# Fistula Surveillance:

## Everyone's Responsibility

**Advanced Course in Vascular Access 2019**

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# Hemodialysis

- The biggest problem is **ACCESS**
- > 25 % of hospitalisations in ESRF
- Cause of death
  - Access Complications
  - Access failure

* Hakim et al, *Kidney International* (1998) **54**, 1029–1040

# Access Problems

Central Vein Stenosis, SVC syndrome

Sepsis (graft, vascath)

Fistula stenosis & occlusion

Giant fistula / high output failure

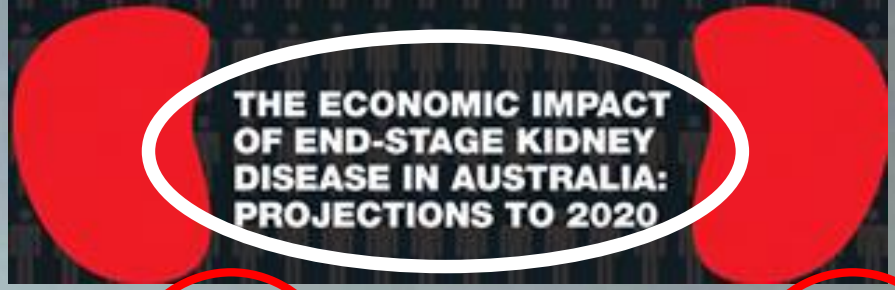
Fistula ulceration / bleeding

Fistula aneurysm

Inadequate dialysis

Access failure etc.

And it is EXPENSIVE !!




| | In centre | Satellite | Home HD | PD |
|---|---|---|---|---|
| **Estimated health system expenditure/pt/yr AUD 2007-2008** | **$76,881** | **$63,505** | **$47,775** | **$51,640** |
| **Indexed to AUD 2008-2009*** | **$79,072** | **$65,315** | **$49,137** | **$53,112** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nursing | 33% | $26,094 | 24% | $15,349 | 5% | $2,457 | 5% | $2,656 |
| Medical | 3% | $2,372 | 3% | $1,959 | 4% | $1,965 | 3% | $1,593 |
| Access surgery | 6% | $4,744 | 7% | $4,572 | 9% | $4,668 | 19% | $10,224 |
| Pharmacy | | | | | | | | |
| Section 100 | 13% | $10,279 | 15% | $9,471 | 21% | $10,073 | 21% | $11,286 |

| **Resource items** | **Live donor** *Recipient unit cost* | **Live donor** *Donor unit cost* | **Deceased donor** *Recipient unit cost* | **Deceased donor** *Donor unit cost* |
|---|---|---|---|---|
| **TOTAL YEAR 2 ONWARDS COST** | **$11,770** | | **$11,770** | |

