

Quality of nursing practice in Arteriovenous Fistula care

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Introduction

- **Chronic kidney disease (CKD) is an emerging public health problem and is rapidly transforming in to an epidemic.**
- **Vascular access represent a high proportion of Morbidity, Hospitalization, Cost , and Mortality in patients**
- **The creation and maintenance of functioning vascular access improves:**
 - **Quality of care in haemodialysis**
 - **Long-term survival**
 - **Quality of life of patients on hemodialysis via adequacy of dialysis**

PLAN

- **INTRODUCTION**
- **Vascular access modalities**
- **Chronic HD AV Fistulas**
 - **Characteristics of chronic HD AV Fistulas**
 - **Long term success of the AV Fistula**
 - **Fistula First Breakthrough Initiative (FFBI)**
 - **Multidisciplinary care**
- **AV Fistulas complications and Nursing management**
 - **AV Fistulas complications**
 - **Assessment of AV Fistula**
 - **Caring**
 - **Educating**
 - **Quality Assessment and performance Improvement Project to guide practice**
- **Conclusion**

Vascular access modalities

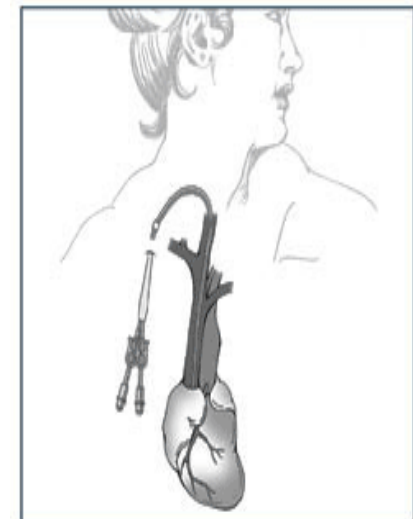
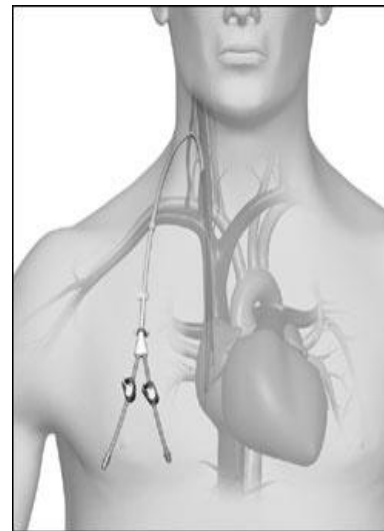
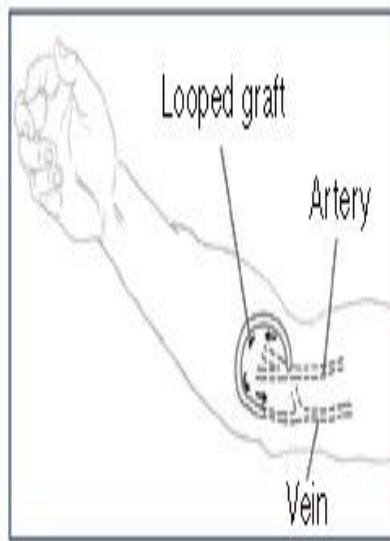
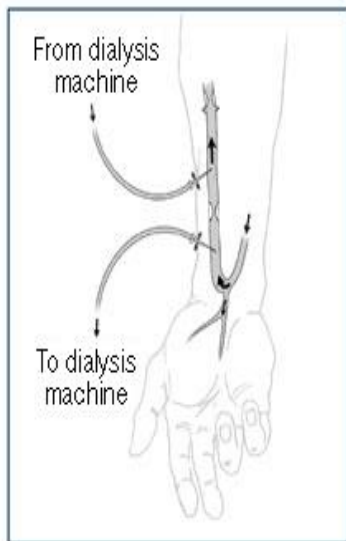


AV fistula

AV Graft

Venous catheters

Tunnelled / Non-tunnelled



40%

1%

09 – 39%

12 – 20%

First dialysis



Safe

- Well tolerated
- Few complications

Reliable

- Provides repeated access to circulation
- Provides continuous blood flow of 400 -600 mL/min
- Long lasting

