Speaker 1:	00:00	To stay on time. We will have our next, lectures come up for our special lecture. So Dr Kashani from Mayo Clinic and Dr Rosner from university of Virginia. And we're going to talk about quality of care for AKI, highlights from the ADQI 22.
Speaker 2:	00:16	Hi, good afternoon. Thank you to the organizers for the opportunity for us to present, the highlights from the last ADQI number 22 which was held, right after the ASN in 2018 here in San Diego. And I'm going to give you a brief introduction and then Dr Kashani will give you the summary statements from the meeting. So our group leaders were Dr Kashani, myself, and Michael Haase shown here is the consensus group, which is many of the participants of this meeting, contact experts throughout the field of AKI throughout multiple disciplines who provided insight into the meeting and to the final statement. So I just want to call those out and thank everybody for participating.
Speaker 2:	01:10	So here is the consensus group having a good time in San Diego and the goals of ADQI really, as designed by Dr Mehta, Dr Kellum and Dr Ronco were to provide an objective dispassionate distillation of the literature to provide, and really describe the current state of practice, diagnosis and management of AKI and dialysis. There have been 21 prior consensus groups which have really I think set landmarks in the treatment and the care of patients with acute kidney injury, dialysis and in critical care. The consensus meeting for us 22 was a diverse panel of experts including nephrologists, critical care specialists, nursing pharmacists, epidemiology and biostatistics and medical informatics and also included people with specific expertise in quality improvement processes. And it occurred October, 2018. So I just want to give you just an idea of how the ADQI process works. The ADQI process begins with a pre-conference literature search and review and that pre-conference literature search is used to generate critical defining questions in various different content areas.
Speaker 2:	02:20	Once that's done and people get together for the actual meeting, we generate clinical defining questions in core areas. What are the key unanswered areas that we have to address and that leads to development of consensus statements to address these questions and then that's followed by an iterative process where those development of key consensus statements are presented to the larger group and they're subsequently refined in an iterative process in order to come to consensus of the group of what the best way to address those questions should be. Now ADQI 22 had as its subject matter how we can improve the quality of care of patients with acute kidney injury.

It was a broad topic and subsequently in pre-meeting we define that into five different content areas. What is primary prevention of acute kidney injury and what are the quality measures that will be involved in that, what's primary prevention in the hospital environment, what's secondary prevention, what are the quality improvements that should be surrounding the delivery of renal replacement therapy to patients with acute kidney injury and then is what is tertiary prevention after the hospital? What's the appropriate care for patients who had an episode of acute kidney injury and are transitioning back to the community?

Speaker 2: 03:42 Here's the ADQI process at work. You can tell that, the group was a little bit hard to get down to work, but a very collegial group and Dr Kashani is gonna present the summary statements.

Speaker 4: 03:58 Thank you Mitch I have to say was very gratifying to work with Michael group leaders at Rosner and professor Harson all the participants in ADQI. So following this night of fun. Dr Rosner says now time to work. So you all run back to the backroom to start conversations about acute kidney quality improvement. So a little bit about the background. We know that based on recent literature particularly AKI in particular setting is preventable to a certain degree. However, care pathways for AKI is not very well defined, particularly because there is considerable variation of how we provide care to patients. And also most institutions do not even have a record of how they provide care for AKI patients. Identifying quality indicators and care pathways is critical step in improving outcomes of patients, at risk or with AKI. So a little bit about quality improvement process per se because we thought that this document as a border lesson timeless document should work with any level of knowledge.

Speaker 4: 05:10 We know that at this point there is no treatment for AKI, but if there is a treatment, how we can optimally use that treatment or how we can use current level of knowledge and leverage it to improvement in patient care. We know that there are millions of things we can do for our patients, but it is important to prioritize, identify projects that they have highest impact, lowest effort so we can actually get them done. When you have more infrastructure, more resources, then you can proceed with projects that have high impact but require higher effort as well. So a priority matrix is the first step in the process. Then you need to kind of look into the national and international benchmarks and look into literature to identify what would be your target for improvement of quality of care provided to

patients. In that particular question that you have related to AKI.

