

## Introduction

Over 660,000 persons in the US have end-stage renal disease (ESRD) and ~110,000 new patients are diagnosed each year. ESRD accounts for 1% of the Medicare population, but utilizes 7% of the budget. Despite some improvement over the past decade, mortality in ESRD remains unacceptably high: 20-25% per year over the first 2 years with dismal 5-year survival of ~40%<sup>1</sup>. Compared to 5-year survival rates in the three highest causes of cancer mortality: locally invasive non-small cell lung cancer 31%, locally invasive Stage II-b colon cancer 48%, and locally invasive breast cancer 90%, ESRD is a deadly killer.

Current ESRD practice targets discrete goals such as dialysis access, adequacy, anemia, bone mineral, nutrition & fluid status resulting in detailed attention to different domains. One of the drawbacks is that the current approach does not provide a gestalt of the patient.

Frailty is a construct that has been demonstrated to predict poorer outcomes in the geriatric population and within the CKD and ESRD populations<sup>2,3</sup>. Frailty is a global assessment involving condensation of major domain assessments to provide an overall indicator of risk for decline. Drost et. al. studied two methods of frailty assessment in ESRD: the original Frailty Phenotype (FP) a 5-item assessment including physical evaluation using a timed-walk test and grip strength, and survey indices of weight loss, exhaustion, and physical activity; and the Frailty Index (FI), a modified assessment excluding the cumbersome walk test, but with additional measures of comorbidity, psychosocial assessment, functional assessment by mini-mental status exam (MMSE) and activities of daily living (ADLs). In this quality improvement project we test implementation of frailty scoring by FI and FP to identify ESRD patients at risk for decline and attempt to correlate frailty scoring with other known predictors of mortality such as 6-month predictive question and serum albumin in addition to outcomes such as frequency of hospitalization, falls, fractures, and other major changes in health status such as loss of independence, skilled nursing or assisted living placement and change to palliative care status.

## Aim Statement

### Outcomes:

- Increase frailty assessment by FI and FP on a single hemodialysis shift from 0% to 100% over 2-month period from November 15 to Jan 15, 2016.
- Correlate Frailty Index & Phenotype to frequency of falls, hospitalization, loss of function, institutionalization, morbidity.
- Redirect rehabilitative, nutrition, palliative interventions and psychosocial services as needed based on frailty assessments.

### Processes:

- Define workflow for frailty assessment
- Record effort added to standard assessments for Frailty Index and Phenotype.
- Demonstrate how frailty assessment can be incorporated into current workflow for team members
- Mobilize Core Team for frailty assessment

