Improving kidney transplant access for obese candidates

1. **Project Lead/Key Contact (name, email & phone number)**

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2. **Why are you interested in participating in the Improvement Scholars Program?**

The kidney transplant evaluation process necessitates a thorough assessment of a potential candidate's medical and surgical fitness. This often requires multiple visits for clinic, tests, and studies, which can be challenging for vulnerable populations (especially those with limited access to transportation). For candidates who are morbidly obese and must complete medically supervised or surgical weight loss, the additional clinic visits may prove overwhelming. Our process would benefit from Quality and Process Improvement experts on the best way to make kidney transplant evaluation more accessible for patients.

My long-term goal is to use the skills learned through the Improvement Scholars Program to identify other barriers to transplantation for our patient population. With a team of other stakeholders (colleagues in the Department of Medicine, nursing coordinators, dieticians, pharmacists), we can develop targeted, sustainable interventions to increase transplant access.

3. **Which UNC Health improvement priority will your project address?**

This project will address multiple UNC Health Improvement Priorities including health equity promotion, patient experience promotion, outpatient care improvement, and mortality reduction by improving healthcare access.

4. **What is the problem or gap in quality you seek to improve?**

The prevalence of obesity (defined as a body mass index [BMI] > 30 kg/m^2) is rising worldwide and currently impacts 42% of adults in the United States.[1] The prevalence of obesity is higher in the state of North Carolina than the national average. By the year 2030, obesity is projected to affect over 50% of North Carolinians, and over 25% will experience severe obesity (BMI > 35 kg/m^2).[2] Obesity is an independent risk factor for chronic diseases including diabetes mellitus, coronary artery disease, malignancies, chronic kidney disease, as well as overall mortality.[1,3] Currently, fewer than 1% of eligible patients are referred for and have access to metabolic bariatric surgery in spite of proven long-term efficacy and safety.[3,4]

For individuals with end-stage renal disease, kidney transplantation offers clear survival benefits and increased quality of life as compared to remaining on dialysis.[5] The evaluation process for kidney transplantation entails a multi-disciplinary assessment of a potential candidate's medical and surgical fitness. The majority of kidney transplant programs use BMI greater than 35-40 kg/m^2 as an exclusion for listing due to an increase in complications including surgical site infections, length of stay, delayed graft function, major adverse cardiac events, and early graft loss seen in obese kidney transplant recipients.[6–10] The rising obesity epidemic may preclude many potential candidates from receiving a life-saving kidney transplant. Obesity disproportionately affects women, non-Hispanic black and Hispanic adults, and adults with an annual household income <$50,000.[2] As a result, unaddressed morbid obesity can exacerbate existing disparities in healthcare access.

5. **Describe the patient population affected, scope, and impact of the problem**
    a. What is the specific patient population your project will impact?

This project will impact morbidly obese (BMI $\geq$ 35 kg/m^2) patients who are referred to UNC for kidney transplant evaluation.

b. How many patients are in the population?
Over the past four years, a pilot clinic for weight management in potential kidney transplant recipients has seen over 313 patients. Referral to the specialty clinic has been at the discretion of the intake nurse coordinators, the evaluating nephrologist, and the evaluating surgeon, and therefore likely underestimates the true number of patients who could benefit from a multi-disciplinary specialty clinic.
UNC currently receives approximately 1500 new referrals annually for kidney transplant. Fifteen percent (n = 225 per year) have at least class 2 obesity (BMI $\geq$ 35 kg/m^2).

c. How frequently does the problem occur?
We estimate that at least 225 people who would benefit from medical and/or surgical weight loss are referred to UNC for kidney transplant annually. Our goal is to create a sustainable, regional center of excellence for the care of obese kidney transplant candidates. As the only center in the region with such a program, this number may increase with time.

