

Supplemental Material

Kidney Week abstracts referenced. (*Full abstracts follow in order referenced and begin on Page 3.*)

Report of Nephrology QI curriculum

Maursetter LJ. Structured quality improvement curriculum leads to increased productivity of fellows. *J Am Soc Nephrol.* 2014. 25; (SA-PO650): 785A.

Fellow QI Projects submitted as Abstracts to the ASN 2011-2015

Search Terms: Fellow, Education, Quality

2015 (4)

Chaudhari S, Carns B, Moore C, Upputalla R, Thakur P, Ansari N, Acharya A. Quality improvement project in dialysis: Improving access to dialysis for patients presenting to the emergency room (ER). *J Am Soc Nephrol.* 2015; 26: SA-PO183; 667A.
Timely notification of renal team of presence of hemodialysis patients in the ER.

Belaynch N, Regmi A, Patel J, Jammalamadaka K, Ugwu E, Iwuagwu N, White JJ, Nahman S, Huber LY. Vascular access and transplant referral rates in CKD: An ongoing performance improvement project for nephrology fellows. *J Am Soc Nephrol.* 2015; 26: SA-PO148; 659A.
Improvement in transplant but not vascular access referral rates after peer review and educational intervention.

Naljayan MV, Nimkevych OI, Fedorchenko V, Coulon SJ, Fremin KC, Al Shaial. Reaching renal goals—A quality improvement project. *J Am Soc Nephrol.* 2015; 26: SA-PO151; 659A.
Improvement in meeting KDIGO practice guideline recommendations in outpatients with CKD 3-5.

Jammalamadaka D, Nahman NS, White JJ. “Binder Reminders” for persistent hyperphosphatemia in hemodialysis patients: A fellow’s quality improvement project. *J Am Soc Nephrol.* 2015; 26: PUB514; 1007A.
SMS/text reminders did not improve short term phosphorus control vs. controls who did not receive messages.

2014 (2)

Regmi A, Nahman NS, Afzal U, Iwuagwu N, White JJ. Quality improvement process and fellow education improves referral rates for transplant and dialysis. J Am Soc Nephrol. 2014; 25: SA-PO652; 786A.

Effect of chart audit on transplant and vascular access rates not marked, but may be due to complicating medical problems and patient refusal.

Kalra VK, Sharma Y, Thakar CV. Evaluation of anemia management in nephrology fellow chronic kidney disease clinic. J Am Soc Nephrol. 2014; 25: PUB190; 937A.

No difference in adherence between two outpatient clinics in assessment of iron deficiency. No intervention.

2013 (2)

Devulappally P, Thaduri SR, Rotaru D. Peritoneal dialysis peritonitis associated with beta cap adapters: Quality improvement project. J Am Soc Nephrol. 2013; 24: FR-PO1105; 617A.

Beta cap adapters were associated with puncture holes at the junction of the PD catheter and the proximal end of the beta cap. Titanium adapters were not associated, and were adopted.

Little DJ, Parker A, Poirier MD, Zwettler AJ, Yoo DJ, Reinmuth B, Abbott KC, Yuan CM, Prince LK. Improving self-reported provider preparation to evaluate and treat antibody-mediated renal transplant rejection. J Am Soc Nephrol. 2013; 24: TH-PO876; 299A.

2012 (1)

Sosa MA, Russo J, Wanjau FM, Stoff JS. Severe hyponatremia is frequently corrected too quickly: a quality improvement project. J Am Soc Nephrol. 2012; 23: FR-PO616; 511A.

Educational intervention significantly reduced incidence of correction of severe hyponatremia >10meq/L over 24 hours.

2011 (0)

None.

Maursetter LJ. Structured quality improvement curriculum leads to increased productivity of fellows. J Am Soc Nephrol. 2014. 25; (SA-PO650): 785A.

