

# Improve Vascular Access Care Competency Among Dialysis Nurses & Increase Rope Ladder Cannulation Practice for Patients With Arteriovenous Fistulas and Grafts (AVF & AVG) through Enhanced Access Care Training Programme

Nursing Vascular Access Task Force (NVATF), National Kidney Foundation Singapore

## INTRODUCTION

Chronic hemodialysis patients rely on a well-functioning vascular access to receive dialysis treatment and survive. In NKF Singapore, 88% of patients are using arteriovenous fistula or graft for hemodialysis, hence it is important that nurses dealing with Arteriovenous access are proficient in providing quality care to reduce access complications and prolong access survival. Key areas of access care including monitoring and surveillance, adequate skin preparation before cannulation, site rotation (Rope Ladder) cannulation technique and appropriate needle securing method (chevron) have been recommended by various clinical practice guidelines (NKF KDOQI, 2006; UK Renal Association, 2011; KHA- KARI, 2013).

As vascular access complications are mainly attributed to inappropriate cannulation practices, inadequate assessment and complications remain undetected (Cowan Debi, 2015). A survey conducted in six NKF community-based dialysis centers has revealed that area cannulation (same site) is the dominant practice by dialysis nurses and as an outcome, aneurysm is very common in AVF and AVG.

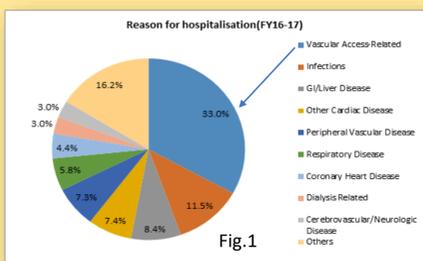
## TEAM LEADER & MEMBERS

Name	Designation	Department	Role
Ms. Lu Meihua Lucy	Advanced Clinical Nurse	Woodlands 2 DC	Leader
Ms. Wong Wai Mei	Clinical Nurse Manager	Queenstown DC	Member
Ms. Minimol	Clinical Nurse Manager	Yishun 1 DC	Member
Ms. Saritha	Clinical Nurse Manager	Bukit Merah 2 DC	Member
Ms. Sivamani	Advanced Clinical Nurse	Serangoon DC	Member
Ms. Bakkia Mary	Advanced Clinical Nurse	Teck Whye DC	Member

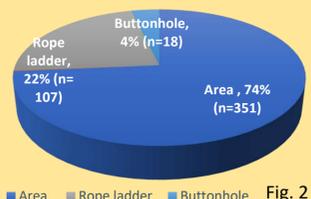
## EVIDENCE OF PROBLEM WORTH SOLVING

The following explains why this project was undertaken:

1. Vascular access is the leading cause for hospitalization in HD patients (Figure 1).
2. Area cannulation is the most adopted practice by dialysis nurses (Figure 2).
3. Aneurysm is very prevalent in current cohort of HD patients, partially attributed to area cannulation (Figure 3).



Cannulation technique and presence of aneurysm of all AVF & AVG in the 6 DCs (n=476) in Oct 2016.



Majority are new Access: 5.3 years in use (79%)