d. What is the impact of the problem?
The current approach to the care of an obese patient with chronic kidney disease is siloed, which prolongs the evaluation process for both kidney transplantation and bariatric surgery. Kidney transplant referral begins with a clinical review by nurse coordinators. Individuals with a BMI > 40 kg/m^2 are referred to "High BMI" clinic, run by a transplant nephrologist and dietician for medical options regarding weight loss. Bariatric surgery referral is reserved for those who are not able to achieve weight loss with lifestyle and medical interventions. Timing of the referral is at the discretion of the providers in the "High BMI" clinic, but often comes after a minimum of 6 months. Many insurance providers require at least a 6-month period after initial intake with a bariatric surgeon to demonstrate failure of medical weight loss. For most patients, maximum weight loss is achieved 12-18 months after bariatric surgery. This stepwise approach prolongs the evaluation for both bariatric surgery and kidney transplantation. Moreover, this creates additional clinic visits which can be challenging to attend for patients who already committed to hemodialysis three days per week. Patients with difficult access to transportation (typically those with lower household incomes) are further disadvantaged as the current approach necessitates multiple visits with multiple providers over time.

6. **What do you think are the underlying causes of the problem? Why do you think the problem is happening?**
The rising obesity epidemic contributes to an increase in the number of people with chronic kidney disease and end-stage renal disease who would benefit from kidney transplantation as well as an increase in the number of people who would benefit from bariatric surgery to mitigate the lifelong deleterious effects of obesity related comorbidities. In spite of the benefits of bariatric surgery (sustained weight loss, remission of comorbidities including hypertension and diabetes, improved perioperative safety over the past two decades), fewer than 1% of eligible patients undergo metabolic surgery.[4] Metabolic bariatric surgery is utilized less by minorities and by individuals covered by state or federal insurance programs.[4] In addition, navigating the bariatric surgery evaluation is likely to be more

challenging in patients with end-stage renal disease as their dialysis schedules can make coordination of other healthcare visits challenging.

7. **What is the history of improvement or attempted improvement at UNC Health? What work will your proposed improvement build on?**
   Starting in 2019, Dr. Randy Detwiler, dietician Judy Lester, and a team of transplant pharmacists including Mary Chandran and Laura Chargualaf created a specialty clinic aimed at weight reduction for potential kidney transplant candidates. Patients with a BMI >40 kg/m^2 were referred to this specialty clinic at the discretion of the intake team for nutritional and lifestyle interventions, with or without addition of medications for weight reduction. Patients were referred for bariatric surgery evaluation at the discretion of the team. Between 10/01/2019-06/01/2023, 313 patients were referred.
   Recent advances in medically assisted weight loss, namely with GLP-1 receptor agonists, may offer increased opportunities for morbidly obese patients with end-stage renal disease to lose the weight needed to qualify for kidney transplantation. For other individuals, it may be more appropriate to pursue early metabolic and bariatric surgery for weight loss and remission of chronic illnesses, including diabetes and hypertension. Many insurance payers require six months of “failure” to lose weight under medical supervision to qualify for bariatric surgery. The addition of a bariatric surgery visit at time of initial evaluation for kidney transplant will allow patients to initiate their six-month supervised diet requirement early in this process, therefore avoiding delays in bariatric surgery if this is ultimately needed for their transplant listing. Our goal is to consolidate the number of clinic visits that each patient must make and therefore shorten evaluation time for both bariatric surgery and kidney transplantation.

