OBJECTIVE
To prevent the development of thrombosis secondary to stenosis in AV accesses, resulting in reduced surgical intervention, hospitalization, and catheter associated risk to dialysis patients.

BACKGROUND
• Morbidity and Mortality meetings at St. Vincent’s Hospital in Sydney, Australia, identified the number of admitted patients due to thrombosed AV access secondary to stenosis as an issue to be improved.
• Ineffective dialysis and associated morbidity of a failed AV access lead to an increase in hospitalizations, increased catheter placements and impairment of a patient’s quality of life.
• Strategies were developed for a needed AV access surveillance program. They include:
  1. AV access surveillance & management protocol.
  3. Staff training.
  4. Liaison with Interventional Radiology Dept. (IRD) for co-management of AV access stenosis.
  5. Patient education.

STUDY
Patients were referred to IRD if:
• AV fistula flow < 500mL/min.
• AV graft flow < 6000L/min.
• Recirculation > 0%.
• Flow had decrease > 25% over 4 months.
Patients were referred for a fistulagram +/- angioplasty followed by post intervention AV access reassessment. Results were discussed with IRD and a vascular surgeon, if necessary.

RESULTS
Prolonged AV access life through:
• Early detection of deteriorating of AV access;
• Increased referrals made to interventional radiology for fistulagrams +/- angioplasties;
• Reduced number of thrombosed fistulas, number of catheters;
• Reduced hospitalization & medical costs.

CONCLUSIONS
• The number of patients presenting with a blocked AV access requiring immediate surgical repair fell by 82% since the program’s inception. Therefore, the practice improvement project more than achieved its objectives.
• Any dialysis unit could use this same practice improvement project in their unit to improve the life of their patients AV access and decrease the number of surgical admissions.
• The processes will continue to evolve as interpretation of results becomes clearer.
• A patient satisfaction survey regarding AV access management and the development of multimedia patient education material have evolved from this process.
• A clinical pathway using best practice will also be implemented in the future.
Prolonging AV Access through the Implementation of a Co-ordinated Screening/Assessment Program

Transonic Flow-QC® was introduced to the Renal Ambulatory Care Unit at St. Vincent’s Hospital, Sydney, Australia in September 2012. This device

- Assesses actual function of AV grafts and fistulas to identify failing accesses and avert under dialysis and/or thrombosis.
- Assesses effectiveness of interventions (post-intervention surveillance).
- Quickly excludes access dysfunction as cause of under dialysis.
- Identifies a mid-access obstruction.
- Friendly operating technique, easy for nursing staff to learn and practice during busy working conditions.

BENEFITS FOR PATIENTS
1. Reduces surgical interventions and hospitalization
2. Reduces catheter associated infection risk
3. Reduces morbidity and improved quality of life
4. Prolongs AV access life and improved dialysis efficiency

BENEFITS FOR THE DIALYSIS UNIT
1. The initial cost of the Transonic Flow-QC® Ultrasound Dilution Monitor has been more than offset by the savings from the 82% reduction in admissions for thrombectomy.
2. Successful implementation of a coordinated program has resulted in a strong partnership with the IRD.
3. Providing an outpatient based method of repairing a failing AV access, thereby increasing staff efficiency and patient flow.
4. Reduction in thrombosed AV access and associated morbidity, as well as complications associated with vascular catheter insertion.
5. Reduced hospitalization and associated costs for the organisation.
6. Up-skilling of nursing staff in the most current methods of prolonging the life of the AV access.
7. Improved quality of care through early detection of vascular access related issues.

Surveillance Implementation Steps

AV Access Surveillance & Management Protocol

- Nurse Coordinator (CNC)
  1. Access flow
  2. Access recirculation
- NUM
  Identified need and purchased equipment.
- Rep organizes staff training.
- Inservice and one on one training to all nursing staff.
- Patient education
- Establishes AV access surveillance/management protocol
- Maintains monthly monitoring & pre/post intervention outcomes database
- Monthly assessment includes:
  1. Access flow
  2. Access recirculation
- Results reviewed by Renal CNC & action taken if flows do not meet criteria
- All patients AV accesses assessed monthly

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Prolonging AV Access through the Implementation of a Co-ordinated Screening/Assessment Program

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INTRODUCTION

For the haemodialysis (HD) population, successful treatment and quality outcomes require a well-functioning arterial-venous (AV) access. It has been identified that regular monitoring and early radiological intervention has been successful in maintaining patient’s AV access and reducing associated morbidity.

The aim of this project is to prevent AV access developing thrombosis secondary to stenosis, resulting in reduced surgical intervention, hospitalization, and catheter associated risk to dialysis patients.

BACKGROUND

- The number of patients needing to be admitted for thrombosed AV access secondary to stenosis was identified as an issue in our Morbidity and Mortality meetings.
- As the AV access failed, ineffective dialysis and associated morbidity lead to an increase in hospitalizations, increased catheter placements as well as impairing patients quality of life.
- The need for an AV access surveillance program was identified and the following strategies were developed:
  1. Protocol for AV access surveillance and management.
  3. Staff training.
  4. Liaise with Interventional Radiology Department (IRD) regarding the management of AV access stenosis.
  5. Patient education.

Transonic Flow-QC®
Ultrasound
Dilution Monitor

Transonic Flow-QC® was introduced to the Renal Ambulatory Care Unit at St.Vincent’s Hospital, Sydney in September 2012.

This device
1. Assesses actual function of AV grafts and fistulas to identify failing accesses and avert under dialysis and/or thrombosis.
3. Quickly excludes access dysfunction as cause of under dialysis.
4. Identifies a mild-access obstruction.
5. Friendly operating technique, easy for nursing staff to learn and practice during busy working conditions.

Patients were referred to IRD if
1. Arteriovenous fistula flow < 500mL/min.
2. Arteriovenous graft flow < 600mL/min.
3. In both arteriovenous fistula and graft recirculation > 0%.
4. In both arteriovenous fistula and graft a decrease in flow of more than 25% over 4 months.

- Patients will have Fistulogram +/- angioplasty.
- Post intervention AV access reassessment.
- Results discussed with IRD and vascular surgeon if required.

RESULTS

**BENEFITS FOR PATIENTS**

1. Reduced surgical interventions and hospitalization
2. Reduced catheter associated infection risk
3. Reduced morbidity and improved quality of life
4. Prolonged AV access life and improved dialysis efficiency

**BENEFITS FOR THE DIALYSIS UNIT**

1. The initial cost of the Transonic Flow-QC® Ultrasound Dilution Monitor has been more than offset by the savings from the 82% reduction in admissions for thrombectomy.
2. Successful implementation of a coordinated program has resulted in a strong partnership with the IRD.
3. Providing an outpatient based method of repairing a failing AV access, thereby increasing staff efficiency and patient flow.
4. Reduction in thrombosed AV access and associated morbidity, as well as complications associated with vascular catheter insertion.
5. Reduced hospitalisation and associated costs for the organisation.
6. Up-skilling of nursing staff in the most current methods of prolonging the life of the AV access.
7. Improved quality of care through early detection of vascular access related issues.

CONCLUSION

This practice improvement project has more than achieved its outcomes. The number of patients presenting with a thrombosed AV access requiring immediate surgical repair has fallen by 82% since its inception.

Any dialysis unit could use this same practice improvement project in their unit to improve the life of their patients’ AV access and decrease the number of surgical admissions.

The processes we have developed will continue to evolve as we become more confident with the interpretation of results.

Other projects stemming from this include a patient satisfaction survey regarding AV access management and the development of multimedia patient education material.

The development of a clinical pathway using best practice will also be implemented in the future.