Speaker 4: 06:05 The root cause analysis, why you are seeing a deficit of care in biding your program, which requires significant number of analysis. You can use a technique like Fishbone or Pareto charts or a process mapping in order to identify where are the bottlenecks and barriers in development of appropriate care for AKI patients. Then you need to strategize in improvement by identifying the goals and try to do some based on measurement and come up with ideas that can improve the care that you have in mind provided to patients using quality projects. This is an iterative process. You take patients from care from point A to point B and then point B to point C until the care that you have in mind is close to optimal for AKI. This depends on your questions and depends on what you have in mind. Finally, you need to evaluate the patient outcome, cost effective analysis and to make sure that what you're doing not only improves care also adds value.

Speaker 4: 07:11 So, decreases the cost. And also you need to try to distribute your findings to the neighboring wards or ICU's to neighboring institutions in your city, neighboring states, country and globally in a form of paper and presentations so others can learn from what you have achieved to improve patient care. So this is easy review of what you can potentially start with for quality improvement projects. We also know that acute kidney injury does not start with one point. So it is a continuity of care, patients in the population and the community, they have different levels of kidney function, different susceptibility to develop acute kidney injury. All these patients with different baggages, they end up coming to the hospital, exposed to different risk factors. And some of them develop acute kidney injury, which requires, potentially requesting a replacement therapy.

Speaker 4: 08:11 But some of them recover from dialysis or some of them recover acute kidney injury that end up going back to the community, getting added to the pool of diverse pool of patients individuals in a community. So care of core acute kidney injury should not be limited to one narrow window of care that we provide to these patients in the hospital ICU should be a continuity start from community ends up with the community. So as professor Rosner mentioned, we have divided the groups to five groups. First group was focused on primary prevention of acute kidney injury within the community. These are, individuals that walk in the street but they have higher risk of acute kidney injury if they are exposed to risk factors. So

group one recommendations one was the roles and responsibility of patients, clinicians and healthcare. They define that.

Speaker 4: 09:07 They mention a healthcare system and clinicians should identify populations or patients at risk of AKI and implement monitoring preventive interventions to decrease AKI risk. And then we will talk about how they recommend these to be done. So first of all, it is important to identify the target population. You want to look into all diabetic patients within your outpatient clinic or you want to go to, schools that, they are in tropical area and is exposed to malaria. You want to go to identify patient population that have higher risk of exposure. That depends on where you work in how your practice looks like. Education is important part of this process. You really need to raise awareness among not only providers, clinicians, you need to increase awareness among patients as well.

Speaker 4: 10:01 So next question they came up with how should AKI high risk population be monitored? they recommended high risk patients and population should have something they called kidney health assessment or KHA at least 30 days before and again within two or three days after an AKI risk exposure. This needs to be tailored based on your clinical context based on clinical judgment and health care resource availability. So again, the same picture. They recommend kidney health assessment, which they summarized as ABCD process, AKI history, measuring and evaluation and correction of blood pressure if they are hypotensive or hypertensive. A evaluation of risk of CKD, measurement of creatinine doing a dipstick is very non-expensive yet provides significant amount of information in risk evaluation and also reconcile their medication, make sure that they are in this high risk population, they are not taking medication that are associated with significant complications. So this needs to be happening on periodic bases based on your resources. You can go every year, you can go every six months or every season and so forth

Speaker 4: 11:14 Now, there is a time that exposure happens. These patients do not stay steady. Sometimes they get exposed to risk factors. These factors were summarized in mnemonic of MIS, medications, in imaging, means contrast and surgery or sick days. They become sick, they get influenza or maybe get pneumonia and some of them are treated in outpatient setting

Speaker 4: 11:42 So preventive strategies for AKI population was defined as clinician review, KJ kidney health assessment before a plan or immediately after unplanned acute. exposure. KHA should be

followed by kidney health response, which I'll describe the component of this suggested by the group. After exposure to high risk AKI exposures. These need to be associated with raising awareness and needs to be, associated with coordination, with all care providers, to those patients who are exposed to the risk factors. So again, going back to that figure with additional layer of kidney health response, they summarize that in 4Ms process, reconciling medications, adjusting medications that are more nephrotoxic if they have been exposed to risk factors, minimizing exposures, try to treat their influenza appropriately, hydrate them appropriately, message to care team and others, the patient themselves to let them know there are, potentially high risk for AKI.

