION MONITOR

Tsung-Jui Wu,[1,2] Jin-Shuen Chen,[1] Shih-hua Lin,[1] Jeng-Chuan Shiang,[2] Chia-Chao Wu[1].

[1]Department of Nephrology, Tri-Service General Hospital, Taipei, Taiwan.

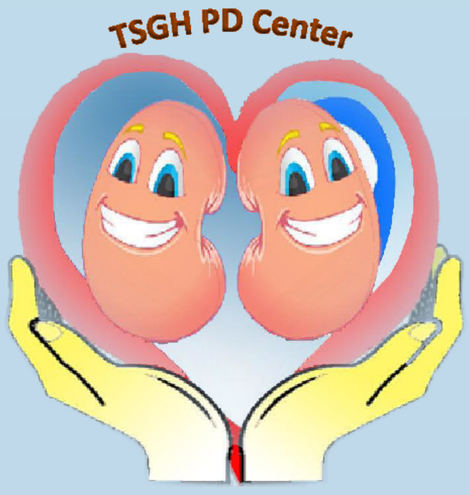
[2]Department of Nephrology, Hualien Armed Forces General Hospital, Hualien, Taiwan.

BACKGROUND AND AIMS

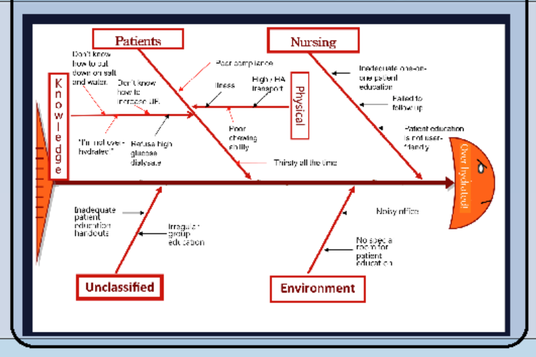
- Peritoneal dialysis, albeit continuous process, is still significantly complicated by volume overload and adverse events.
- Inadequate assessment of dry weight and poor compliance are the most significant stumbling blocks, particularly among those without obvious symptoms or signs.
- A multidisciplinary approach program for fluid status control for quality improvement in PD patients was performed.

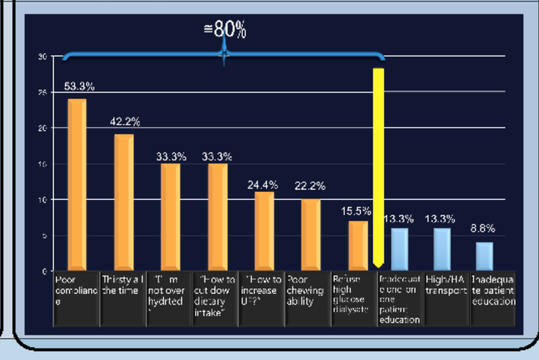
METHODS

- The Body Composition Monitor (BCM, Fresenius Medical Care, Bad Homburg, Germany) is a multi frequency bedside bioimpedance spectroscopy device for clinical use. The accuracy of estimate of OH (in liters) depends on the physiological hydration properties of body tissues which are considered to be independent of the population measured. The OH value were recently proven to be an independent predictor of death in chronic hemodialysis patients.
- In our PD center, all 114 patients were divided into intervention group or control group according to BCM OH value.



OH≥2





OH<2

- Patient education
- Recheck BCM at the end of QCC

- Bilingual patient educational DVD
- Self-assessment of legs edema and self-recording.

- Intensive telephone / home visiting, social network, and teaching aids.

