



In-center Nocturnal Hemodialysis SPH Pilot Study

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Agenda

- Background
 - Why
 - Whom
- SPH pilot project results
- Summary and future plans



Background

Why In-center Nocturnal HD

- Medical indications
 - Requirement for increase dialysis dose
 - Symptoms
 - Phosphate control
 - Supporting literature
- Social Indications
 - Employment opportunities
 - Increase time with family



Supporting literature

- No randomized controlled studies
- Observational studies demonstrate:
 - Improved BP and LVH
 - Improved Anemia and Ca/Po4
 - Improved Nutritional status
 - Reduction in overall medications
 - Decreased hospitalization
 - Improved survival



Supporting literature

- NDT 1998: The results of an 8 hr thrice weekly hemodialysis schedule
 - G. Laurent and B. Charra
- NDT 2009: Prospective evaluation of an in-center conversion from conventional HD to an intensified nocturnal strategy
 - David et al
- CJASN 2009: In-center Nocturnal HD: Another option in the Management of Chronic Kidney Disease
 - Goldstein et al



Supporting Literature

- CJASN 2009: Outcomes associated with in-center nocturnal hemodialysis from a large multicenter program
 - Lacson E et al
- JASN 2012: Survival with Three-Times Weekly In-center Nocturnal Versus Conventional Hemodialysis
 - Lacson E, Lindsay RM, Suri R, Garg A, Hakim R



In-center NHD: In whom?

- Medical indications and barriers to home or in-center independent nocturnal HD
 - Home unsuitable
 - Fear of needling
 - Unable to be trained
 - Technical barriers
 - Medically unsuitable
 - Personal choice
 - Do not want to take dialysis home



INHD: SPH experience

- Program initiated Jan 2012
 - Dr. Kiaii, Dr. Copland, Dr. Jung, Dr. Farah
 - 16 patients selected from in-center and community units
 - 8 patients/shift (M, W, F or Tu, Th, Sun)
 - 4:1 patient to nurse ratio
 - Patients selected based on:
 - Priority 1: Medical Indications
 - Priority 2: Patient preference



Logistics and Barriers

- Overnight shift: Ward nurses vs. HD nurses
- Nurse to patient ratio
 - Started with 4:1; aimed for 6:1; reached 5:1
- Shift start time / Take off time
 - 21:30 - 22:00 / 5:30 – 6:00
 - Feasibility of 4 shifts per day?



Logistics and Barriers

- RN issues:
 - Holding needle sites : patients became involved
 - Break time/ safety issues
 - Only two nurses on at a time
- Cost
 - NHD: 1 nurse for 4 pts over 8 hours
 - CHD: 1 nurse for 8 pts over 8 hours
 - Determined 5:1 ratio to be cost neutral

Patient Demographics

Number of Patients	17
Age [median (range)]	57 (25-77)
Male (%)	11 (58%)
Diabetes (%)	9 (47%)
PVD	5 (30%)
CVD	9 (47%)
Dialysis vintage prior to NC (months)	45.6 (3.2-313.6)



INHD: SPH experience

- Patients exited from original cohort: 5
 - 2 were transplanted
 - 1 left secondary to psychiatric reasons
 - 1 died (cardiac)
 - 1 left after second amputation (could not transfer independently)
- Current status:
 - 30 patients; 5:1 ratio; 8 hour treatments; 6 nights per week

