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Background

Anaemia management is recognized as an important factor in improving outcomes of dialysis patients. Our anaemia nurse manager program in haemodialysis (HD) improved our care and outcomes. Our peritoneal dialysis (PD) was lagging behind. Unique challenges in PD includes being a home based dialysis treatment, patients compliance (financial, transportation, level of education, social support). We implemented a special nurse led-nephrologists supervised anaemia management model in PD to achieve better haemoglobin (Hb) targets (minimum 70% in target range (10-12g/dL) per KDOQI/KDIGO guidelines) and avoid extreme Hg levels (below 9 g/dl to avoid anaemia symptoms and prevent blood transfusion and above 13 g/dl to avoid clotting events, high blood pressure and other long term complications).

Aim / Objective

- Primary Aim –
 - 70% on PD patients in target Hemoglobin range of 10-12 g/ dL (per KDOQI/KDIGO guidelines) by December 2018.
- Secondary Aim -
 - create an administrative anemia management system that improve work flow and leads to cost reduction (by decreasing unnecessary dosing of erythropoiesis stimulating agents (ESA).
 - short acting ESA, change to long acting ESA in order to improve the patient compliance on ESA shots

Method

- PD anemia manager is a PD nurse who was trained for 4 months by our lead anemia manger and nephrologist.
- We targeted all PD patients. They were followed for 12 months (August 2017 to July 2018).
- We followed Hg, iron sat and ferritin per our protocol.
- Our PD anemia manager role includes lab review, medications adjustments, patients education and act as a focal point between patients and their families and staff and physicians.
- Our PD anemia manager reviewed results after blood draw and prescriptions for erythropoietin stimulating agents (ESA) and iron were written simultaneously with physician (physician prescription is mandatory per health authority in Qatar).
- Patients who did not have any Hg values during this period were excluded from data analysis.
- To cover all the PD patients follow up on monthly basis, we develop additional clinical spots for the patient appointment

Current Practice Reviewed

- 1 Previous Anemia management outcome studied.
- 2 Challenges Identified
 - Patient level
 - Staff level
 - Management level

New Management Practice Developed

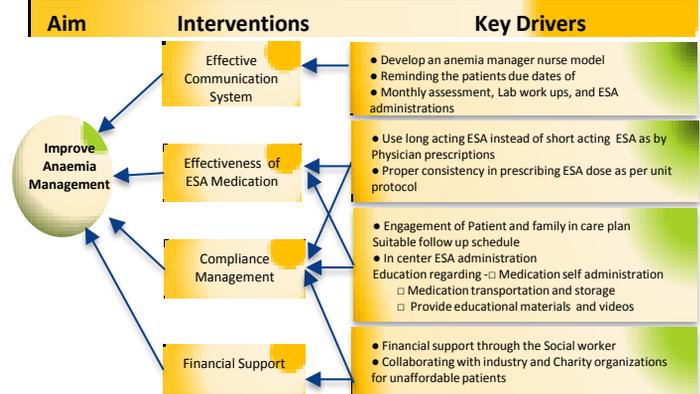
- 1 Anemia management protocol updated PD Central Anemia
- 2 Management project initiated
- 3 Training and performance evaluation for Nurse manager
- 4 Data collection tracking system created.

New practice Implemented & Evaluated

- 1 Tracking outcome data
- 2 Performance monitored and evaluated by “clinical practices measures”
- 3 Short term and long term plan and recommendations developed

- We formed a multidisciplinary team (nephrologist, nurses, educators, social workers, quality reviewers) to coordinate efforts to evaluate performance and challenges on monthly basis.
- We performed root cause analysis routinely to address challenges to achieve goals. Based on our root cause analysis we built a unique anemia management action plan algorithm for PD.

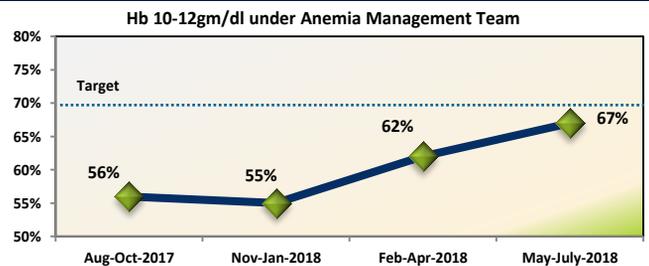
Improvement strategy algorithm



Result

- We started with PD patients in August 2017 till July 2018. PD census mean was 185 during this period. Anemia manager model achieved a statistically significant improvement in PD patients with Hg within target range 52% in August 2017 versus 68% in July 2018 with pValue of 0.009 (Chi-square test).
- Number of patients in target range in the new model (May-July 2018) improved compared to the 3 months period prior to implementing the program (June-August 2017)) 67% versus 56% (p Value 0.0016).
- Number of patients with extreme Hg has improved from 13% in July- 2017 to 8% in July 2018 (censored for ESA naïve patients) (pValue >0.05 NS).
- Root cause analysis (RCA) showed that the main cause of failure was compliance with visits and ESA shots.
- Shifting to long acting ESA: In July 2017, 10% of patients were on Epoetin and 90% of patients on Darbeoetin with average cost of \$69 per patient /week. On July 2018, 36% of patients were on Darbeoetin and 64% on Mircera with same average cost of \$69 per patient per week .

Outcome



- The percentage of Peritoneal dialysis with Hemoglobin target level 10-12 gm/dl increased from 56% to 67% by end of July-2018
- Month of August, Hemoglobin target 10-12 gm/dl reached to 68%, showing a continuous improvement

Conclusion

- Anemia management in PD was shifted mainly to the anemia nurse manager
- We improved anemia outcomes close to our target.
- Number of patients with extreme Hg consistently decreased
- Multidisciplinary approach and performing root cause analysis was very helpful to achieve our goals
- The model was cost effective despite shifting to long acting ESA

Lesson Learned

- Nurse led care model improved the quality of care and outcomes

References

- Kidney Disease Outcomes Quality Initiative(KDOQI) guidelines
- Kidney Disease Improving Global Outcomes KDIGO guidelines
- HMC Anemia Management in Adult Dialysis Population CP 102