SA-PO650

Structured Quality Improvement Curriculum Leads to Increased Productivity of Fellows Laura J. Maursetter. *Div of Nephrology, Dept of Medicine, Univ of Wisconsin School of Medicine and Public Health, Madison, WI.*

Background: Quality improvement (QI) looks at a problem through a lens that is different from that of basic science or clinical research. Its mission is not scientific discovery but, rather, improvements in the efficiency, safety or effectiveness of healthcare delivery. As organizations and individuals are more commonly being measured on quality, it is critical for graduating fellows to have a working understanding of the QI process and the contribution it can have on practice. The aim of this project was to create and deliver a QI curriculum to multiple fellowship programs over the course of the year to increase the number and quality of QI projects that these fellows created.

Methods: The curriculum was developed around the FADE model (Focus, Analyze, Develop, Execute, Evaluate). Five meetings were established among 6 fellowship groups. Fellows met for 20 minutes of didactics and 40 minutes of project discussion at each of the five sessions to develop and implement a QI project. The projects were vetted across the groups for improvement suggestions and then presented at a department-wide event.

Results: 35 fellows and 12 faculty mentors participated in at least one of the sessions. Projects were created by groups ranging from 1-6 fellows. There were 16 projects across the 6 participating divisions with at least 1 project in each division. In the Division of Nephrology, the number of projects created increased from 0 to 3 projects per year over the 2 years the curriculum as been in place. Projects ranged from mechanisms to avoid PICC line placement in CKD stage 4-5 to measuring the efficiency of care impact pre-clinic preparation had on the osteoporosis clinic. This year 10 posters were presented at the end of the year with 1 project, thus far, submitted for publication.

Conclusions: A structured QI curriculum increased the number of QI projects generated. Including fellows from various divisions in the process and discussions allows for common problems to be identified and improved with further-reaching impact. Analysis of participant survey data will help to determine how to improve the process to enhance learning and productivity for the future.

Chaudhari S, Carns B, Moore C, Upputalla R, Thakur P, Ansari N, Acharya A. Quality improvement project in dialysis: Improving access to dialysis for patients presenting to the emergency room (ER). J Am Soc Nephrol. 2015; 26: SA-PO183; 667A.

SA-PO183

Quality Improvement Project in Dialysis: Improving Access to Dialysis for Patients Presenting to the Emergency Room (ER) Nikul Kumar Chaudhari,¹ Bonnie Carnes,² Cherryll Moore,² Roshni Upputalla,¹ Parikshit Thakur,¹ Naheed Ansari,¹ Anjali Acharya.¹ ¹*Nephrology, Jacobi Medical Center/Albert Einstein College of Medicine, Bronx, NY;* ²*Nephrology, Atlantic Dialysis, Queens, NY.*

Background: Hemodialysis patients presenting to the emergency room are a vulnerable patient population. Majority of them have significant comorbid conditions. Delays in evaluation and institution of dialysis are common in busy emergency rooms. We undertook a project to improve quality of patient care as well as the patient experience with a goal to provide timely dialysis.

Methods: We analyzed baseline data from electronic medical record (EMR) pertaining to all hemodialysis patients presenting to the ER in a specific 8 week period. After brainstorming within the team we identified a few factors that were seen as obstacles in providing timely dialysis. One of them was the time from patient triage to notification of the renal team. We instituted an educational program with the ER staff with focus on the timeliness of informing the renal team, establishing “triage to renal team notification time” of less than 30 minutes as a meaningful metric. Data was collected at pre and post intervention. The objective was to meet this goal >80% of the time over the 2 month intervention period.

Results: There was a positive impact on the triage to renal notification time. The percentage of timely notifications as defined, rose to >85% from a baseline of <25% and this effect was sustained over the 8 weeks. Most patient notifications happened within 10 minutes of triage.

Conclusions: A simple intervention on educating the ER staff made a significant impact on timely evaluation of dialysis patients presenting to the ER. There was an observable positive impact on patient experience. We view this as a simple first step in optimizing patient care and experience towards a seamless journey through the hospitalization. Simple innovative steps such as this could contribute to cost control by avoiding/minimizing dialysis treatments during off hours. In addition it could help mitigate staff fatigue and treatment errors thus improving patient safety.