8. **Please complete the “[1]”. Please describe the anticipated outcome measure(s), 2-3 process measures, and one balancing measure. Please do not include more than 5 measures total.**

Measure Name	Measure Type	Measure Calculation	Measure Exclusion	Data Source	Baseline	Goal	Collection Frequency
Number of morbidly obese kidney transplant referrals who become waitlisted for kidney transplant	**Outcome**	Numerator: patients enrolled in multi-disciplinary clinic listed for transplant Denominator: patients enrolled clinic	none	Electronic Health Records	<40%	75%	Every 3 months
Number of discrete clinic visits for morbidly obese potential kidney transplant candidates	**Process**	Number of discrete clinic visits (on different days) for morbidly obese patients undergoing evaluation for kidney transplantation	none	Electronic health records	5-10	5	Every 6 months

Measure Name	Measure Type	Measure Calculation	Measure Exclusion	Data Source	Baseline	Goal	Collection Frequency
Time from evaluation to waitlist decision	**Process**	Number of days from time of first evaluation visit to time the patient is discussed at transplant selection	none	Electronic health records	480	150	Every 3 months
Presence of frailty in morbidly obese kidney transplant candidates	**Balancing** (Will a focus on weight loss contribute to frailty, which is a relative contraindication to transplantation?)	Numerator: Patients with a frailty score of 3 or greater (out of 5) Denominator: All patients in cohort (Frailty score 0-5)	none	Electronic health record (Frailty assessment will be performed at each clinic visit)	0% (Patients with a frailty score >3 are not considered transplant candidates)	<15%	Every 6 months

9. **What ideas do you have for changes that will result in improvement (your improvement strategy)?**
   Our strategy is to co-localize evaluation clinic such that we can decrease the number of visits that are required of our target patient population. We will follow the number of clinic visits that each patient needs, and we theorize that this will increase our compliance/decrease clinic no-show and same day cancellation rate, as well as decrease the time from referral to waitlist decision.

10. **How has this problem has been addressed successfully elsewhere?**
    The University of Cincinnati created a similar clinic (Transplant Related Interdisciplinary Metabolic Surgery program) for simultaneous evaluation for kidney transplantation and metabolic bariatric surgery.[11] For the patients who chose not to undergo metabolic bariatric surgery, 94.5% did not follow up and were therefore never considered for kidney transplantation. For patients who underwent metabolic bariatric surgery, 22.7% had received a transplant and 63.6% were in process of being wait listed at time of study closure. The group demonstrated a low rate of peri-operative complications after metabolic bariatric surgery (1.2%) and substantial weight loss consistent with what is seen in non-ESRD patients after bariatric surgery.

11. **How will Carolina Quality tools (Just Culture, SAFE reporting, team communication and teaming skills, huddles, and visual management boards) be used to support the work? Although use of these tools is not required, applications including them will be strengthened.**
    We will institute a monthly “check in” meeting with team members modeled off of Carolina Quality Leader Rounds. This empowers all team members involved in the project to review data on our initiative and brainstorm areas for ongoing improvement. Team members involved will include the physicians and surgeons, nurse coordinators, dieticians, pharmacists, social workers, and psychologists. All stakeholders will have the opportunity to

participate in discussion, which contributes to maintaining a Just Culture and fosters engagement with the project.

12. **Please describe how your project addresses one or more of the 5 elements reflected in the Quintuple Aim for Health Care Improvement.**

    The primary aim of this project is to improve health for patients who have both morbid obesity and end-stage renal disease. The current practice pattern, while not completely standardized, has the referral process for kidney transplant and bariatric surgery happen in a stepwise fashion. This requires patients to return to healthcare system for multiple visits distributed over time to see different providers. For patients with other co-morbidities requiring healthcare visits, as well as the time spent in dialysis units, we hypothesize that many potential candidates may be lost to follow up in this setting. We propose that the evaluation clinic can be co-localized to minimize the number of visits that patients would be required to make to qualify for kidney transplantation.

    We theorize that streamlining the evaluation process and decreasing the number of discrete clinic visits will improve the patient experience. Co-localizing the clinic and having all providers see patients at the same visit will also allow the opportunity to discuss which pre-operative tests and studies are needed for both bariatric surgery and kidney transplant. We can then avoid duplicate studies which will decrease healthcare costs.

    Further, patients who have a lower household income, patients who identify as black or African American, patients who identify as Hispanic, and patients who are women have a higher incidence of end-stage renal disease and obesity. We believe that this initiative will improve health equity by way of access to kidney transplantation for vulnerable patient populations.