Simple

- Easy to place
- Easy to use

Acceptable to patient

- Painless
- Cosmetically acceptable

The native AVF remains the gold standard

Top reasons for long term success of the AV Fistula

- **Good judgment for access-site selection**
- **Maintaining vessel integrity**
- **Comprehensive education and preparation for the time when dialysis should begin**
- **Creation the fistula at the right time for every patient**
- **Technical surgical excellence**
- **Appropriate management of complications**
- **Definition of strategy towards heamodialysis excellence**

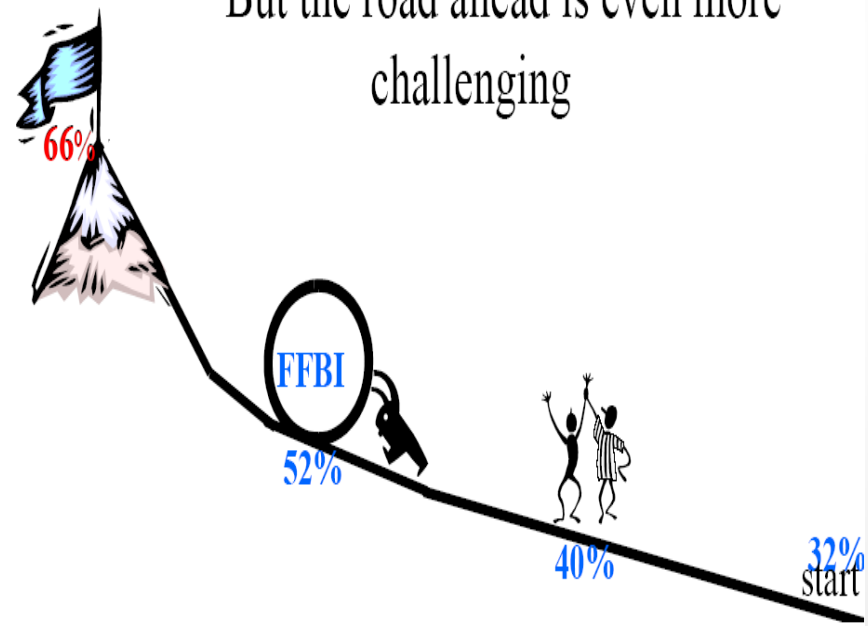
Planning for Vascular Access for Dialysis Fistula First Breakthrough Initiative (FFBI)