Belayneh N, Regmi A, Patel J, Jammalamadaka K, Ugwu E, Iwuagwu N, White JJ, Nahman S, Huber LY. Vascular access and transplant referral rates in CKD: An ongoing performance improvement project for nephrology fellows. *J Am Soc Nephrol*. 2015; 26: SA-PO148; 659A.

SA-PO148

Vascular Access and Transplant Referral Rates in CKD: An Ongoing Performance Improvement Project for Nephrology Fellows Nardos Belayneh, Anuj Regmi, Jusmin Patel, Divakar Jammalamadaka, Elias Ugwu, Noble Iwuagwu, John Jason White, N. Stanley Nahman, Lu Y. Huber. *Medicine, Georgia Regents Univ*.

Background: Referral for vascular access (Ac) and kidney transplantation (Tx) are important management facets of CKD. We previously conducted a performance improvement project assessing Ac and Tx referral rates (RR) in CKD patients from the Nephrology fellows' clinics. Following an educational intervention, there was an improvement in transplant RR (JASN 25:786A, 2014). To evaluate the sustainability of this initiative, we conducted a follow-up analysis.

Methods: This performance improvement project was conducted in 3 phases at the Charlie Norwood VAMC; Phase 1 (baseline, 1/1-4/30, 2013), Phase 2 (post-intervention, 8/1-11/30, 2013) and Phase 3 (follow-up, 1/1- 4/30, 2015). Data extraction was conducted by three, 2-fellow teams, each reviewing the other's RR for all patients seen in the previous 4-month period. The analysis was sorted by eGFR (ml/min/1.73m²): for eGFR<15, both Ac and Tx RR were recorded. In addition, Tx RR for eGFR 15-20 was documented.

Results: 1114 total records were reviewed (349, 361, and 404 for Phases 1, 2 and 3, respectively). Table 1 indicates the number of patients and RR in those with GFR<20. RR for Ac through all 3 phases were steady at 72-73%. Tx RR were improved after intervention and were sustained in Phase 3.

Table 1. Referral in patients with GFR <20 in different study phases. Results presented as number of patients (%)						
	Phase 1		Phase 2		Phase 3	
	GFR 15-20	GFR<15	GFR 15-20	GFR<15	GFR 15-20	GFR<15
N	79	36	30	22	18	29
Transplant referral	9 (11%)	18 (50%)	11 (37%)	15 (67%)	8 (44%)	19 (66%)
Vascular Access referral	-	26 (72%)	-	16 (73%)	-	21 (72%)

Conclusions: Referral rates for kidney transplantation by Nephrology fellows improved after a chart review and educational intervention were performed. Vascular access referrals from this study remained stable. This work suggests that outpatient performance improvement projects conducted by Nephrology fellows confer peer review accountability for outpatient practice habits, heightens trainee awareness of key referral issues, and appears to help sustain or improve referral rates for vascular access and kidney transplantation.

Naljayan MV, Nimkevych OI, Fedorchenko V, Coulon SJ, Fremin KC, Al Shaial. Reaching renal goals—A quality improvement project. J Am Soc Nephrol. 2015; 26: SA-PO151; 659A