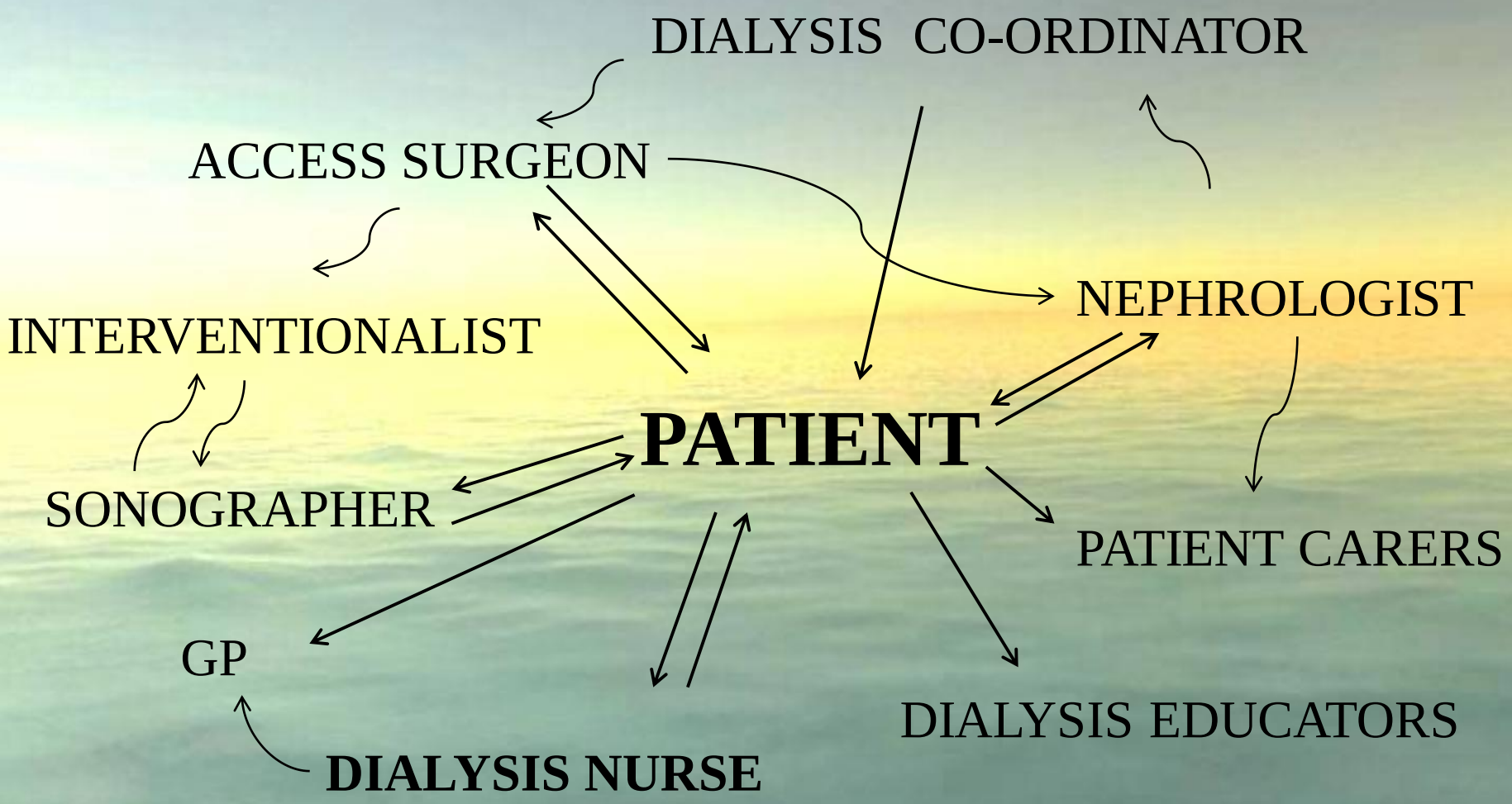
# ESRF:

An expensive business - We have to get it right!

# Fistula Failure & Complications

- Most are predictable
- Fistula failure is almost always gradual
- An occluded fistula is a “ System Failure”!

# DIALYSIS TEAM



# WESTMEAD SYSTEM FOR DIALYSIS ACCESS

1 **Early Referral For Access Formation**

2 **Emphasis On Home Hemodialysis**

3 **Avoidance Of Vascath At All Times**

4 **Use Of Autogenous Vein For ALL Fistula Access**

5 **Planning Of AVF Using Duplex U/S; <u>“Preservation Scan”</u>**

# WESTMEAD SYSTEM FOR DIALYSIS ACCESS

6 Duplex U/S As First Line Investigation

7 Early Intervention In Non Maturing AVF

8 Endovascular Treatment Of Problems; Nitinol Stents are good!

9 Endovascular Salvage Of Occluded Fistula

10 AVF Surveillance “Fistula Maintenance” In All

Should we do Fistula Surveillance & Maintenance?

Is it Useful ?

Where are the Randomised Trials?

Is the Pope in Rome a Catholic ?

Where are the Randomised Trials?

Good Care &
Maintenance

No Care &
No Maintenance

# What happens to the nAVF if Neglected & Un-maintained ?

It may not grow,

Or it may fail,

It may even fail early !

# Surveillance Questions

1.WHY ?