Speaker 4: 12:50 So monitor them, appropriately. Now, each group, you see these figures a frequently after each group discussion, each group came up with a series of statements that recourse to be followed as quality indicators divided in structure, process, and outcome based on Donabedian model of care. And you see two different boxes, blue and white boxes. White boxes belongs to the resource limited areas and blue boxes, is in the places that they have appropriate amount of resources. So, for example, for community primary prevention, having a trained staff or a hospitals or physician primary care provider in resource limited area or nurse practitioners that they can potentially provide this kind of care structure. the process is to, do kidney health assessment, provide kidney health response. The outcome would be development of acute kidney injury among these high risk patients.

Speaker 4: 13:53 So the rate of acute kidney injury development among community patients following this process should go down so you can follow this risk among these patients as your quality indicator. So in ADQI we also had a lot of fun. We went to the beach for a sundown visitation, however, it was completely cloudy, so we missed it all so you can see Dr Heung cause Erin Barreto is my colleague in Mayo Clinic. She's a wonderful pharmacist and professor Wu from Taiwan. Then this is the dinner. the faculty dinner. see Dr Bihourac here, Dr Ostermann than Erin and professor Wu again and Kashani. Then you see back to the beach you see professor Macedo and Tolwani and professor Wu again. Then we had the pleasure to go to Dr. Mehta's home for one of the dinners and we had a lot of fun, a lot of conversations, a lot of ideas came about.

Speaker 4: 15:01 to discuss. Erin and Mike Haase is here. If you are wondering where professor Wu is here it is, he's hiding. I apologize for my poor Photoshop skills. Okay. Going back to group two, so group

		two focus was primary prevention of AKI among patients that are in hospitals. There's different from communities there is slightly higher risk because by definition they have some sort of acute exposure. So how and when should hospital high risk patient be identified? All patients at hospital admissions should be screened for acute kidney injury risk. This should be a periodic through their admission. So you should not be limited to the time of admission. You should do it on daily basis. Even more often if patients is considered high risk. All AKI at risk patients should receive a measurement of serum creatinine, urine dipstick, urinalysis and urine output measurement and the context of specific evaluation.
Speaker 4:	16:07	If you have a patient with sepsis, you may want to kind of do work for sepsis associate AKI that may potentially happen considering using biomarkers, using models to identify the risks would be advisable. Local availability's clinical context and clinical judgment drives the frequency and the type of the workup that you provide. It should be complimentary diagnostics, at least serum creatinine, urine dipstick and urine output measurement should be done. Early correction or mitigation of context specific modifiable AKI risk factors should be considered for all high risk patients. So after you identify these patients that are high risk, try to identify modifiable risk factors and mitigate them. Then we also came up with some quality indicators that could be followed as institutional level in order for you to review on annual or quarterly or seasonally basis to see how you're doing with the risk of AKI.
Speaker 4:	17:07	So these quality indicators included a proportion of patients screened for AKI risk among all admissions, proportion of identifiable AKI How are these patients among all the screened patients, proportion of AKI, high risk exposure among all hospitals population and all high risk patients, proportion of patients who received an appropriate intervention around their high risk exposure and proportion of patients who develop AKI among all admissions and all high risk patients.. Utility of quality indicators for AKI. Risk profiling, should include indicators should be reviewed and utilized to identify areas of improvement and action. Frequency of reporting depends on local resources and regulatory requirements and should be periodic at least once a year. Again, this quality indicator figure in a structure, process and outcome, you need to have some sort of availability to record the screening process that they recommend.
Speaker 4:	18:18	The process is to provide appropriate review of their exposures and try to modify risk factors and the outcomes will be

developed acute kidney injury and related outcomes. Now group three focus was secondary outcome. These are patients now already have acute kidney injury. The context acute kidney injury or the develop hospital acquired acute kidney injury and how we can optimize their care. Key consideration for diagnosis and evaluation includes optimizing proportion of patients who undergo context appropriate timely evaluation and cost saving. These may look like common sense but there are a lot of our patients do not receive these. The idea for this ADQI was to try to highlight that we are obligated to provide these to our high risk patients and limiting the duration and severity of AKI. this is again is timeless recommendation. If tomorrow there is an intervention that decreases severity of AKI, please go for it.