## Acknowledgements

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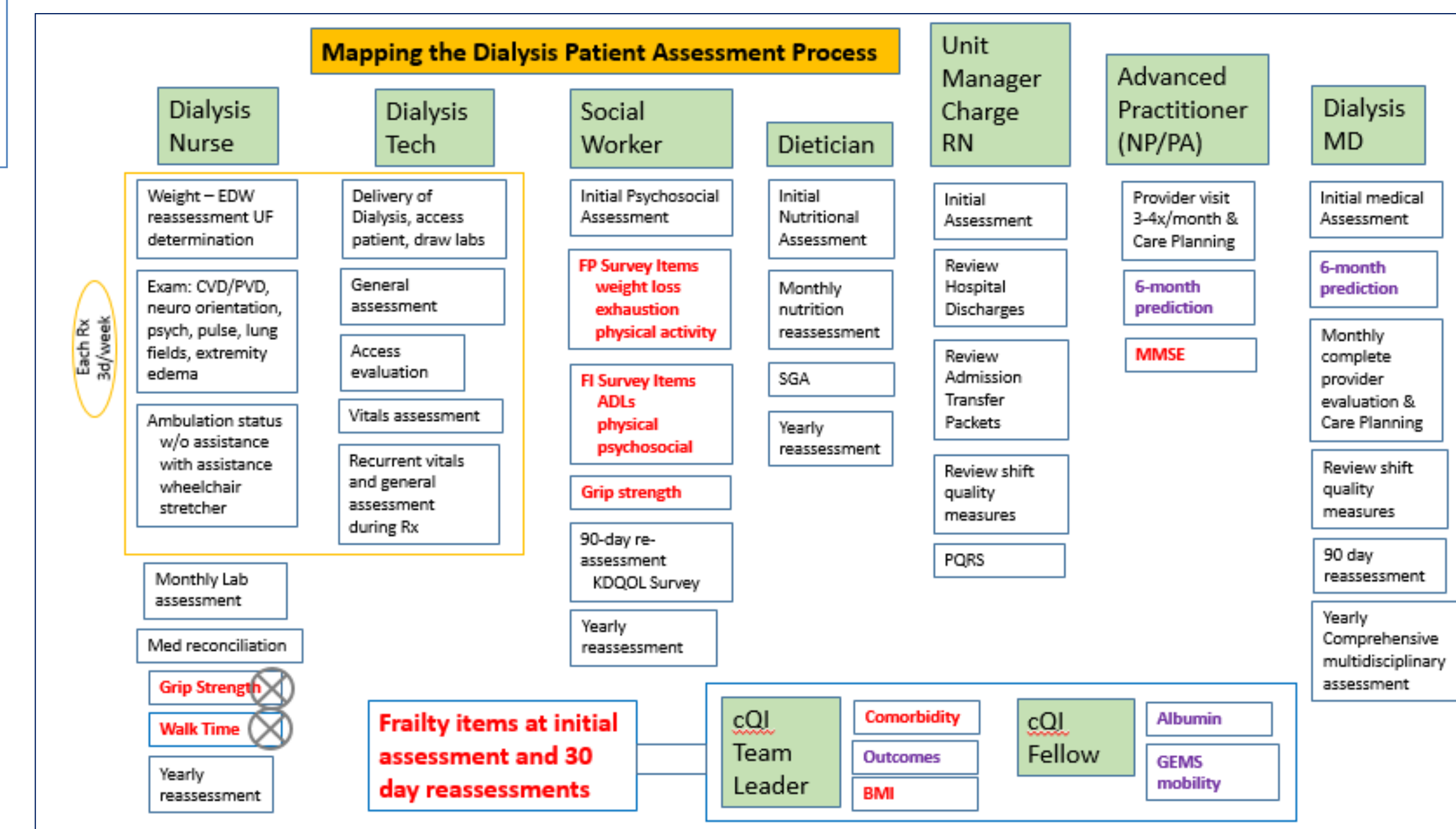
This poster was prepared with financial support from the American Medical Association.

## Methods

Frailty Instrument	Components	Measurement	Classification
Frailty Index	38 items, each scored 0-1		Total score of positive items / Total available items = index score Index score of $\geq 0.25$ = frail.
Frailty Phenotype	ADL/ADL	Help Bathing Help Dressing Help getting in/out of Chair Help Walking around house Help Eating Help Grooming Help Using Toilet Help up/down Stairs Help lifting 10 lbs Help Shopping Help with Housework Help with meal Preparation Help taking Medication Help with Finances	Yes = 1, No = 0
	Physical	Lost more than 10 lbs in last year Stayed in Bed at least half the day due to health (in last month) Cut down on Usual Activity (in last month) Walk outside Self Rating of Health	Yes = 1, No = 0 Good = 0.5 Very Good = 0.25 Excellent = 0 Better/Same = 0
Psychosocial	How Health has changed in last year	Worse = 1 Better/Same = 0	
	Feel Everything is an Effort Feel Depressed Feel Happy* Feel Lonely Have Trouble getting going	Most of time = 1 Some time = 0.5 Rarely = 0	
Comorbidity	High blood pressure Heart attack Congestive Heart Failure Stroke Cancer Diabetes Arthritis Chronic Lung Disease	Yes = 1 Suspect = 0.5 No = 0	
	Function test	MMSE	<10 = 1 11-17 = 0.75 18-20 = 0.5 20-24 = 0.25 ≥24 = 0
Grip Strength (GS in kg)	Men	GS $\leq$ cutoff = 1 BMI $\leq$ 24, GS $\leq$ 29 BMI 24.1-28, GS $\leq$ 29 BMI $\geq$ 28, GS $\leq$ 30	Women GS $\leq$ cutoff = 1 BMI $\leq$ 24, GS $\leq$ 17 BMI 23.1-26, GS $\leq$ 17 BMI 26.1-29, GS $\leq$ 18