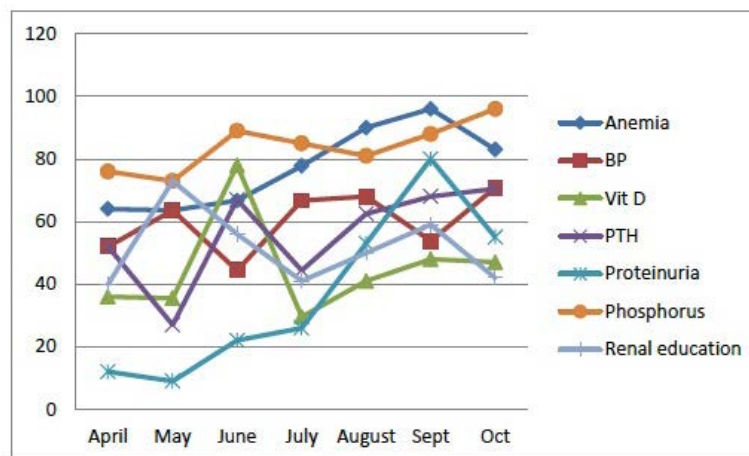
SA-PO151

Reaching Renal Goals – A Quality Improvement Project Mihran V. Naljayan, Oksana I. Nimkevych, Vecheslav Fedorchenco, Sara Jacob Coulon, Kimberly Cox Fremin, Zohayr M. Al Shaial. *Medicine, LSUHSC School of Medicine, New Orleans, LA.*

Background: The purpose of this study was to improve our patient care in a renal clinic at a large university hospital by using three of the core competencies- patient care, systems based practice, and practice based learning and improvement.

Methods: A check-out sheet was developed and given to all trainees in the nephrology clinic. Data was collected for 174 visits over 6 months. Data include age, gender, eGFR, and CKD stage. Each patient's blood pressure, hemoglobin, phosphorus, Vitamin D, PTH, bicarbonate, and the extent of renal replacement therapy planning were acquired and further analyzed to determine whether nephrology goals were met based on KDOQI/KDIGO guidelines.

Results: Achievements in goals for CKD 3-5 as per KDIGO/KDOQI guidelines based on a percentage value of the patients seen each month. Data are from April to October. Hemoglobin of >10 g/dL were met in 64%, 64%, 67%, 78%, 90%, 96% and 83%, respectively. Blood pressure of $<140/90$ mmHg (or $<130/80$) were met in 52%, 64%, 45%, 67%, 68%, 54% and 71%, respectively. Vitamin D of ≥ 30 ng/mL were met in 36%, 36%, 44%, 63%, 68% and 71%, respectively. Proteinuria (<300 mg/day) were met in 12%, 9%, 85%, 81%, 88% and 96%, respectively. Attending renal education classes were met in 40%, 73%, 56%, 41%, 50%, 59% and 42% respectively.



Conclusions: Our project was helpful in educating trainees in the treatment goals and guidelines for patients in the renal clinic and standardized an approach to patient care. Overall, the results show a trend towards improvement in all goal areas except for renal education. This study did not account for patients who were new to our clinic and therefore had never received renal education previously.

Jammalamadaka D, Nahman NS, White JJ. “Binder Reminders” for persistent hyperphosphatemia in hemodialysis patients: A fellow’s quality improvement project. J Am Soc Nephrol. 2015; 26: PUB514; 1007A.

PUB514

“Binder Reminders” for Persistent Hyperphosphatemia in Hemodialysis Patients: A Fellow’s Quality Improvement Project Divakar Jammalamadaka, N. Stanley Nahman, John Jason White. *Medicine, Georgia Regents Univ, Augusta, GA.*

Background: Despite regular quality improvement (QA) processes, control of mineral metabolism remains poor. One root cause is patient non-adherence to phosphate (Pho) binders. Evolving data suggest SMS/text reminders improve medication adherence in a wide range of chronic illnesses. Here, we report our initial experience with text reminders on Pho control in HD patients.

Methods: 40 patients with Pho > 5.5 mg/dL for 2 of last 3 months, and possessing cell-phones with texting capabilities were studied. We randomly assigned 20 to receive the phrase “Binder Reminder” at mealtimes x 7 days prior to their monthly lab draw. The remaining 20 received usual care. Group assignment and messaging was performed by a nephrology fellow, not part of the multidisciplinary team. Patients were excluded if they declined participation, missed any dialysis sessions during the 7 day period, or if they were unable to obtain their binders. Pho level after intervention was the primary outcome.