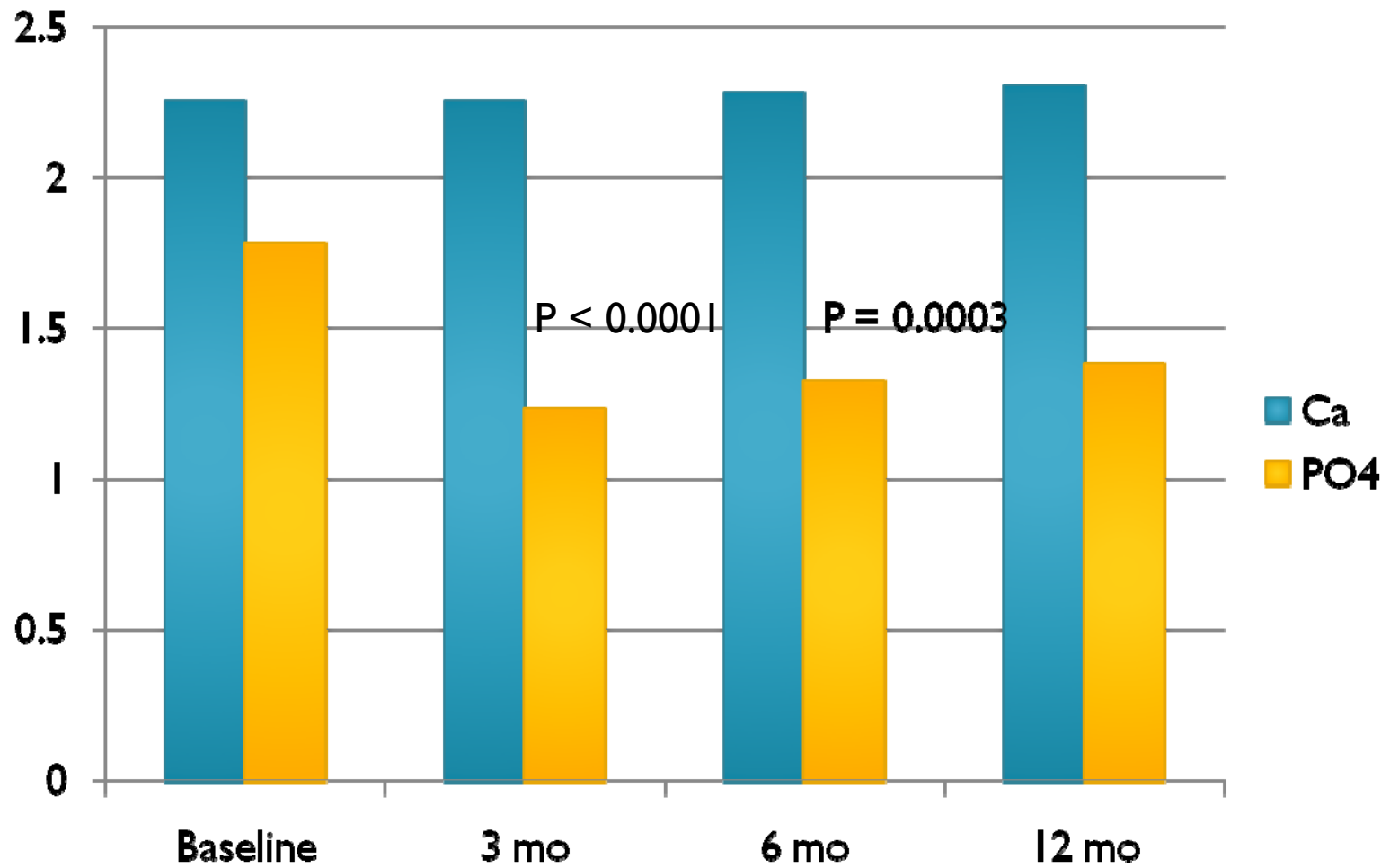


Results

- Collected but not analyzed yet:
 - Ambulatory Blood Pressure
 - Pulse wave velocity
 - Cardiac echo and MRI
 - Quality of life questionnaires