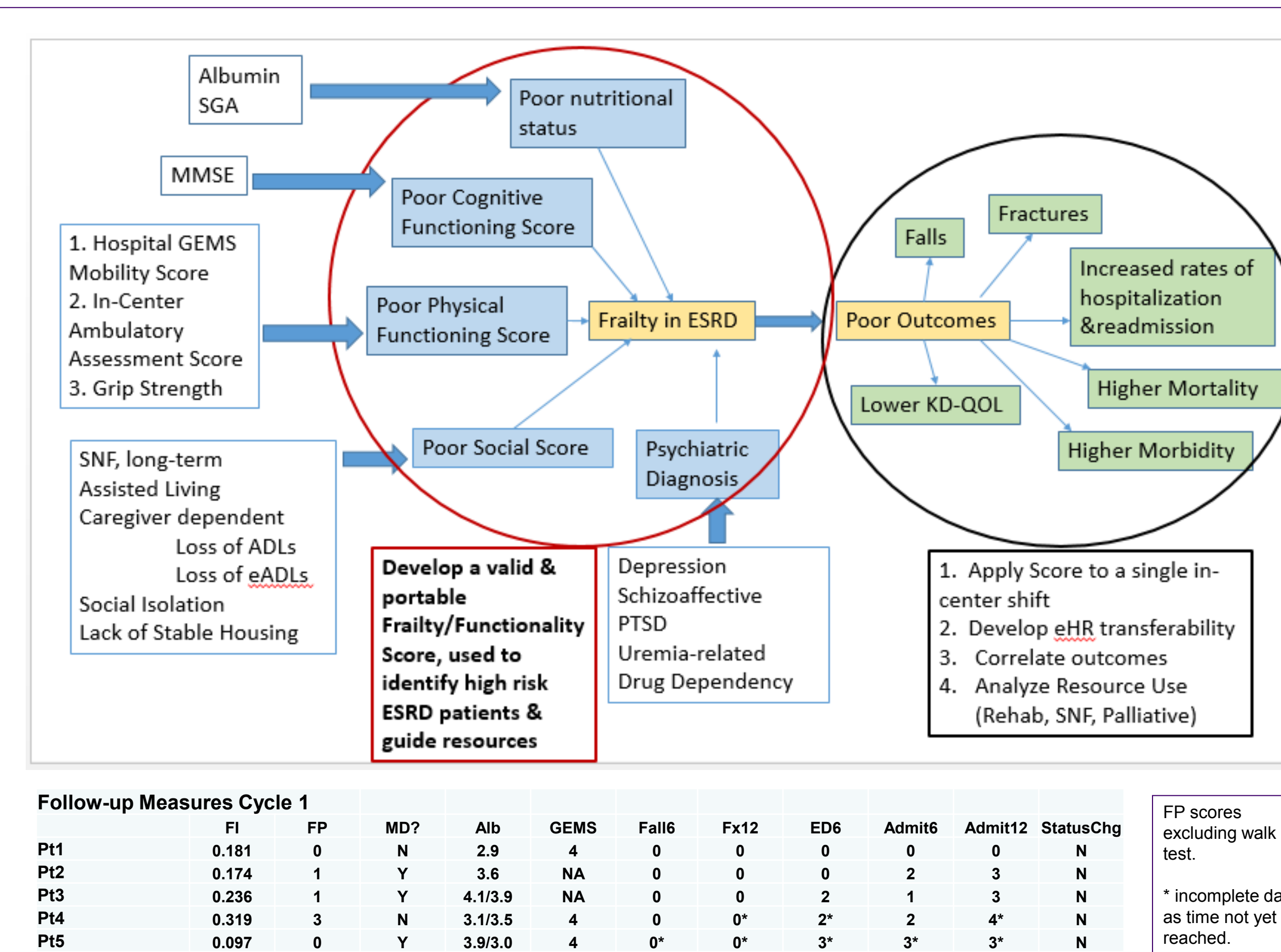
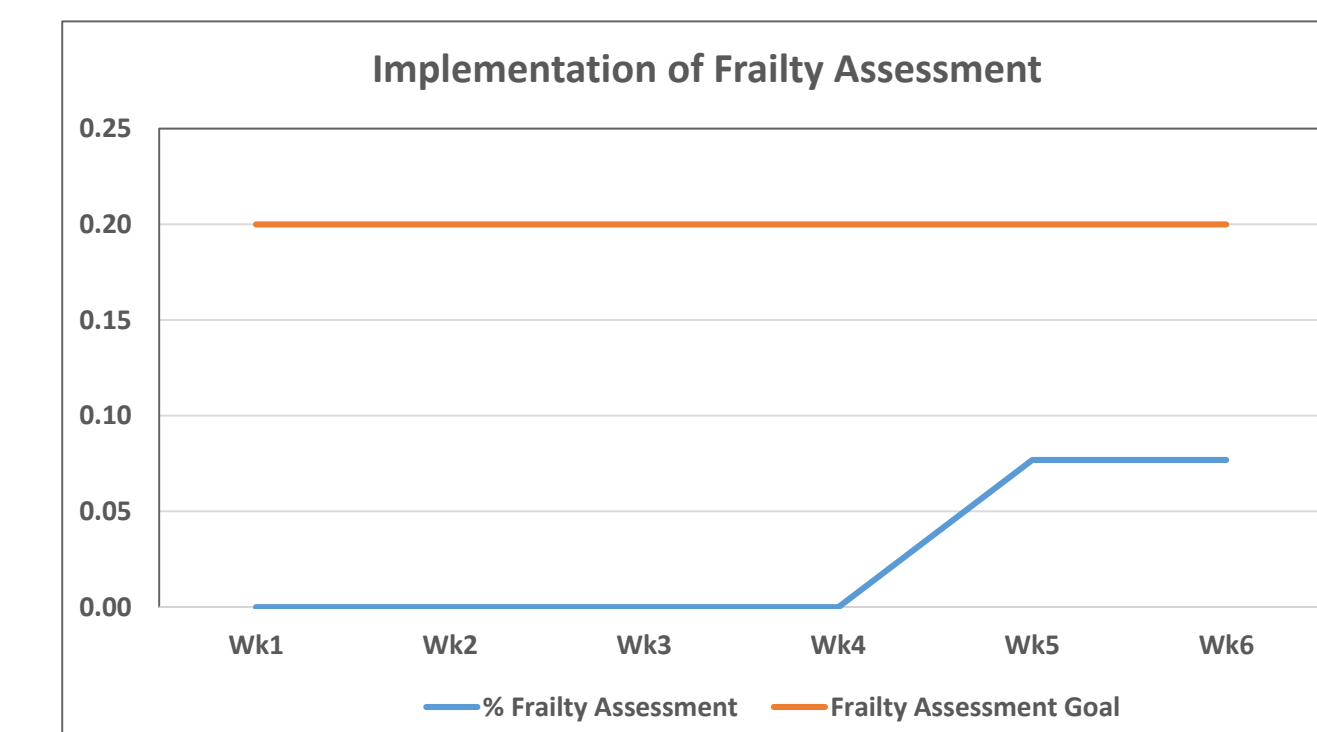
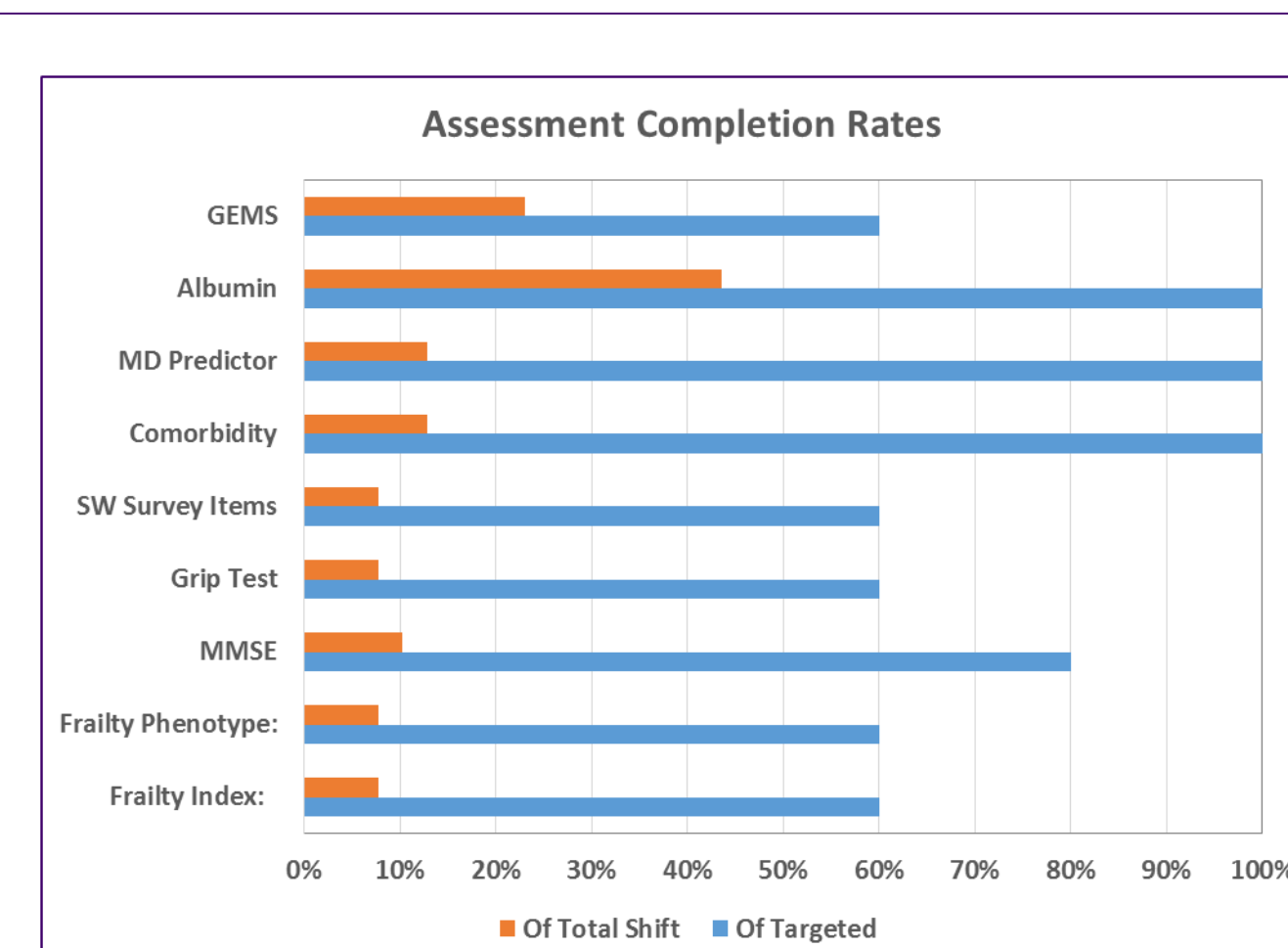
Frailty Instrument	Components	Measurement	Classification
Frailty Phenotype	5 items, each scored 0 or 1		Score range: 0 to 5 0 = non-frail 1-2 = pre-frail ≥3 = frail
Exhaustion	Weight loss	In the last year, have you lost more than 10 pounds unintentionally (i.e., not due to dieting or exercise)? Yes = frail for weight loss criterion No = frail for weight loss criterion	
	Exhaustion	Do I feel that everything I did was an effort? Do I could not get going? The question is asked "How often in the last week did you feel this way?" 0 = rarely or none of the time (1 day) 1 = some or a little of the time (1-2 days) 2 = a moderate amount of the time (3-4 days) 3 = most of the time Subscales answering "2" or "3" to either of these questions are categorized as frail by the exhaustion criterion.	
Walk Time (WS)	Walk Time (WS)	Stratified by gender and height Cutoff for Time to Walk 15 feet criterion for frailty, WS $\leq$ cutoff = 1	
	Grip Strength (GS)	Stratified by gender and body mass index (BMI) Cutoff for grip strength (kg) criterion for frailty, GS $\leq$ cutoff = 1	
Physical Activity**	Physical Activity**	How often do you engage in activities that require a low or moderate level of energy such as gardening, cleaning the car, or going for a walk? 1 = "More than once a week" 2 = "Once a week" 3 = "One to three times a month" 4 = "Hardly ever or never" Participants were score low physical activity when they answer "one to three times a month" or "hardly ever"	