Results: After exclusions, 13 patients received the intervention and were compared to 14 controls. Pre-intervention Pho levels were 6.81 +/- 0.88 and 6.60 +/- 0.93 mg/dL (Mean +/- SD) in the control and intervention groups respectively. After intervention, Pho levels declined in the intervention group to 6.00 +/- 1.2 mg/dL ($P = 0.10$). Pho also declined in the control group to 6.19 +/- 0.76 mg/dL. Hence there was no difference between the groups ($P = 0.76$). Each group had 8 patients with improved Pho levels, and 5 patients at goal.

Conclusions: Our initial QA project utilizing SMS/text messaging appears to have no effect on short-term Pho control in a group of HDs patients with chronic hyperphosphatemia. A major drawback is the small number of patients and the number excluded (33%). However, this study does provide useful preliminary data for the planning of a larger pilot project, highlights the importance of contemporary control groups in QA to exclude the Hawthorne effect, and, given its simplicity, may be a model for fellow-driven QA projects and education.

Funding: Clinical Revenue Support

Regmi A, Nahman NS, Afzal U, Iwuagwu N, White JJ. Quality improvement process and fellow education improves referral rates for transplant and dialysis. J Am Soc Nephrol. 2014; 25: SA-PO652; 786A.

SA-PO652

Quality Improvement Process and Fellow Education Improves Referral Rates for Transplant and Dialysis Access Anuj Regmi,^{1,2} N. Stanley Nahman,^{1,2} Usman Afzal,^{1,2} Noble Iwuagwu,^{1,2} John Jason White.^{1,2} ¹Nephrology, Charlie Norwood VAMC, Augusta, GA; ²Nephrology, Georgia Regents Univ, Augusta, GA.

Background: Important functions of any chronic kidney disease (CKD) clinic are timely referrals for renal transplantation and dialysis access. However, the optimal timing of referral is debatable, and the reasons for low referral rates are not well understood.

Methods: As part of an on-going quality assurance initiative (QAI) in our CKD Clinic at the Charlie Norwood VA Medical Center, we evaluated all patients seen by nephrology fellows between January 1, 2013 and April 30, 2013 (4 months) (Phase 1) and assessed referral patterns for renal transplantation and dialysis. We focused on CKD 4 and CKD 5. At the conclusion of Phase I, the results were reviewed in a combined session with fellows and faculty. The need for early referral was emphasized and plans for second audit defined. We subsequently evaluated referral patterns for all patients seen between August 1, 2013 and November 30, 2013 (4 months) (Phase 2). Lastly, we assessed referral rates for eGFR < 20 ml/min/1.73m² and documented reasons for non referral.

Results: The results are summarized in the table. Following the intervention, there was a general increase in referral rates for access, but there was a limited effect on transplant referral. Reasons for non referral in 24 patients included: advanced age/dementia (n = 5); acute malignancy (n = 4); patient refusal (n = 3); unstable psychiatric disorder (n = 1); and unknown (n = 10).

Percent of patients referred for transplant or access (N)		
Referral	Phase 1 (349)	Phase 2 (361)
Transplant		
CKD 4	9% (67)	25% (49)
eGFR < 20	32%(37)	50%(26)
CKD 5	50% (18)	67% (15)
Access		
CKD 4	21%	11%
eGFR < 20	59%	55%
CKD 5	72%	73%

Conclusions: Rates of referral for transplantation and dialysis access placement may be improved by chart audits. Furthermore, the reasons for non-referral may be due to complicating medical problems but patient refusal is also an issue. Addressing issues of non referral may help increase the rate of referral for transplant and vascular access in advanced CKD.

Kalra VK, Sharma Y, Thakar CV. Evaluation of anemia management in nephrology fellow chronic kidney disease clinic. J Am Soc Nephrol. 2014; 25: PUB190; 937A.