Goal

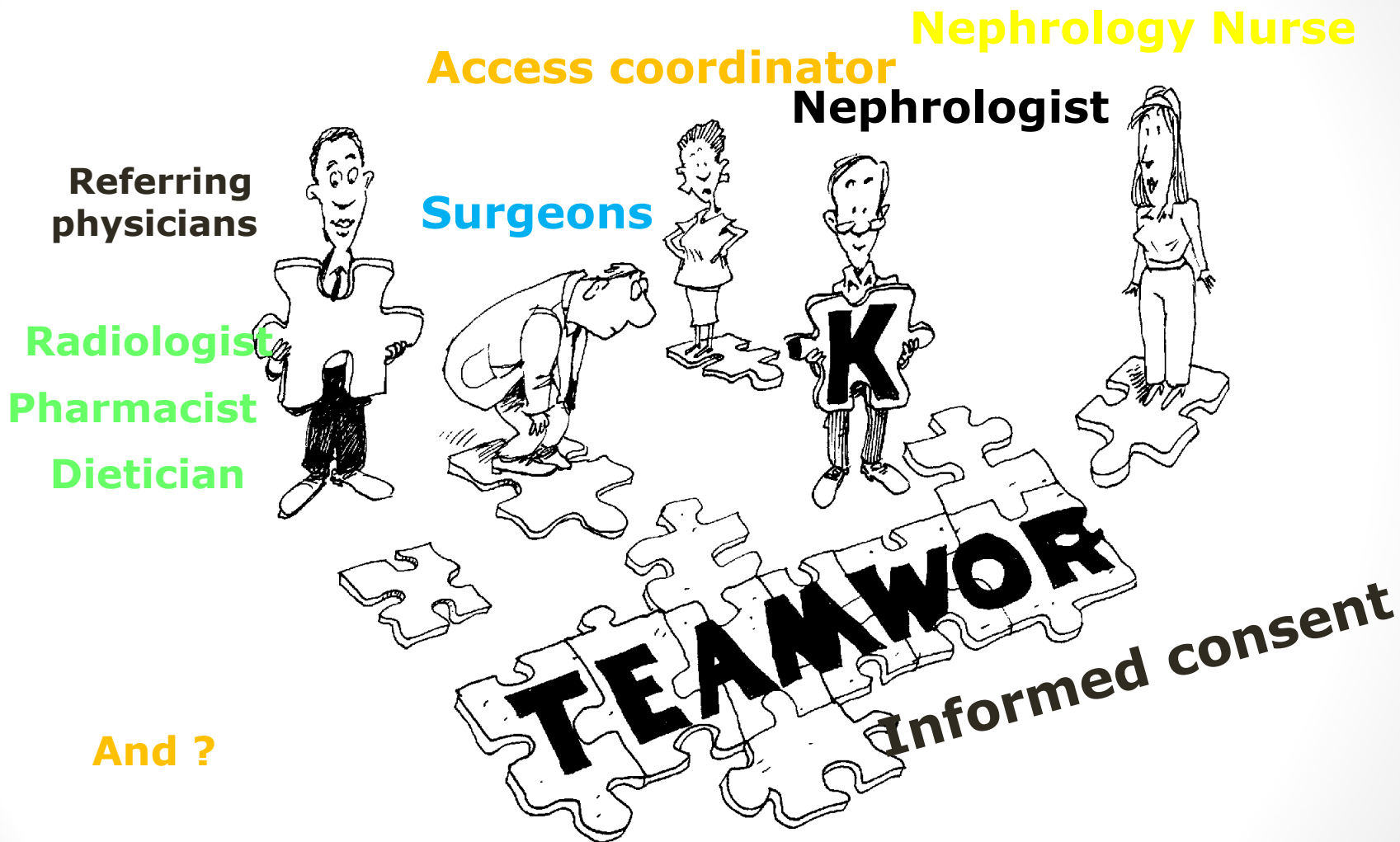
- Ensure that all HD patients have the opportunity to be evaluated for a fistula first, and to receive an AV fistula where feasible, and not medically contraindicated
- Goal= 66% prevalence of functioning AVFs
- Additional goal to reduce catheter use and abuse

We've come a long way!