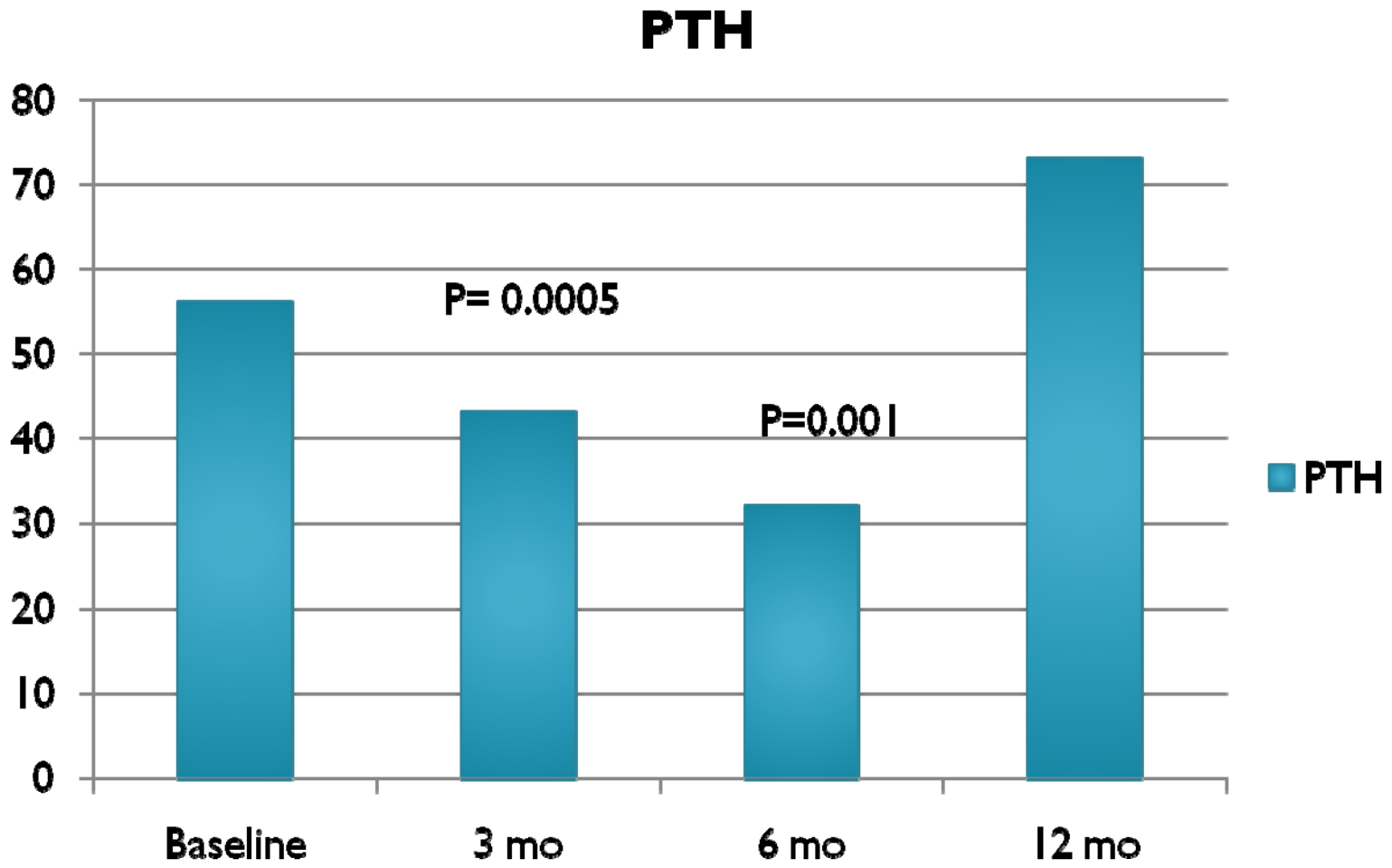
Results:

Mineral Metabolism



Results

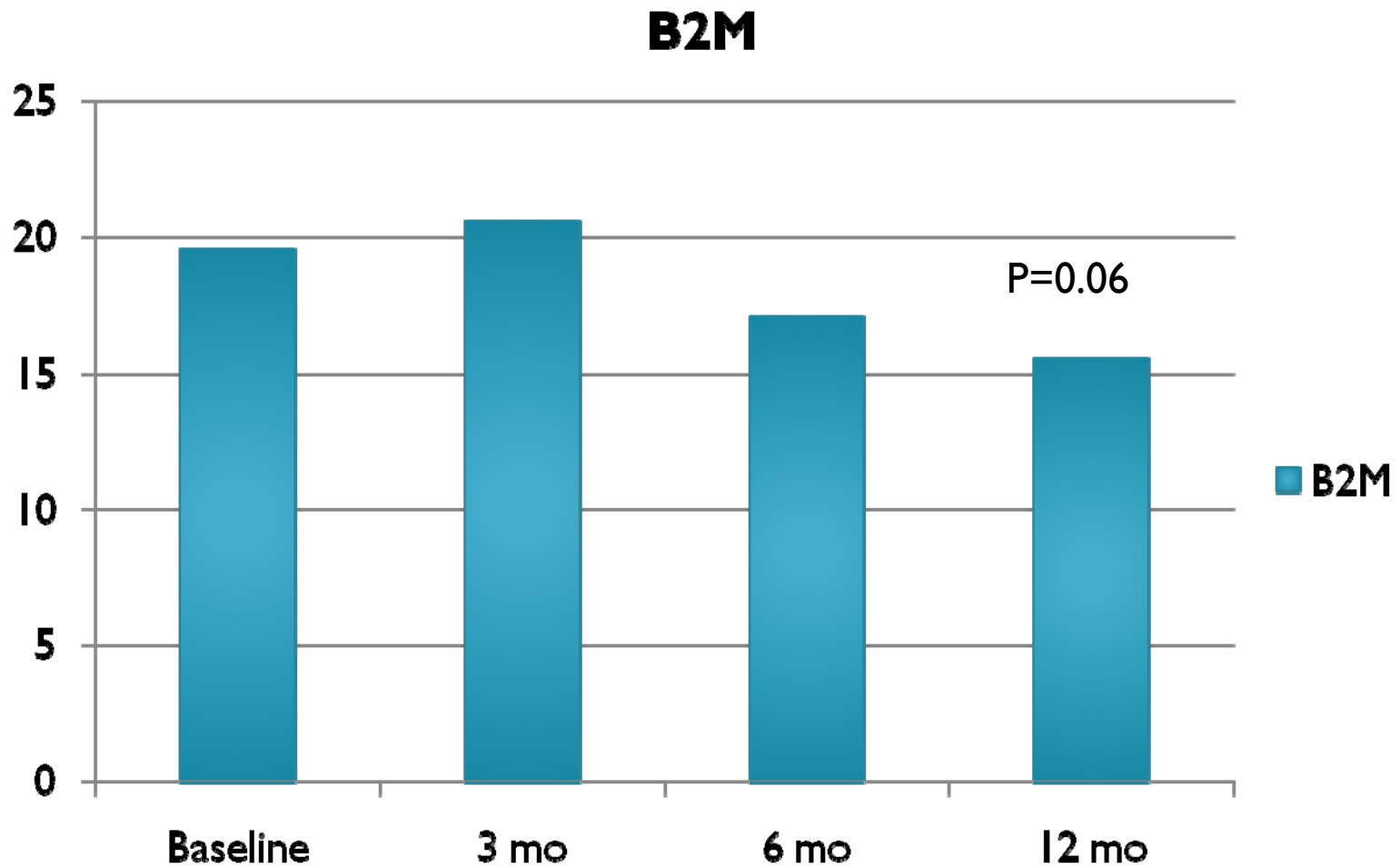
Mineral Metabolism



Results: Anemia

	Hemoglobin	Tsat (%)	Ferritin
Baseline	109	20	476
3 months	112	23	528
6 months	116	22	403
12 months	119	20	577

Results



Results: Medications

Number of patients on indicated medications

	ACEI/AR B	BB	ESA	Iron	Binders	Vitamin D
Baseline	5	6	17	15	17	12
3 months	1	4	13	11	6	2
6 months	1	1	6	7	4	2
12 months	1	1	5	6	1	3

ESAS Results

	Median (3 mo)	P value	Median (6 mo)	P value
Anxiety	0.5	0.7263	0	0.8312
Appetite	2.5	0.5312	1	0.5165
Depression	0	0.6567	0	0.2802
Drowsiness	0	0.0445	1	0.3506
itching	1.5	0.8793	1.5	0.2753
Nausea	1	0.2367	0	0.0148
Pain	2	0.3133	0.5	0.8619
Sleep	1	0.8086	1	0.4653
Tiredness	2.5	0.1288	2.5	0.3506



Vascular Access Complications

- No major adverse events
- No increase investigations/interventions
- 2 pts used button hole:
 - 1 self needling on entering program
 - 1 RNs needling button hole
- 1 patient was taught to self needle using rope ladder technique



Hospitalizations

- 4 hospitalizations over 12 mo period:
 - 1 admission for myalgia NYD (short stay)
 - 2 admissions for infected foot wound
 - One required antibiotics and outpt follow-up
 - One required long admission and amputation and withdrawal from nocturnal program
 - One admission with dizziness and hypotension
 - 1 day admission



Summary/Plans

- Positive results from pilot project
 - Significant reduction in medication use
 - Improvement in lab parameters
 - Improvement in patient overall well being
- Increase/encourage patient independence
 - Involve home dialysis educators
 - Facilitate transition to home based therapy
- Provide possibility of respite for home NHD patients



Thank You



In-center Nocturnal prescription

- 8 hours
- High flux/High efficiency dialyzer
- Q_b : 250 ml/min
- Q_d : 300 ml/min
- Needle size: 17 gauge needles
- Na : Individualized
- K : 2 or 3
- Calcium: 1.5
- HCO_3 : 28-30
- Heparin: 1500 bolus/ 1000 running