2. WHICH ?

3. WHO ?

4. HOW ?

5. HOW OFTEN?

&

6. WHAT ACTION PLAN ?

# 1. Why ?

- To maintain adequate hemodialysis
- To prevent fistula occlusion
- To prevent fistula complications

# 1. Why ?

Native fistula failures are:

→ Progressive (over months)

→ Predictable

→ Preventable !

# 1. Why ?

Little scientific evidence access  surveillance

? Increased Surveillance

? Unnecessary prophylactic interventions

# 1. Why ?

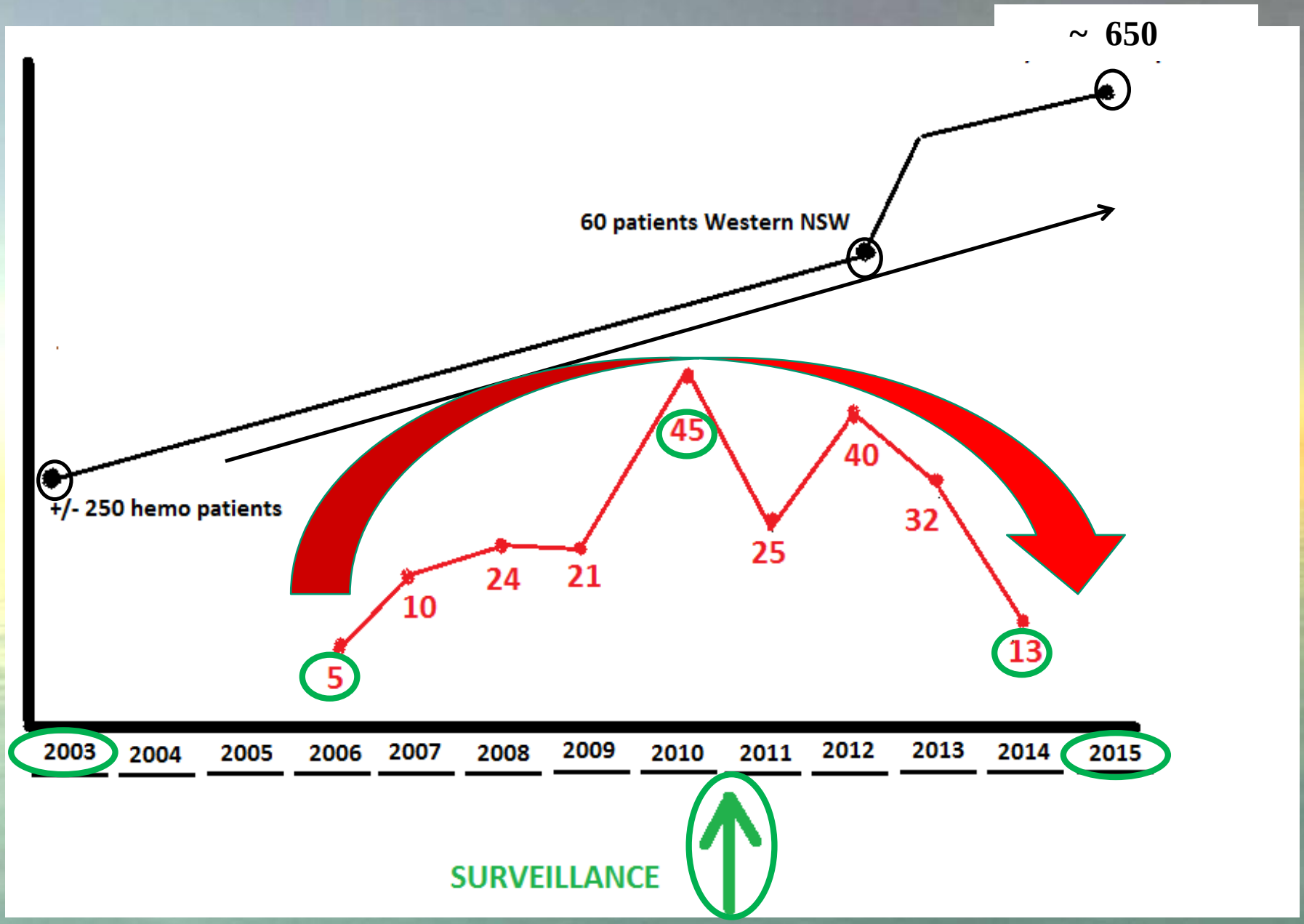
RCT by Tessitore over 5 years:

Blood flow surveillance & pre -emptive repair

→ Prolonged functional life of mature AVF

→ Fistula loss of 15.6%/year vs 5.1%/year

# Western Renal Service



# 2. Which ?

- All Fistulas must have surveillance !

