Peritoneal Dialysis Supplemental Telephone Support Program to Reduce 90 Day Drop Out

Lucy Todd[1], Mary Gellens[1], Ann Mooney[2], Alyssa Wilmington[1] and Ann Mancini[1]

1. Renal Division, Baxter Healthcare Corporation, Deerfield, IL
2. American Renal Associates, Beverly, MA

Background:

Improving PD technique success is critical to meet Advancing American Kidney Health Initiative's (AAKHI) aggressive growth goal by 2025. Per results in the Peritoneal Dialysis Outcomes and Practice Patterns Study (PDOPPS) 2017, the United States First 90-day (F90) dropout rate was 11.4% vs. 8.4% for all PDOPPS countries. Focused intervention may lessen F90 dropout. The objective of this study is to evaluate the impact of a Peritoneal Dialysis Supplemental Support (PDSS) service to reduce F90 loss in Automated Peritoneal Dialysis (APD) patients utilizing remote monitoring. The PDSS service consists of telephone calls to patients and clinic nurses. PDSS provides pre-emptive technical support to patients and actionable clinical insights to clinicians.

Methods:

A dialysis provider enrolled non-randomized, incident PD patients, who were being treated with a 2-way APD cycler enabled with a remote management system, into a PDSS program. The PDSS nurse reviews remote monitoring data and looks for trends in alerts and alarms that may lead to F90 dropout. For technical alerts and alarms, a member of the PDSS team proactively calls the patient to discuss technique and training reinforcement. For clinical alerts and alarms, the PDSS nurse contacts the clinic PD nurse (PDRN), who remains the only party in control of clinical care.

Results:

The dialysis provider enrolled 202 incident patients from 23 clinics into the PDSS program. The dialysis provider's historical F90 loss within these clinics was 15.9%, N=69 for 2018-2020. PDSS began in November 2019 and continued through December 2020. Data revealed a decrease in F90 loss to 8.4%, N=17, for patients enrolled in PDSS, a 46.9% reduction in F90 loss (p=0.0032).

Conclusion:

A supplemental PD telephone support service enhances the benefits of two-way remote patient monitoring. The patient benefits from timely support. The nurse benefits from additional analysis of clinical trends in the data. This enables the nurse to implement appropriate clinical interventions as needed. The result is a statistically significant reduction in F90 loss rate.