PUB190

Evaluation of Anemia Management in Nephrology Fellow Chronic Kidney Disease Clinic Vikas K. Kalra, Yuvraj Sharma, Charuhas V. Thakar. *Nephrology, Univ of Cincinnati, Cincinnati, OH.*

Background: When defined as hemoglobin (Hb) < 13g/dL in males and < 12g/dL in females, the prevalence of anemia is >60 % in patients with Chronic Kidney Disease (CKD) stage IV or V, according to Kidney Early Evaluation Program (2012) data. Untreated iron deficiency is an important cause of hypo-responsiveness to erythropoiesis stimulating agent (ESA) treatment. Supplementation of iron, when indicated, may potentially decrease the need for ESA, which is important given the potential safety concerns associated with ESA use. As a part of clinical quality improvement project, we assessed Fellows' CKD clinics, within two different healthcare systems, for parameters of anemia management in patients with CKD stage IV or V.

Methods: We retrospective selected a cohort of first 120 patients (60 patients per location) with CKD stage IV or V, who were seen by Nephrology Fellows from March

2014 to May 2014. Patients on dialysis were excluded. Data was reviewed to answer two questions: 1.) Was Hb measured within a period 3 months prior or 1 week after the Renal Clinic visit; 2.) In patients with anemia, were iron stores evaluated within a period 6 months prior or 1 week after the clinic visit? Physicians conformity to these questions across clinic sites was assessed by Fisher's exact tests.

Results: The cohort was 73 % men, mean age (+/- standard deviation) was 65.2 (+/- 13.4) years, mean estimated glomerular filtration rate was 19.7 mL/min and 5 patients were on ESA. Hb was checked in 96 out of 120 patients (80%) of which 85 patients (88.5 %) had anemia. Within the target period, iron stores were not evaluated in 36 out of 85 (42.4 %) patients with anemia. Average Hb for patients whose iron stores were evaluated versus not evaluated was 9.8g/dL versus 11.3g/dL. There was statistically insignificant difference among the two clinics in the proportion of patients with Hb checked ($p=0.25$), and iron panel checked when anemic (63.2% versus 50 %, $p=0.27$).

Conclusions: There is room for improvement in physician's conformity to anemia management guidelines regardless of healthcare systems. Peer review of performance during fellowship, and provider education may be the key in achieving desired quality improvement.

Devulappally P, Thaduri SR, Rotaru D. Peritoneal dialysis peritonitis associated with beta cap adapters: Quality improvement project. J Am Soc Nephrol. 2013; 24: FR-PO1105; 617A.

FR-PO1105

Peritoneal Dialysis Peritonitis Associated with Beta Cap Adapters: Quality Improvement Project Pavan Devulapally, Sudhir R. Thaduri, Dumitru Rotaru. *Dept of Nephrology, Univ Arkansas for Medical Sciences, Little Rock.*

Background: Puncture holes and catheter disconnection of the PD catheter is an uncommon occurrence.

Methods: Between Dec 2012 and Apr 2013 we identified 7 patients in our Davita PD clinic with puncture holes at the junction of PD catheter and the proximal end of the Beta cap adapter. 1 patient also had an episode of disconnection of the transfer set from the distal end of the adapter. As a consequence PD peritonitis occurred in 2 patients associated with puncture hole events and in the patient with the disconnection. 2 patients needed hospitalization and 1 attended the ER. One of the catheters was removed due to relapsed PD peritonitis.

Patient	1	2	3	4	5	6	7
Puncture hole	Dec 1	Feb 1	Feb 19	Mar 19	Mar 20	Mar 22	Apr 19
Disconnection			Mar 20				
Peritonitis	MSSE Dec2 MRSE Dec 28		Pepto streptococcus	MSSE			
Catheter removed	Yes						
Hospitalised	Yes		ER visit			Yes	

All events were seen in 35 DaVita PD clinic patients using the beta cap adapters. No events were found in our 27 VA PD clinic patients where the titanium adapters are used.

Results: A similar experience with catheter holes associated with beta cap adapters was reported in 2012. These authors felt that these events were related to a recent change in the design of the proximal end of adapter from a rounded edge to a sharper edge. We also found an FDA class II recall in 2011 and an ECRI alert in 2012 both reporting a reduction in thread engagement which may lead to a risk of separation of transfer set from the distal end of the adapters.