But the road ahead is even more challenging



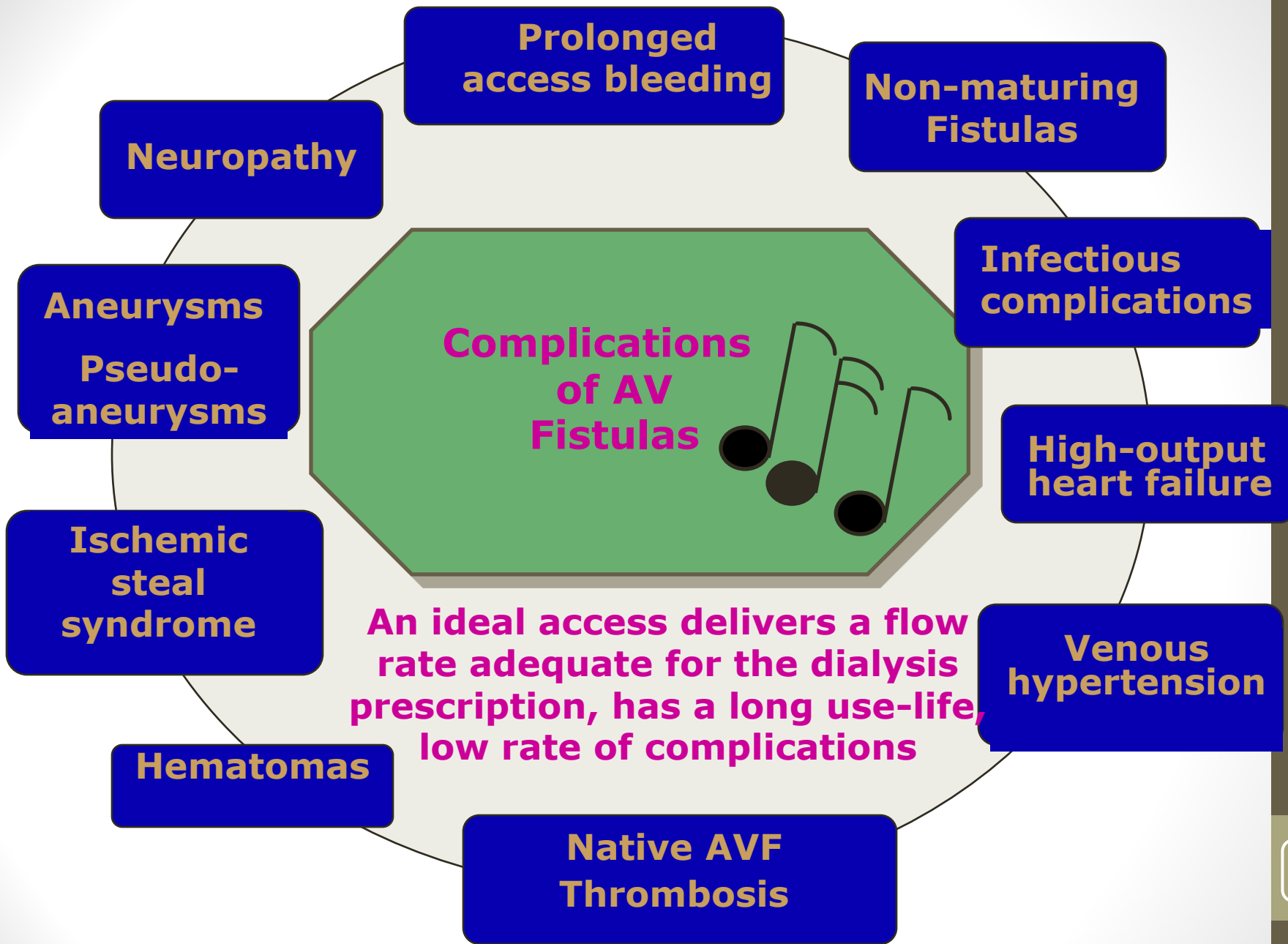
Multidisciplinary care



Active participation of the patients / family's lead to improve outcomes and a good quality of life

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AV Fistulas Nursing management

To optimize patient outcomes



Assessment of AV Fistula: prior to every treatment

Inspection: look for

**Ecchymosis/
discoloration**

**breaks in the skin,
Erythema.**

Aneurysm

**Hematoma formations,
curves/ flat spots**

prior cannulation sites

**Hand or arm or limb
swelling**

**Discoloration of nail
beds, Presence of
accessory veins**

Palpation: feel

-Thrill or pulsation

Normally a thrill is present and disappears after you manually occlude the AVF

If thrill remains = accessory

**-Vein diameter, flat
spots, aneurysms.**

**-Skin temperature :
Warm (infection?); Cold
(steal syndrome?)**

Auscultation : listen

**Quality and
amplitude of
bruit:**

**Sounds should be
continuous**

Baseline documentation

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Cannulation of a new AV fistula


- **Prepare skin before cannulation (antibacterial soap/ antiseptic)**
- **Recognize the pain, (whether psychological or physical), that accompanies cannulation**
- **Obtain “road map” of the AV fistula (graft)**
- **Use the “wet” needles**
- **Insert one needle (use for arterial supply)**

Cannulation Technique

Three broad techniques



Area puncture

 Cannulation in a restricted area



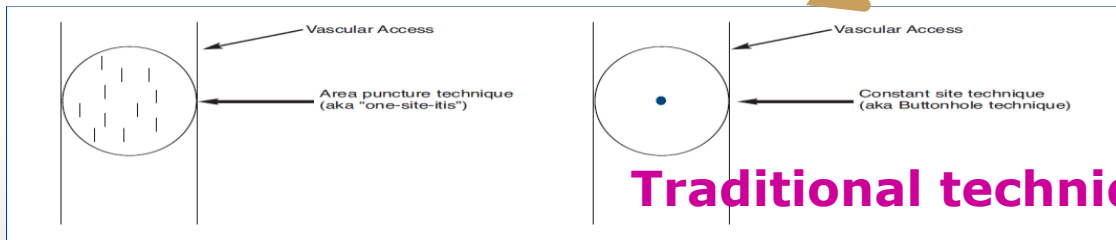
Buttonhole

"Constant-site"
Use of dull edged or blunt needles .
For use only with an AV fistula, not an AV graft.