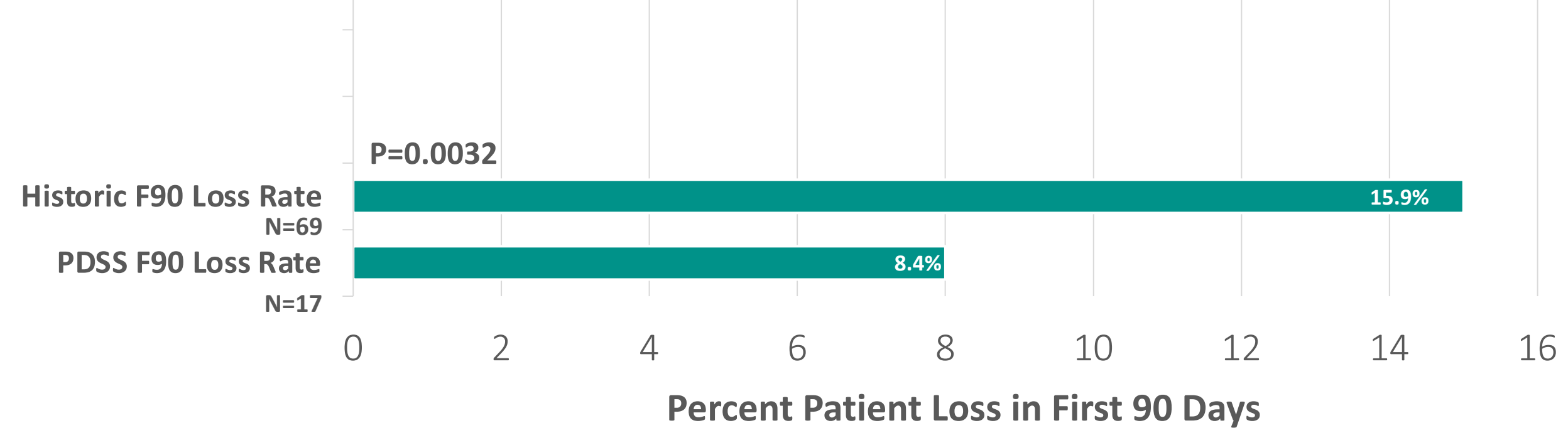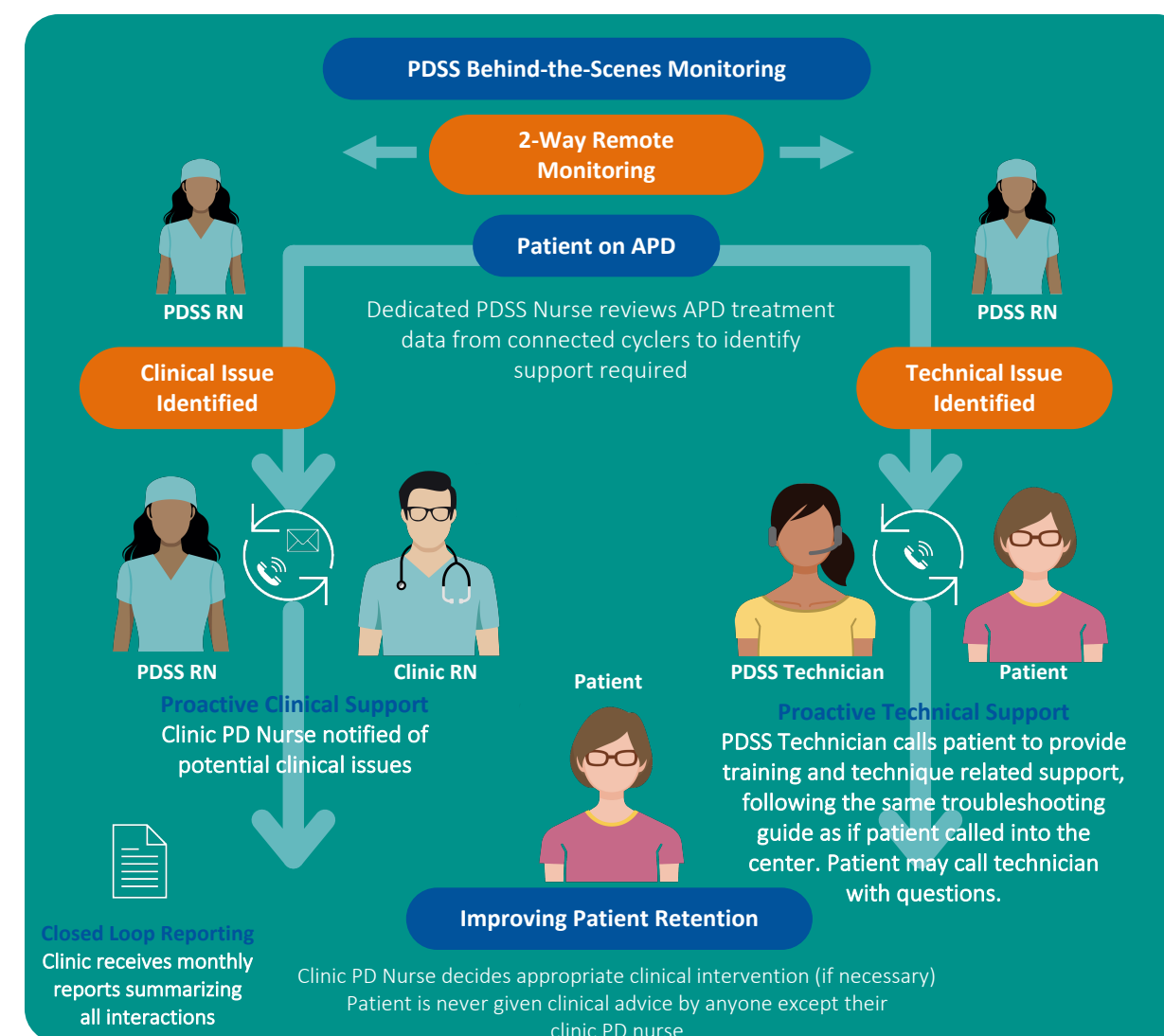