Speaker 4: 19:20

Try to optimize and make sure that those most of your patients receive that. Implementation and reporting of the proportion of patients that received timely diagnosis appropriate interventions, compliance with these interventions should be measured. Report and reviewed on periodic basis at least on annual basis. Key for considerations for reducing complications of AKI, which could be volume overload, hyperkalemia, malnutrition. All of those that you are very familiar with. prevention of avoidable AKI. Risk factors requires appropriate monitoring, implementation of risk reduction strategies like limiting potassium intake, limiting volume overload, limiting maintenance fluid among these patients. And report that in order to be able to see how you're doing to evaluate, the targets for interventions.

Speaker 4: 20:19

So, their recommendation was in three categories of diagnosis, evaluation, limiting severity and duration of AKI, prevention of avoidable complications in three categories of recognition, action and and results. So just for example, diagnosis evaluation, first of all, diagnose AKI as soon as possible context appropriate evaluation was the action. And then result would be a number of patients that receive appropriate context, appropriate evaluation, again for quality indicator among this group, having some infrastructure including electronic health record or appropriate paper-based records. having the patient's, insurance information and pharmacists available, is a structure that you may need. Process is to decrease the modifiable risk factor for progression of acute kidney injury or complications of acute kidney injury. And the outcome would be limiting number of complications like AKI or limiting the stage that AKI reaches in a maximum way.

Speaker 4: 21:28

Now, group four focus was mainly on renal replacement therapy. So the first question was how should the quality of

acute renal replacement therapy be monitored, evaluated and reported? Quality indicators should integrate the structure, process and outcomes. Again, Donabedian formula indicators, for each therapeutic modality, both in the ward and ICU. So it's a comprehensive approach. So for a structure they want all of us to define specifically targeted group of population that we have to work with clinicians, nursing, like health professionals. We need to make sure that we have capacity to provide appropriate renal replacement therapy for our patients and also identify in a responsible team that reviews all of these data coming from our current dialysis practice to provide targets for improvement. Minimum process. It should incorporate methodologies to standardize and protocolize the procedures for renal replacement therapy to increase efficacy and consistency of dialysis and also safety.

Speaker 4: 22:38

While it should be specific for each dialysis modality. The minimum outcome indicators should include patient centered outcome provide patient satisfaction included mortality, quality of life among survivors, dialysis, liberation and health. economic outcomes, again for quality indicators, structure would be availability of 24 hour nurses that can provide dialysis. So RCRT that stops at 10:00 PM does not restart at 8:00 AM. It should start immediately to avoid the discrepancy between delivered and prescribed those processes to make sure that we provide appropriate care. We have appropriate monitoring like fin bond ratio as professor Mehta mentioned and outcome would be, decreasing the complication of dialysis including catheter related wards from infection, electrolyte abnormalities, volume overload and so forth. Group five which was working on basically kind of very thin ground of literature because there is not much known about how the best care is provided to the patients who already have acute kidney injury.

Speaker 4: 23:53

Now they are ready to go back to the community. How do we care about these patients? So they came with a very innovative approach, so appropriate post AKI or acute kidney disease care and they recommend a healthcare system need to ensure appropriate followup. They need to quantitate the proportion of patients who need post AKI or AKD followup. They also need to evaluate the quality of care provided to those who received followup. And not only the follow up is important. The quality of follow up is important as well. Key elements of appropriate post AKI/AKD care include the structure. evaluation of needed personnel and the clinics and outpatient location that these patients can go and have their, laboratory measured and blood pressure measured urine dipstick done and so forth. Process is who needs to be followed by whom. needs to be followed is the

nephrologists is it internist This is a hospitalists. What should be followed? Is it urine dipstick, serum creatinine, where should this happen? Is outpatient clinic or the patient need to come back to the hospital? When is it a week later, three months later, why and how we need to describe to the clinicians on the ground why we need this to happen. And we need to also assure how this process needs to be conducted to be successful. The outcomes include CKD progression, continued or new need for renal replacement therapy, mortality, et cetera.