Rope ladder

Cannulating the entire length of the fistula in a different site



Traditional technique



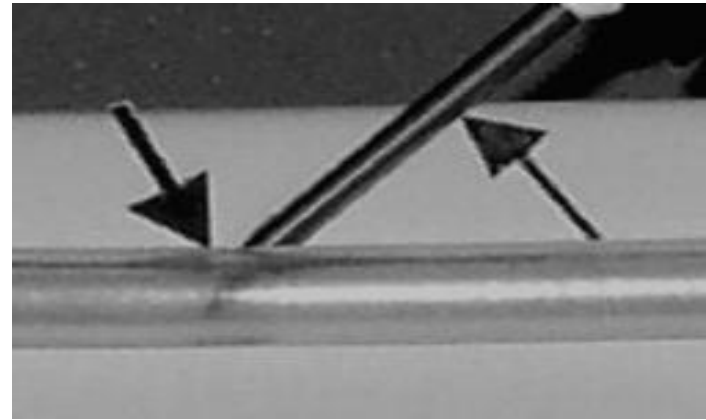
Technique for Cannulation

Three-Point Technique



Provides for accuracy
Has little pain associated with it

One Needle-Two Hole Illustration



Apply tourniquet to upper arm ↘ **Facilitates easier cannulation**
↙ **Avoids trauma to intima of vessels**

Check for arterial circulation of the hand: Steal Syndrome

Allen Test

Compress both the radial and ulnar arteries

Patient open and close the hand

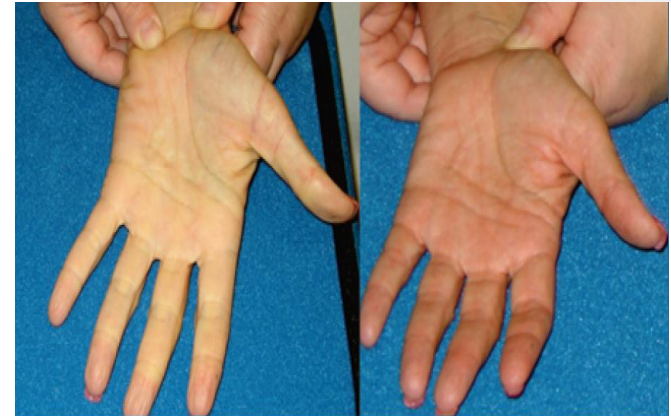
Evaluate Capillary refill to the hand

**Less than
3 seconds**

Negative test
adequate blood
flow in the
palmer arch

**More than
3 seconds**

Alert : plan for
access
placement /
revision



↓ blood supply to the hand

Hypoxia
pain (mild –severe)
etc...

Risk factors:

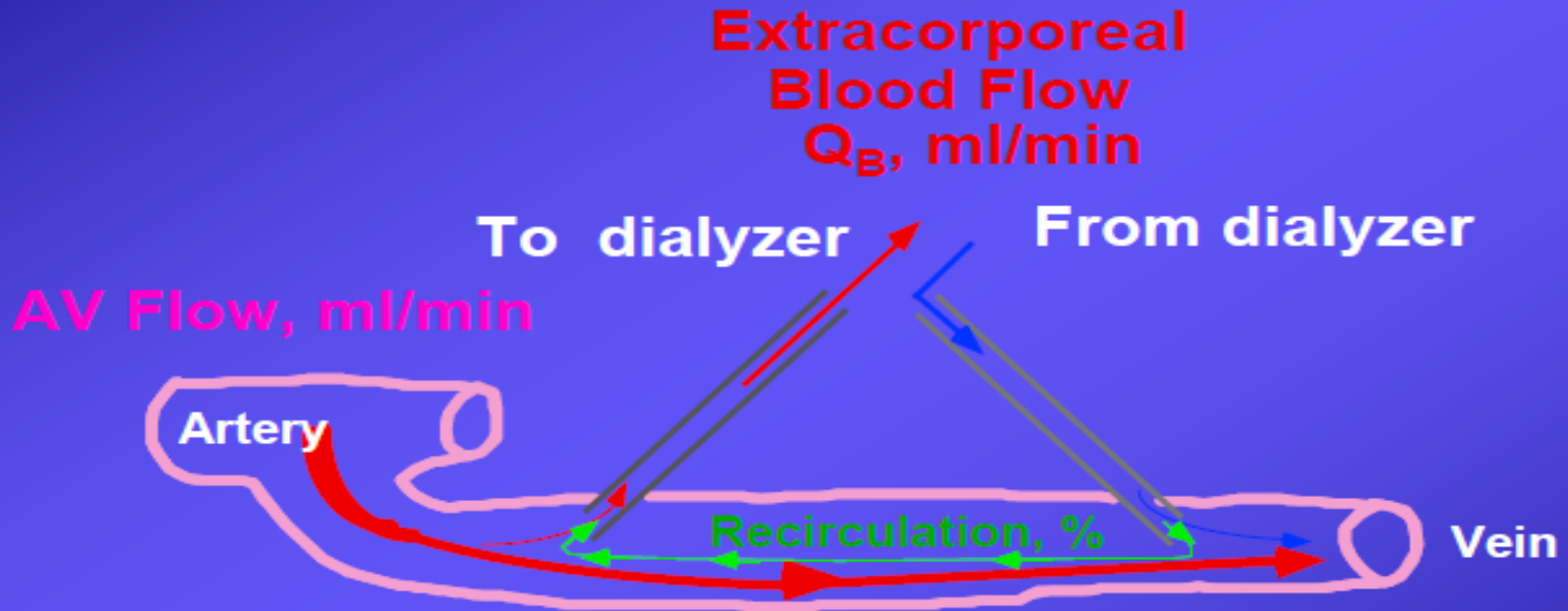
- AV Grafts
- Upper arm fistulas

Fistulogram?

- **If fistula flow <500 mL/min or drop of >20% of previous value**
- **If graft flow <650 mL/min or drop of >20% of previous value**
- **If dialysis inefficacy**

Check the *arterial dialysis pressure (ADP)* at every dialysis

Access Flow Recirculation



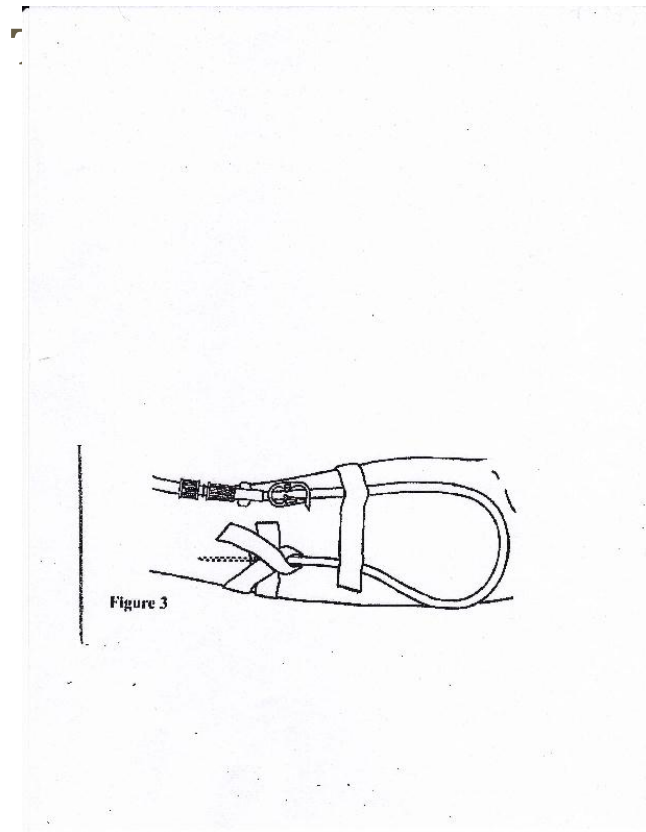
$$\text{RECIRC} = \frac{P-A}{P-V} \times 100$$