13. **Please describe the support and engagement you have from leadership for the work you are proposing. Please indicate leaders with whom you have consulted about this proposal.**

    This project was designed by a multi-disciplinary team which includes the Medical Director for the UNC Healthcare Center for Transplant Care and Abdominal Transplant Surgery Division Chief (Dr. Chirag Desai), the Medical Director of the Kidney Transplant program (Dr. Randy Detwiler), the Kidney Transplant Surgical Director (Dr. Alexander Toledo), and the Medical Director of Bariatric Surgery (Dr. Timothy Farrell).

14. **Who will comprise the project team? List names and roles of team members, describe how the project team will function and how the team's work impacts other teams/units and/or is impacted by other teams/units. Successful improvement project teams are interprofessional, multidisciplinary, and often include patient and family members. Although not required, applications listing interdisciplinary co-leads (e.g., nurse and provider co-leads, or pharmacist and provider co-leads) will be strengthened. Access this link to learn additional helpful information about improvement teams.**

    - Melissa Chen, MD (project lead) will serve as the Abdominal Transplant Surgery team lead and will perform the surgical portion of the kidney transplant evaluation
    - Maggie Hodges, MD (co-lead) will serve as the Metabolic and Bariatric Surgery team lead and will evaluate potential candidates for bariatric surgery as well as perform the metabolic and bariatric operations
    - Randy Detwiler, MD (co-lead) will serve as the team lead for the medical evaluation of potential kidney transplant candidates. Dr. Detwiler will also provide medically-supervised weight loss.

- Judy Lester, MS, RD (co-lead) will serve as the team lead for the dietary counseling and management of this patient population
- Mary Chandran, CPP (co-lead) will serve as the lead for the transplant pharmacists and assist with medically-supervised weight loss

15. **How will you ensure sufficient time to dedicate to the project over the scholar year? Although time commitment to the program varies throughout the year, Scholars may expect to spend at least 2 hours per week (with range from 1 hour minimum to 5 or more hours a week) on project-related activities.**
    Melissa Chen (proposed project lead) has dedicated academic time built into her call schedule, some of which can be used for this project. Dr. Hodges and Dr. Detwiler have also committed time to ensuring that this process offers a streamlined avenue to evaluate morbidly obese individuals for kidney transplantation.

16. **What factors do you anticipate will foster and hinder improvement?**
    Building onto an existing clinic (i.e., adding a bariatric surgeon and a transplant surgeon to the medical weight loss clinic for kidney transplant candidates) allows us to leverage existing structure and hit the ground running.
    The number of patients who could benefit from this clinic may exceed the current provider capacity, but we believe that as this initiative will decrease the number of clinic visits for patients, we will also see a decrease in the provider burden.

17. **What ideas do you have for sustaining the improvement at the end of the Improvement Scholars Program?**
    At completion of the Improvement Scholars Program, our goal is to create an efficient and streamlined model for evaluation for both bariatric surgery and kidney transplant for patients with end-stage renal disease. As the incidence of both end-stage renal disease and obesity grows, we anticipate an ongoing need for the clinic to continue and expand. We will conduct reviews of the evaluation process going forward to ensure that we are able to offer medical and surgical options to those who historically have faced barriers to kidney transplantation in a comprehensive, efficient, and accessible way.

18. **Implementation Timeline**
    The UNC Healthcare Center for Transplant Care is in the process of improving the evaluation process for abdominal transplants as part of the Strategic Planning initiatives. We will leverage this existing shift in transplant evaluation and implement our multi-disciplinary clinic Summer 2024. We will use the intervening time to create a clear referral pathway for this clinic.

19. **References**

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20. **Letters of Support: Two letters of support are required. One from the project sponsor (defined below) and one from your supervisor. Submit both letters with the application.**