- However, some need more than others:

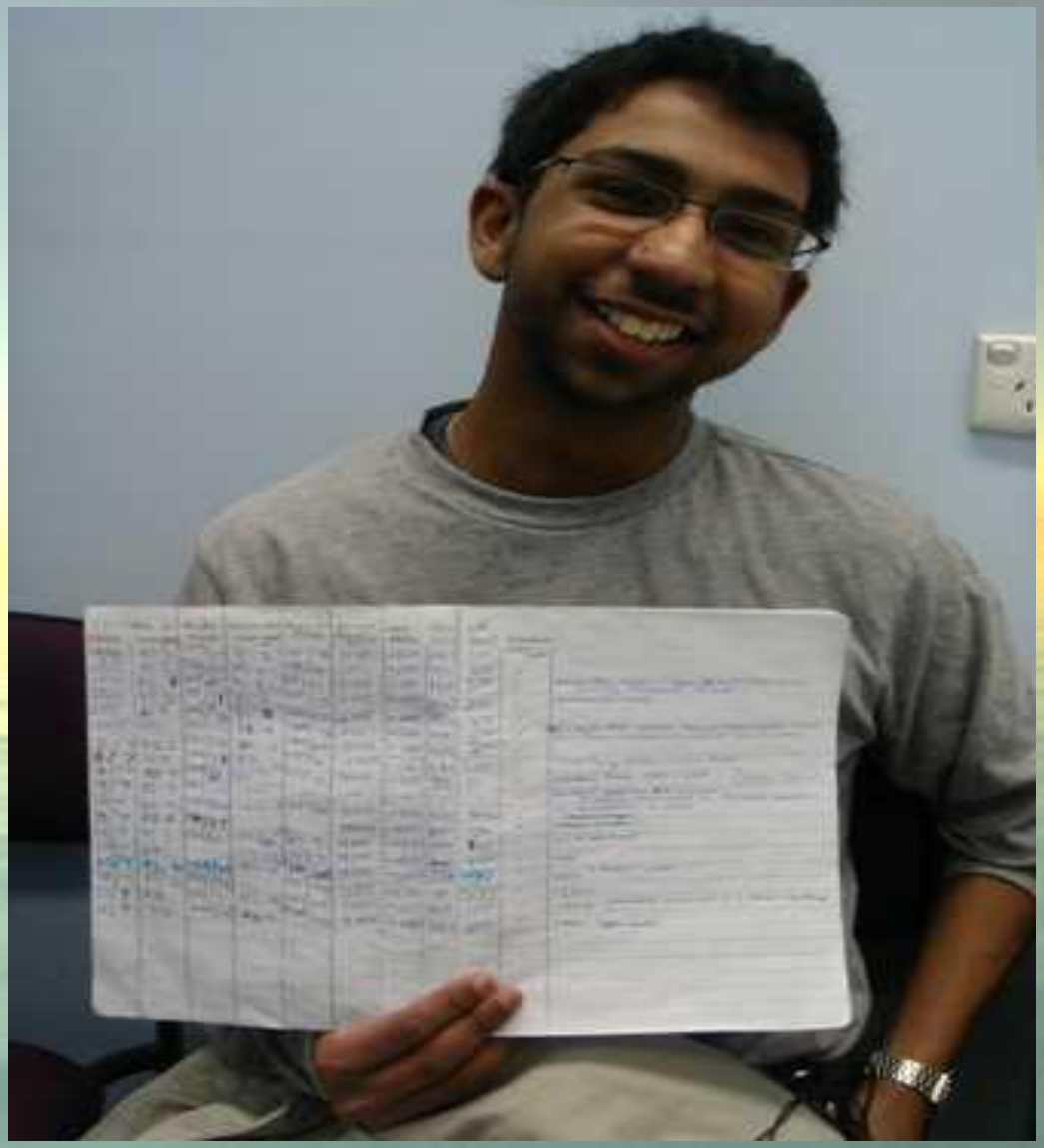
→ “Frequent Fliers”