AV Fistula

Courtesy of B. Canaud

Decrease risk of dislodged needles

- ▶ **Secure blood lines to patient's clothing, **DO NOT TAPE TO CHAIR****
- ▶ **Place machine on same side as vascular access**
- ▶ **If you need to adjust a needle, use fresh tape**
- ▶ **Patient teaching-keep access visible, do not use lotion on access arm on dialysis days**



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 - **Self-management support : The 5 A's**
 - **Access-related patient education programs**
 - **Information brochure for patients : Patient safety:**
 - **Educate staff**
 - **Quality Assessment and performance Improvement Project to guide practice**
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Educate patients

- **Planning therapeutic patient education sessions/activities**

Promote patient self management

Self-management support The 5 A's cycle

© WHO 2004



Self management would include such things as:

- **Patient cleans access**
- **Self cannulation**
- **Examination of access (look, listen, feel)**
- **Understanding of numbers (clinical lab values)**
- **Understanding of monitoring and interventional tools that are available**

Educate patients: Producing an AV fistula brochures for patients

To avoid needle dislodgements

PATIENT SAFETY IS OUR NUMBER ONE GOAL

**PLEASE KEEP YOUR ACCESS UNCOVERED
SO WE CAN SEE IT AT ALL TIMES!**



Photo from: www.diabetes.niddk.nih.gov

**WHY? FOR YOUR SAFETY!
TO BE SURE THAT:**

- Needles are secure
- Bloodlines are connected
- No blood is lost

SAFETY CHECKLIST:

- ✓ Access is visible
- ✓ Bloodline connections are visible
- ✓ Lines are free from tugging
- ✓ Tape is secure

Help Us Ensure Your Safety!

AV fistula and patient safety

Keep it in Plain Sight



***ALWAYS THINK PATIENT SAFETY**



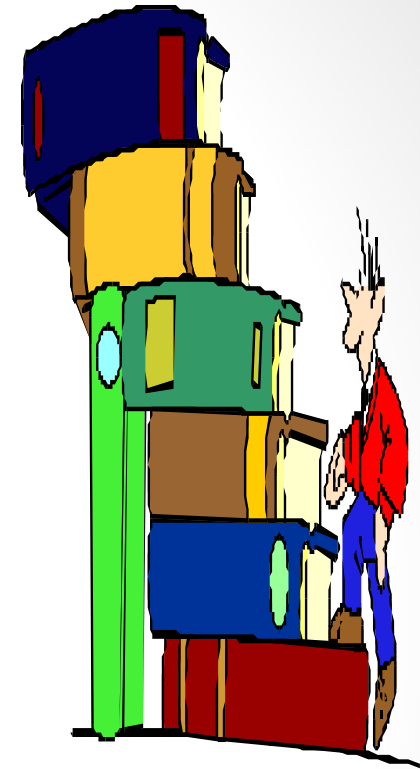
Venous Needle Dislodgement:
one of six main areas of patient safety concern.
Reputability professionals committed to enhancing and maintaining optimum levels of kidney patient safety.

REPUTABILITY PROFESSIONALS

www.kidneypatientsafety.org

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 - **Quality Assessment and performance Improvement Project to guide practice**
 - Purpose
 - Protocol oversight: "Controlled Language"
 - Evaluation of professional practice
 - Educate of staff
- Conclusion



Quality Assessment and Performance Improvement Project to guide practice : Purpose I

- **Develop and monitor Practice guidelines**
- **Provide for a systematic method to continuously assess and improve all aspects of health care delivery**
- **Improve patient care outcomes through the ongoing objective assessment of important aspects of patient care based on quality, cost, and service and the appropriate solutions of identified problems**

Quality Assessment and Performance Improvement Project to guide practice: Purpose II

- **Monitor the medical necessity, appropriateness of AV fistulas care, and adverse outcomes**
- **Collect and analyze Outcome data on an ongoing basis**
- **Ensure patient safety**