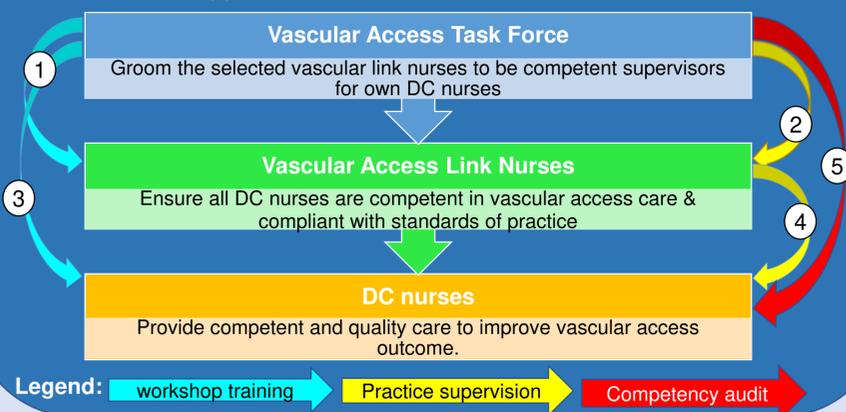
## AIM & OBJECTIVES

- Improve nurses' vascular access care competency in the areas of:
  - Physical examination
  - Skin preparation before cannulation
  - Site rotation cannulation technique (Rope Ladder)
  - Chevron needle taping
- Promote Rope ladder cannulation practice

## METHODOLOGY

**Design & setting:** a pilot project, involving all nurses from six community-based haemodialysis centre of NKF, namely Ang Mo Kio 1 (AM1), Bukit Batok (BBK), Bukit Merah 2 (BM2), Ghim Moh (GMH), Hougang 2 (HG2) and Yishun 1 (YS1) DCs.

**Methods:** Tiered approach



## INTERVENTION

- 1 A checklist was devised to measure nurses' vascular access care competency.
- 2 Enhanced Vascular Access Care Training Programme
- 3 A continuous monthly Rope Ladder data was monitored.

- 2 Enhanced Vascular Access Care Training Programme

**Workshop training (1/2 day)**  
Lay standards and expectation of care

**Scope of training:**

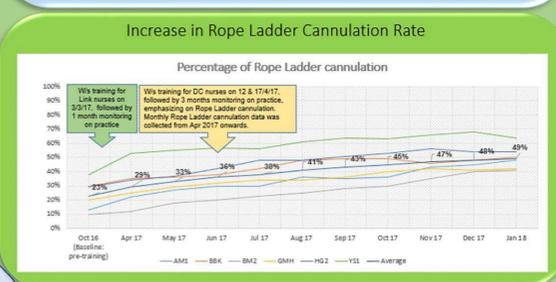
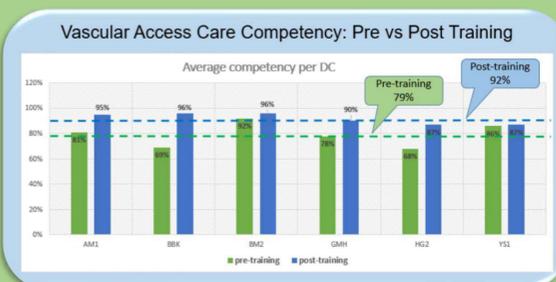
- Emphasize the importance of Access care
- Access monitoring and surveillance
- Skin Preparation before needling
- Site rotation cannulation technique
- Chevron needle taping
- New Access care

**Clinical Supervision (3 months)**  
Ensure competency & compliance

**Follow up on practice:**  
1-min Examination pre-HD

## RESULTS

Staff competency level on vascular access care has improved significantly from 79% to 92% after completion of training program. Rope Ladder cannulation rate has been steadily increasing, by Jan 2018, the percentage of patients on rope ladder cannulation has doubled up from 23% to 49%.



## CONCLUSION

A well-functioning vascular access is a prerequisite for successful haemodialysis treatment (Van Loon, 2009). Quality vascular access care plays an important role in reducing Access complications and improving Access survival, as well as the patients'.

Follow-up on practice is an integral part of nursing education which facilitates the application of learning into practice, an effective way to ensure competency and compliance and to close the theory-practical gap which commonly exists. This pilot study has produced promising results suggest that re-education and close practice monitoring are the key factors to maintain competency level and upkeep the standards of care.

## SUSTAINABILITY

The outcome of the pilot study was shared with the Nursing Quality Management and all Clinical Nurse Managers and was approved to roll out to all dialysis centres. Till date, a total of 26 dialysis centres nurses had undergone the "Enhanced Vascular Access Care Training" programme. The Task Force has planned to carry out re-fresh training and clinical audit to sustain the outcomes.