→ The “precious fistula”

# 3. Who ?

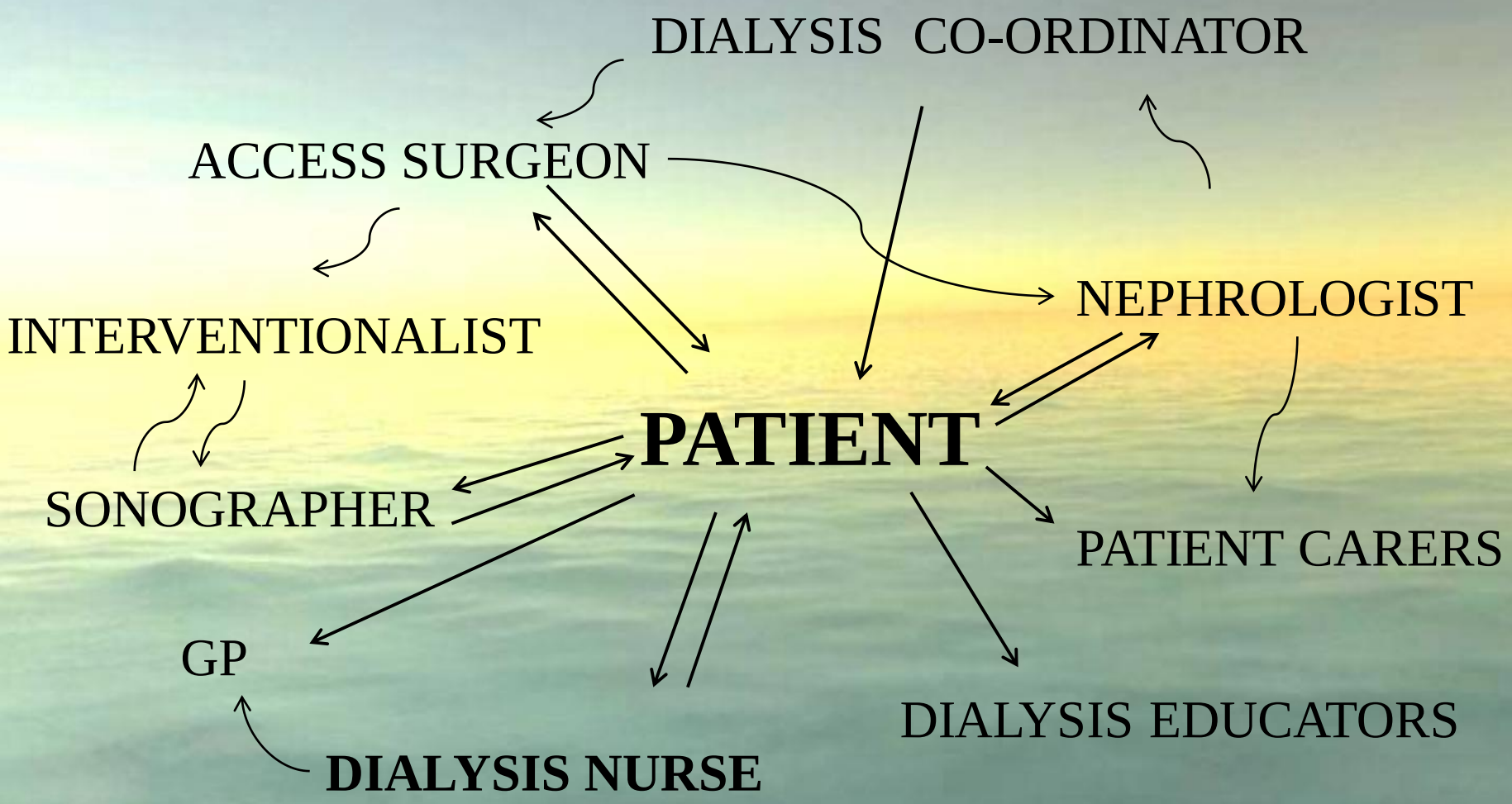
- EVERYONE !
- Patient First (patient education)
- Dialysis Nurse Second
- **ALL** Health professionals involved!