Protocol oversight: Controlled Language

- **Ensure policies reflect current standards of care & best practice**

Develop a “Controlled Language” (CL) adapted to health professional needs

Example: Supervise the following elements every [15] minutes during [1] hour:
[blood pressure],
[machine parameters]

Evaluation of professional practice (EPP)

- **The EPP is an organized approach to improve practices to continuously benchmark the practices performed and the results obtained with professional recommendations.**
- **Methods : decision trees, Monitoring of clinical practice patterns, Peer Review, review of death –morbidity, clinical pathway, root cause analysis, Auditing,.....**

EPP of vascular access in hemodialysis Integrated Clinical Pathway

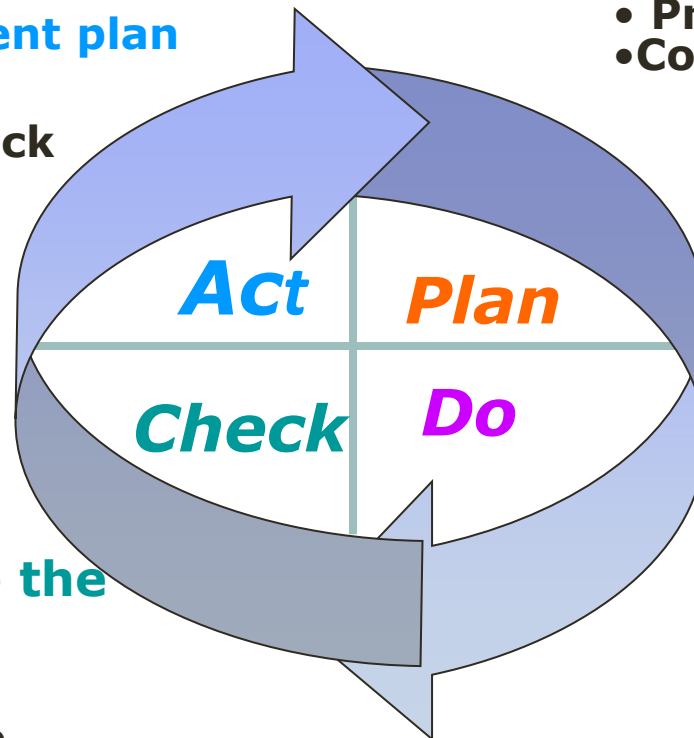
↑Fistula, ↓catheter rate

Implementation of action Plan Quality improvement plan

- Action plan
- Re –audit to check effectiveness

Verify & Analyse the results

- Gap analysis
- Discussion of the results



Prepare the action plan

- Team: multidisciplinary
- Problem area
- Communicate

Develop & Do the action

- Protocol: Clinical Technical Expert Panels/ DOQI
- Methodology Inclusion, Exclusion criteria, Tool, indicators
- Data Collection

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Measurement Guidelines: key measures

Measure	Indicator Rate:	Calculation
Outcome	Annual thrombosis rate for AVF/ PTFE	# thrombosis episodes in AVF / PTFE within the study year divided by the total number of AVF/ PTFEs at risk/ year.
Process	Annual rate of radiological procedures	# of radiological procedures performed within one year per each functioning VA for a whole year.
Outcome	VA survival	time period from the first use until end of follow- up after necessary surgical and/or radiological repairs had been to maintain VA permeability.
Process / Outcome	<ul style="list-style-type: none"> -Maturation -Failure -Additional required interventions -Past and current incident -prevalent AVF -Hospitalization -Infection 	<p>Numerator = event/problem related with AVF / PTFE</p> <p>Denominator= total number of AVF / PTFE / population at risk X 100, 1000</p>

AndStaff education

Educate, educate and educate staff..

Conclusion I

- **Vascular access remains the single most important and modifiable risk factor for death and illness in the haemodialysis population**
- **Preserving vascular access patency strongly influences treatment outcomes for patients**
- **Patient starts dialysis with a functioning AV fistula have best outcome**

Conclusion II

- **Vascular access failure is a veritable public health problem**
- **Quality of life and overall outcome could be improved significantly :**
 - **Increased placement of native AVFs**
 - **Detection of dysfunctional access before thrombosis of the access route occurs.**
- **Integrate the quality improvement approach in training of professional**

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