\* This item was scored inversely: Most of time = 0, Some time = 0.5, Rarely = 1



Team members were assigned different portions of the Frailty Instruments to complete in addition to their usual assessments (refer to diagram). From these the Frailty Index and Frailty Phenotypes were calculated. Calculations were adjusted for lack of walk test. Concurrent patient outcomes and alternate predictors of mortality were reviewed for target patients. Team meetings conducted at monthly intervals with team leader touching base individually with team members on ~ weekly basis.

## Results



Follow-up Measures	FI	FP	MD7	Alb	GEMS	Fall6	Fx12	ED6	Admit6	Admit12	StatusChg	FP scores excluding walk test.
P11	0.181	0	N	2.9	4	0	0	0	0	0	N	
P12	0.174	1	Y	3.6	NA	0	0	0	2	3	N	
P13	0.236	1	Y	4.1/3.9	NA	0	0	2	1	3	N	
P14	0.219	3	N	3.1/3.5	4	0	0*	2*	2	4*	N	* incomplete data as time not yet reached.
P15	0.087	0	Y	3.9/3.0	4	0*	0*	3*	3*	3*	N	

## Discussion

Implementation of frailty assessment and scoring was much more complicated than initially anticipated and initial target of 100% assessment was modified to a more modest assessment target of 5 patients per cycle with each cycle lasting 3-4 weeks. At present <10% have completed frailty scoring

Barriers encountered during implementation of frailty scoring include lack of easy accessibility to recorded assessments by different team members, lack of cohesion as to benefit of frailty assessment, poor understanding of frailty and frailty assessment, overall assessment fatigue of both patients and team members and need for further administrative investment in frailty assessment in order to fully address these issues.

The Frailty Phenotype involves assessment of risk in 5 domains: 1. physical activity decline, 2. impaired nutrition by assessment of weight loss, 3. lack of endurance by exhaustion scoring, 4. decreased strength (grip test), and 5. impaired mobility by walk speed. The Frailty Index was developed to duplicate frailty assessment without use of walk test by substituting various survey items. Studies suggest FI may overestimate incidence of frailty in ESRD.

In mapping the current pattern of standard assessments in our dialysis unit we find that assessments in these domain areas are already being done in one form or another, but do not exactly match current frailty assessment instruments. For example dialysis nurses assess patient mobility with each treatment, the KD-QOL survey items administered by the social worker at admission and 90 day reassessment reflect FI/FP activity/exhaustion items, and the dietician performs subjective global assessments (SGA) of nutrition and protein energy wasting on a regular basis.

## Conclusion

- Implementing any new assessment requires a fairly extensive period of education and training for correct and consistent application.
- Assessments not already build into current dialysis protocols are difficult to implement and show low success rate.
- Adjustment of Frailty assessments for this unique population to utilize information already embedded into current ESRD protocols such as serum albumin, SGA, nurse mobility scoring is likely to be more successful.
- More data is needed to see if more frequent application of global assessments such as frailty scoring can help to identify "at risk" patients earlier and mitigate poor outcomes.
- Changes to current eHR systems to improve access to discrete assessment information, to automatically collate discrete information into intuitive global assessments or scores with ability to visually demonstrate time trends should be a goal of further investigation.

## References

1. USRDS Annual Report 2016
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5. Drost D, Kalf A, Vogtlander N, and van Munster, BC, "High prevalence of frailty in end-stage renal disease" Int Urol Nephrol 2016; 48:1357-1362.
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