# PATIENT CENTERED



courtesy
Dr R Allen

# DIALYSIS TEAM



# 4. How ?

- Clinical examination / history
- Qb: “Dialysis numbers”
- Qa: Volume flow
- Ultrasound of fistula circuit
- “Adequate Dialysis Parameters” et Kt/V

# Physical Examination

## Accuracy of Physical Examination in the Detection of Arteriovenous Fistula Stenosis

Arif Asif et al

Clin J Am Soc Nephrol 2: 1191–1194, 2007

“The findings of this study demonstrate that physical examination can accurately detect and localize stenoses in a great majority of arteriovenous fistulas.”

# Physical Examination

- Very important for the “financially constrained”
- Cheap
- Reliable
- First step in surveillance strategy!

# Parameters

- Qb  < 300, > +140, > - 140
- Qa Volume Flow  < 500
- Recirculation > 10%

# 5.How Often?

- Twice daily by patient
- At each dialysis by dialysis nurse
- “Dialysis is a Fistula STRESS TEST”

  Tim Spicer, Sydney

(Cost: 0 $ - Effectiveness: High!)

# 6. Action Protocols

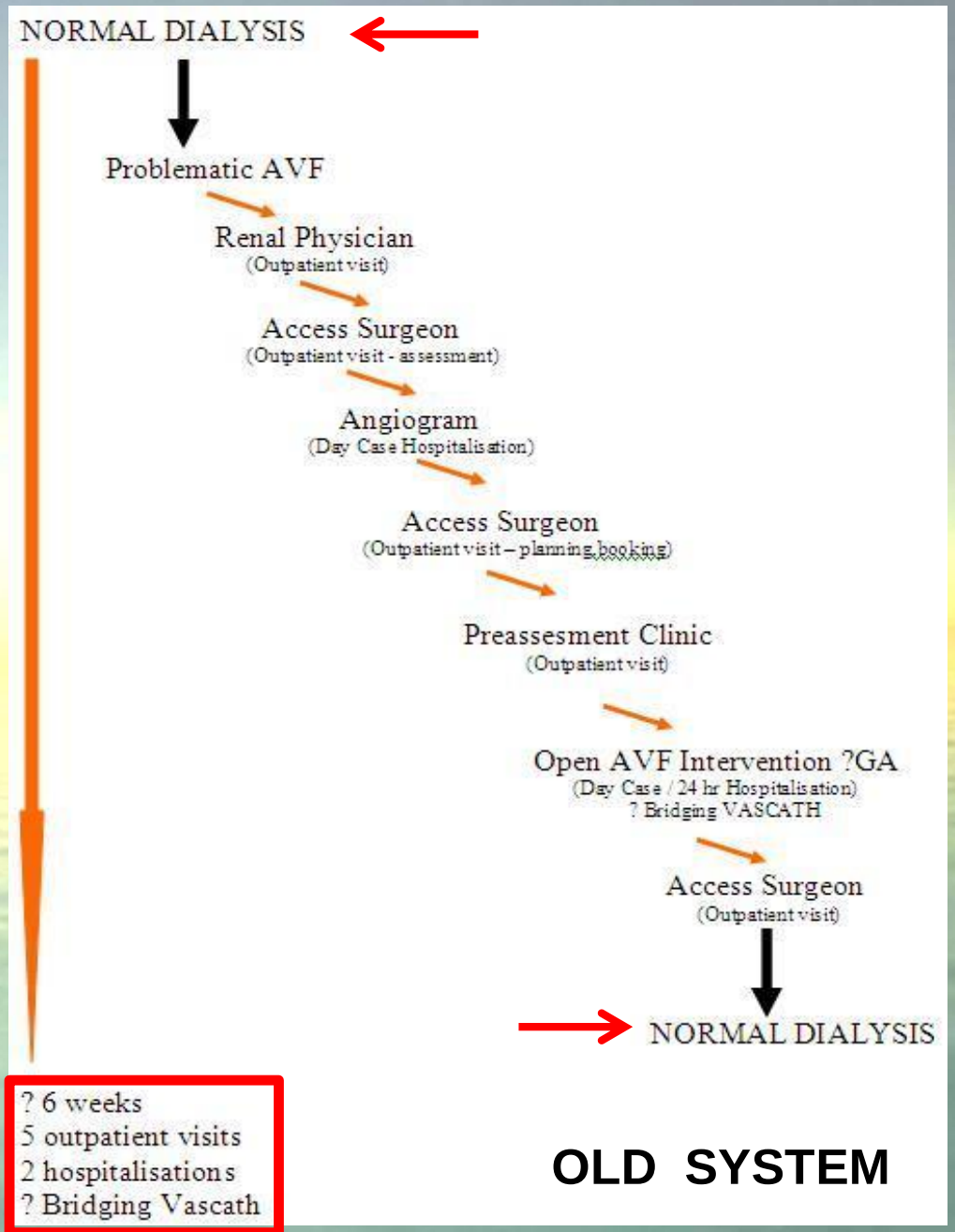
Surveillance suggests a problem

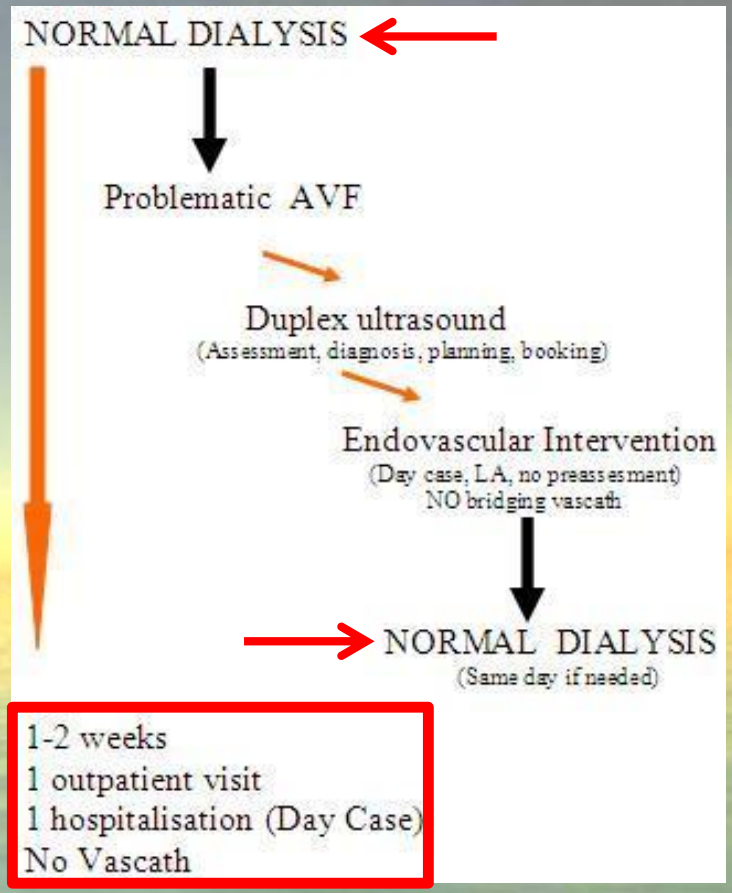
Diagnositic fistula ultrasound

Corrective Procedure

(Open Surgery or Endovascular)

# THE PROBLEMATIC AVF




**WESTMEAD SYSTEM**

# As a result of SURVEILLANCE:

Available money & resources will be spent on

Preventing Problems

rather than treating complications

Resulting in improved patient

Length of Life

&

Quality of Life

# Thankyou for your attention