RESULTS

All 114 patients (52 men) were enrolled into this study. 47.4% are aged between 40 and 59 years. 48% has hypertension cardiovascular disease, and 10.5% are diabetic (Table 1). Overall, 39.5% showed evidence of volume overload. There were greater percentage of patients with male sex, high body weight, leg edema, diabetes, and cardiomegaly in the volume overload(OH≥2) group (Table 2). Blood biochemistry revealed no significant improvement in hypoalbuminemia, or anemia

Characteristics	N	%
Male sex	52	45.6
Age < 40 40-59 >=60	 16 54 44	 14.0 47.4 38.6
Body weight, median (IQR)	57.5 (51.0- 68.03)	
HCVD	48	42.1
DM	12	10.5
C/T >50	38	33.3
Edema	26	22.8
SBP >140	44	38.6
ALB, median (IQR)	4 (3.7-4.2)	
ALB <3.5	8	7.0
Hb, median (IQR)	10.0 (8.8- 11.2)	
Hb <9	36	31.6
Na, median (IQR)	135.5 (133.0- 138.0)	
NA < 135	45	39.5
Intervention	45	39.5

Table 1 Patient characteristics

Characteristic	OH >2 (N=45)	OH <2 (N=69)	p
Male sex	27 (62.8)	25 (35.2)	0.004
Age < 40 40-59 >=60	 7 (16.3) 17 (39.5) 19 (44.2)	 9 (12.7) 37 (52.1) 25 (35.2)	0.427
Body weight, median (IQR)	64.8 (57.0- 71.0)	55.0 (49.5- 65.6)	0.003
HCVD	19 (44.2)	29 (40.8)	0.438
DM	8 (18.6)	4 (5.6)	0.032
C/T >50	19 (44.2)	19 (26.8)	0.044
Edema	15 (34.9)	11 (15.5)	0.016
SBP >140	18 (42.9)	26 (36.6)	0.323
ALB, median (IQR)	3.9 (3.6-4.0)	4.0 (3.7-4.3)	0.354
ALB <3.5	3 (7.0)	5 (7.0)	0.650
Hb, median (IQR)	10.1 (8.7- 11.3)	10.0 (8.8- 11.2)	0.596
Hb <9	14 (32.6)	22 (31.0)	0.511
Na, median (IQR)	136.0 (133-138)	135.0 (133-138)	0.895
NA < 135	17 (39.5)	28 (39.4)	0.753
Intervention	43 (100)	2 (2.8)	<0.001

Table 2 Comparisons of PD patients according to the OH values

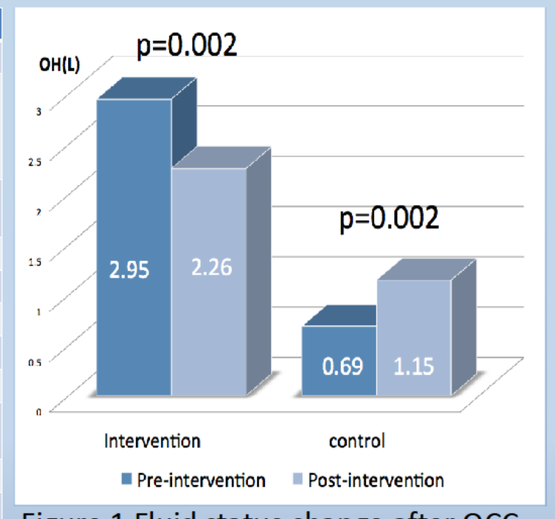


Figure 1 Fluid status change after QCC

After quality control circle the volume overloaded group received a serial interventions. The mean OH value of the intervention group decreased from 2.95L to 2.26L (p=0.002), and that of the control group increased from 0.69L to 1.15L(p=0.002). Both groups were closer to euvolemia at the end of QCC.

Characteristic	Pre-intervention	Post-intervention	p
SPB >140	18 (40.0)	20 (44.4)	0.500
Na < 135	18 (40.0)	9 (20.0)	0.032
Hb <9.0	14 (31.1)	11 (24.4)	0.422
ALB <3.5	3 (6.7)	3 (6.7)	0.662

Table 3 Parameters associated with volume overload Blood pressure and biochemistry revealed no significant improvement including hypoalbuminemia and anemia.

CONCLUSIONS

A multidisciplinary approach program using BCM is effective to improve quality and satisfaction by helping achieving euvolemia in PD patients. This program may be applied to other chronic kidney disease or hemodialysis patient for quality improvement.

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