Speaker 4: 25:24 so this is the graph that they came up with this is very a comprehensive graph. Each criteria on each box indicates the intensity of follow up. They may need as you see follow traffic light. So green is very good shape and dark red is our horse out of barn kind of a person. So patients for example who have a stage one acute kidney injury for only one day, they return to baseline. And there are healthy individuals admitted in a hospital, they may not follow a nephrologist, they may be able to follow a nurse practitioner or nurse or primary care provider as an outpatient. However, if patient record there also is due to acute kidney injury in a hospital or they had CKD stage four at the baseline, they may need to be followed next day after discharge or a be followed by a nephrologist within a week. So this depends on how resources you have available. Again, this should be border-less. So depends on your resource availability. You need to consider more intense follow up for patients that are suffering from more severe acute kidney injury.

Speaker 4: 26:35 They also came up with two care bundles. One is RAMPS In a final paper it is converted to CAMPS because the journal didn't allow us to use renal kidney, so we met RAMPS to CAMPS, so that includes renal function check, measuring serum creatinine, protein, and potentially biomarkers of recovery. Advocacy is important. Educating patients and providers and communicating with all care providers. We in ICU we generally tend not to see hospitalists after patients discharge. We don't want to hear anything back from them. And hospitalist does the same thing with outpatient providers, these should be dissolved. We have to have a team of intensivist, hospitalist and community providers in order to provide a continuity of care, medication should be reconciled We need to make sure that these are patients that are not on nephrotoxic medications. Pressure should be measured and evaluated.

Speaker 4: 27:37 Hypotensive patients need probably midodrine or some other interventions. Hypertensive patient need treatment for hypertension, and if they are sick, they need to know who to call, what medication to stop, what are the signs and symptoms

of recurrence of acute kidney injury. Now they also have a care bundle for patients who require dialysis as a result of acute kidney injury. They called it Watch Me. So the first step is to weight assessment. To avoid volume overload or volume depletion. Access evaluation, make sure that they do not get infected because of access. They do not have thrombosis, they have appropriate access. No recirculation teaching is important. Again, your communication between intensivist hospitalist nephrologists as an outpatient is important. Clearance evaluation on periodic basis is important in order to keep them healthy, exercise them appropriately. Hypotension should be avoided because majority of these patients have a chance to recover their kidney function and medication reconciliation adjustments should be done for these patients.

Speaker 4: 28:41 So in summary, we have identified five phases of AKI care spanning the clinical spectrum. We propose quality indicators to develop, measure, and study across the structure, process and outcomes. And patient experience domains. Goal is to improve quality of AKI care, which should result in improvement in clinical outcomes with new knowledge. Targets should change. However, the process should not change. We still need to try to provide optimal care for our patients In the hospital and ICU. It was a pleasure to work with professor Rosner, professor Haase in organizing this particular meeting. And we cannot thank enough from the founders of ADQI that allows us to do it and support us throughout the way, particularly professors Kellum, Ronco and Mehta. We are very unfortunate not to have professor Bellomo on board for this particular ADQI due to distance.

Speaker 4: 29:43 we also were supported by many companies without their support, this wouldn't be possible. All of the observers from the industry sat behind the room and just served as observer, did not have anything to do with the outcomes of these consensus meeting. A few pictures of ADQI 22, moments, you see that this is a beautiful house that, is a mansion basically in LA Jolla belongs to professor Mehta. We all had a wonderful night there, this is a faculty dinner professor Rosner giving a talk. This is professor Haase, and myself, professor Kellum making fun of me, saying that, I have an ADQI to run so I didn't want to die. At some points it said that this is an important target for Kashani, a lot of fun, a lot of sweat and blood and these games. And that resulted everybody lose, these are non alcoholic beverages. I'm kidding. This was alcoholic beverages. we couldn't survive without it. A lot of games, again, throughout the meeting and a lot of friendships, that would result hopefully further documentations, all these groups outside of one single paper

		that is, hopefully being accepted soon a way to produce additional paper, focusing on their own group output. Hopefully, directed toward the appropriate journals. With that thank you for your attention.
Speaker 8:	31:27	[inaudible].