Conclusions: We undertook a QI project with goals to decrease the risk of PD peritonitis, improve quality of patient care in our clinic and increase the awareness of this complication. We reported our findings to the UHC Patient Safety Net, DaVita Dialysis management, company representative and at our QA Faculty Meeting. Based on the experience with the titanium adapter in our VA PD clinic and also from previous literature reports we decided to use the titanium adapters for all new and existing PD catheters in our clinic.

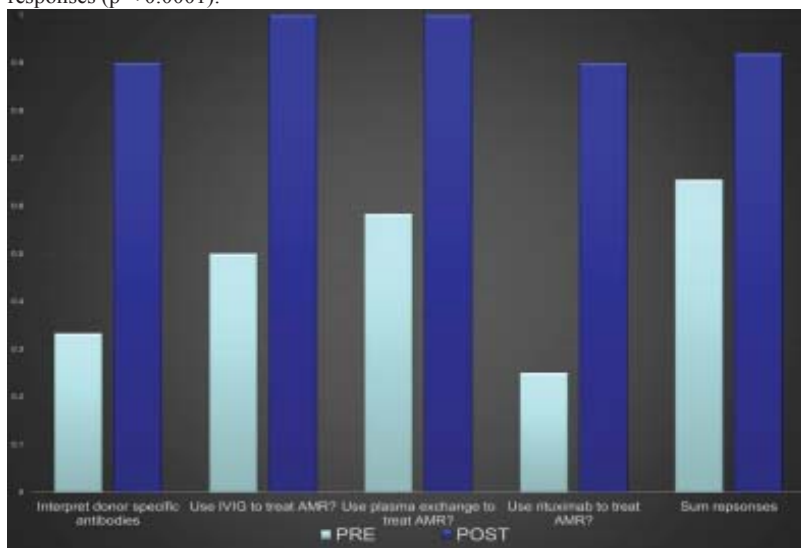
Little DJ, Parker A, Poirier MD, Zwettler AJ, Yoo DJ, Reinmuth B, Abbott KC, Yuan CM, Prince LK. Improving self-reported provider preparation to evaluate and treat antibody-mediated renal transplant rejection. J Am Soc Nephrol. 2013; 24: TH-PO876; 299A.
TH-PO876

Improving Self-Reported Provider Preparation to Evaluate and Treat Antibody-Mediated Renal Transplant Rejection Dustin J. Little,¹ Austin Parker,³ Mark D. Poirier,² Amy J. Zwettler,¹ David J. Yoo,¹ Bruce Reinmuth,¹ Kevin C. Abbott,¹ Christina M. Yuan,¹ Lisa K. Prince.¹ ¹Walter Reed National Military Medical Center; ²San Antonio Military Medical Center; ³Naval Medical Center Portsmouth.

Background: Antibody-mediated kidney transplant rejection (AMR) is a major cause of allograft loss. We designed and implemented a performance improvement project aimed at optimizing the evaluation and treatment of AMR at our institution.

Methods: Medical literature on AMR was reviewed, as were AMR cases treated at our institution from 2006-2011. An electronic survey was administered to the nephrology staff and fellows, which included ten questions assessing provider preparation to evaluate and treat AMR. Lectures were given on the evaluation and treatment of AMR and findings of review of institutional AMR cases. An educational electronic “AMR Toolkit” was created, and an identical post-survey was administered 4 months following the pre-survey. Fisher exact test was used to compare pre and post-survey responses, with a p value of 0.05 used to determine significance.

Results: Twenty-one cases of AMR were identified in 16 patients. No patients died and two experienced graft loss. Pre and post-survey response rates were 12/13 and 10/12, respectively. Significantly more respondents reported feeling quite or extremely prepared on the post-survey for 5 of the 10 items. Ninety-one of 99 total responses on the post-survey reported feeling quite or extremely prepared, compared to 78/119 of total pre-survey responses ($p < 0.0001$).