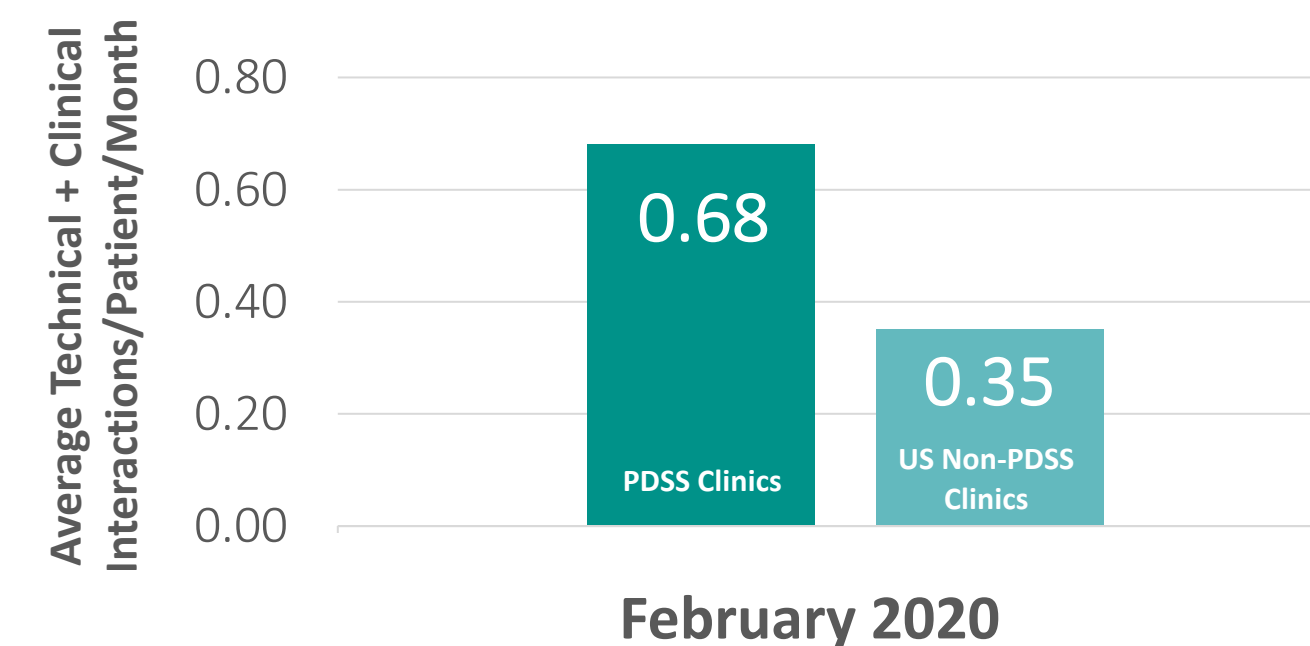## Figure 1