Conclusions: AMR presents a dilemma, in part because of limited data regarding treatment options. We implemented a comprehensive education strategy, following which providers reported feeling better prepared to evaluate and treat AMR. Our results suggest that this model should be considered for other challenging clinical problems.

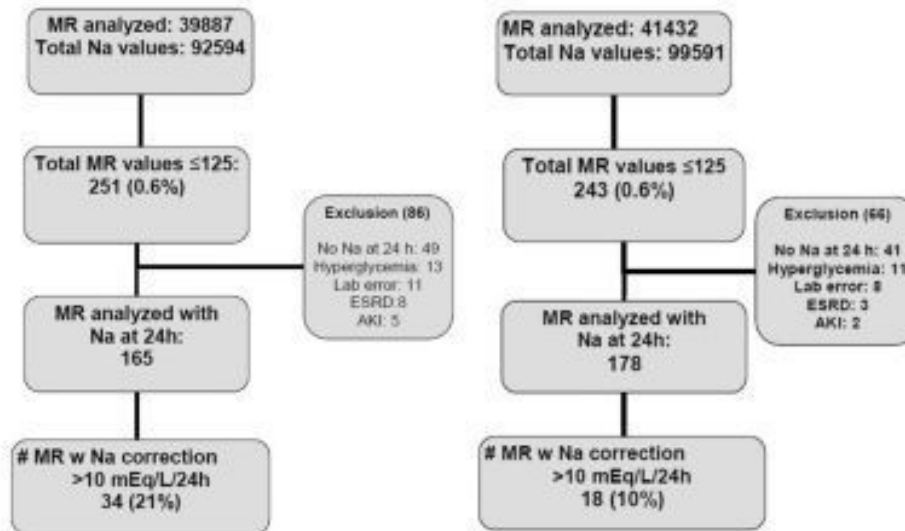
Sosa MA, Russo J, Wanjau FM, Stoff JS. Severe hyponatremia is frequently corrected too quickly: a quality improvement project. J Am Soc Nephrol. 2012; 23: FR-PO616; 511A.

FR-PO616

Severe Hyponatremia Is Frequently Corrected Too Quickly: A Quality Improvement Project Marie A. Sosa,¹ Jennifer Russo,² Francis M. Wanjau,² Jeffrey S. Stoff.¹ ¹*Department of Medicine, Division of Nephrology, University of Massachusetts Medical School, Worcester, MA;* ²*Department of Medicine, University of Massachusetts Medical School, Worcester, MA.*

Background: Hyponatremia (Na <135 mEq/L) is the most common electrolyte disorder encounter in clinical practice, is considered severe when the Na is below 125 mEq/L. Community-acquired hyponatremia has been described in 38% of hospitalizations and hospital-acquired in 38%. Osmotic demyelination syndrome (ODS) are the neurologic manifestations associated with rapid correction of hyponatremia. ODS can be prevented with Na correction rate of <10mEq/l in 24 h. The incidence of rapid Na correction of hyponatremia and ODS are not known. A quality improvement (QI) project was conducted with the goal of reducing the incidence of rapid Na correction.

Methods: Retrospective review of records of hospitalized patients with Na ≤125 over 4 months in 2011. The rate of correction of serum Na during the first 24h was determined. A second retrospective review of same data was obtained post intervention in 2012.



A root cause analysis identified lack of knowledge of practitioners as one of the causes for rapid correction. QI Intervention: 1) Residents Lecture 2) Review article on hyponatremia 3) Education maintained by small group sessions and the “Na Question of the week”. Other data: 47% of the cases were managed by PCP/hospitalist and 24% by ICU staff. Renal was consulted in <1% of the cases. The average time to re-check the initial low Na was 10 h.

Results: In 2011, 21% of the cases of severe hyponatremia were corrected >10mEq/l 24h; the number was decreased to 10% in 2012 after conducting a QI project. Chi-square test 7.33, p value <0.007.

Conclusions: Severe hyponatremia is frequently corrected too quickly. A QI Intervention can be effective in decreasing the number of cases of rapid Na correction.