Impact of PDSS on F90 Loss Rate

P=0.0032

Historic F90 Loss Rate N=69 — 15.9%
PDSS F90 Loss Rate N=17 — 8.4%

Percent Patient Loss in First 90 Days

Figure 2

PDSS Behind-the-Scenes Monitoring

2-Way Remote Monitoring

Patient on APD

PDSS RN — Clinical Issue Identified — PDSS RN — Technical Issue Identified

Dedicated PDSS Nurse reviews APD treatment data from connected cyclers to identify support required

PDSS RN — Clinic RN
Proactive Clinical Support
Clinic PD Nurse notified of potential clinical issues

Patient — PDSS Technician — Patient
Proactive Technical Support
PDSS Technician calls patient to provide training and technique related support, following the same troubleshooting guide as if patient called into the center. Patient may call technician with questions.

Improving Patient Retention

Closed Loop Reporting
Clinic receives monthly reports summarizing all interactions

Clinic PD Nurse decides appropriate clinical intervention (if necessary)
Patient is never given clinical advice by anyone except their clinic PD nurse

Figure 3

Monthly Interactions per Active Patient on 2-way Remote Monitored APD Cyclers

PDSS Clinics — 0.68
US Non-PDSS Clinics — 0.35

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Introduction:

The Executive Order of July 2019, Advancing American Kidney Health Initiative (AAKHI) set a very aggressive goal for home therapy growth by 2025. The goal is 80% of incident patients will be dialyzing on a home therapy or receiving a transplant. To reach this goal, many infrastructure issues must be addressed, such as increase in nursing workforce and improved MD education to prescribe home therapies. On the patient side, both recruitment and retention are essential for growth. One critical component of retention is reduction in technique failure (TF). Cho et al (2018) define TF as "a permanent transfer to hemodialysis or death on PD without a specified allowance time to return to PD". Cho et al state that the first 90 days of therapy (F90) was found to be the period of greatest risk for patient drop out due to TF.

Regarding F90, from PDOPPS data, Perl et al (2018) state "early attrition from PD may be an important source of modifiable PD treatment failure." They show that data from 6 countries including over 1000 patients, revealed that the USA had the worst F90 dropout probability rate at 11.4%.

Chaudry (2011) identifies critical issues both contributing to and preventing TF, as modality, system and patient related factors and strategies. Some modality related causes of TF are peritonitis, inadequate dialysis, UF failure and catheter malfunction. Modality related strategies to prevent TF include peritonitis prophylaxis and treatment, membrane preservation techniques, PD prescription optimization based on RKF, and addressing catheter malfunctions. System related issues of TF include center effect and provider expertise. Center effect references small vs large programs, as it is well documented in smaller programs, usually <20-25 patients, both drop-out and TF are higher and survival lower. Provider issues refers to clinical staff in small programs who may not have the same experience level as larger programs, thus impacting ability to successfully manage TF issues. Not all Nephrology Fellows receive comparable training time and experience in PD, again impacting ability to successfully manage patients. System related strategies cite optimal infrastructure to support PD, including patient education and training, MD and RN therapy education and high census numbers. Patient related issues in TF include fatigue/ burnout and family/social support difficulties. Patient related strategies are more challenging, as social support and psychological issues can be difficult to mitigate. Assisted PD is mentioned as well.

Objective:

The objective is to evaluate the impact of a Peritoneal Dialysis Supplemental Support (PDSS) service to reduce F90 loss in APD patients utilizing two-way remote monitoring (2WRM).

Method:

A large dialysis organization, the provider, enrolled all incident APD patients with 2WRM in selected clinics in PDSS (see Figure 2), from November 2019 – June 2020 for their first 90 days of PD. The PDSS tech receives patient calls for alarm/alert issues. In addition, the PDSS tech monitors 2WRM data to proactively place calls to patients to assist with technique and training-based issues that have high phone resolution probability. The PDSS nurse reviews the 2WRM daily therapy data to identify clinical trends, alerts and alarms. PDSS nurse shares all issues with the clinic nurse who can use the information for early clinical intervention, technique reinforcement or alarm management education. The clinic nurse can call the PDSS nurse for clinical questions arising from 2WRM alarm data. It is a closed-loop system. The PDSS nurse is an additional set of eyes on patient data providing extra support to the clinic nurse, who retains full control over patient care.

Results:

Provider historical F90 loss, 2018-20 was 15.9% for 339 of 2218 patients. The PDSS service (Fig 1) resulted in a statistically significant F90 reduction to 8.4% for 17 of 202 patients (p=0.0032). Average number of interactions per patient per month, tech and clinical support, was 0.68 in PDSS clinics and 0.35 in all US clinics (Figure 3).

Conclusion:

The PDSS service enables earlier identification of catheter malfunction, improved PD program infrastructure, supplemental support for patient training, and enhanced support for MD and RN therapy education resulting in decreased TF and F90 loss. Patients receive direct support in their most vulnerable period on PD, which may positively impact F90. Clinic nurses are potentially mentored by the PDSS nurses and supported with additional eyes on patient data facilitating early interventions that may decrease F90. This additional support for both patients and clinics during the period of highest vulnerability for TF appears to decrease F90.

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