27° Πανελλήνιο Συνέδριο Νεφρολογίας

Astir-Egnatia Palace

20–23 Μαΐου 2026
Αλεξανδρούπολη

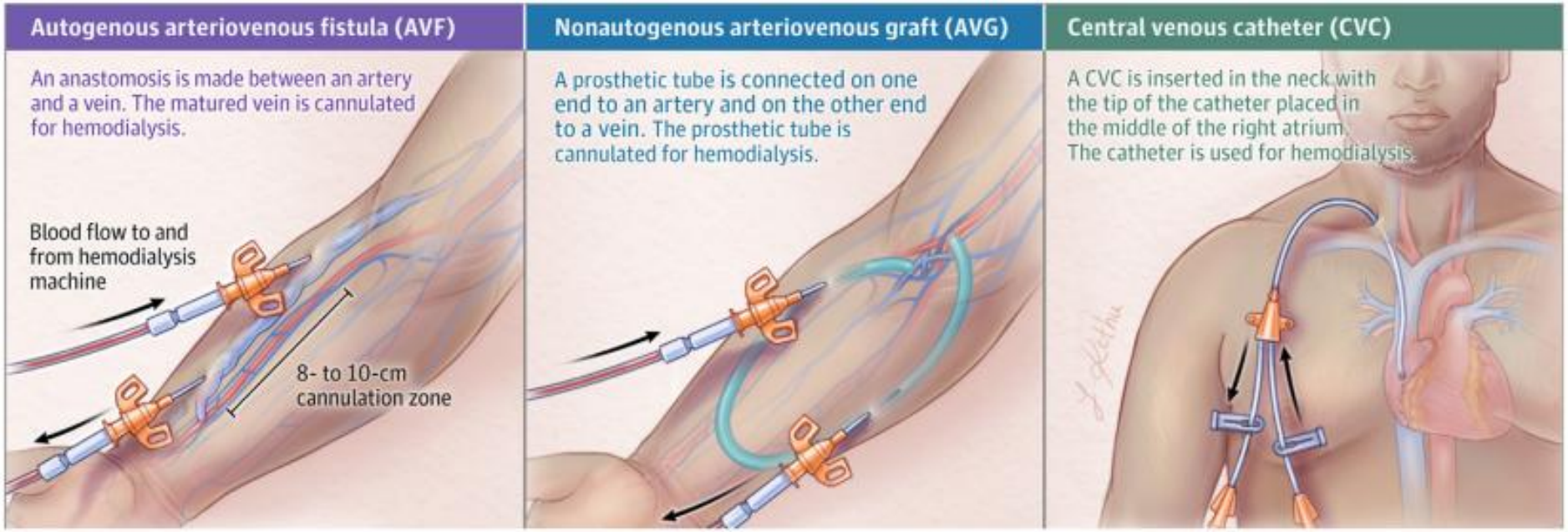
# Πολιτική διενέργειας αγγειακών προσπελάσεων: Life plan

Αδαμαντία Μπρατσιάκου

Νεφρολόγος

Νεφρολογικό & Μεταμοσχευτικό Κέντρο ΠΓΝ Πατρών

# ΕΠΙΛΟΓΕΣ ΑΓΓΕΙΑΚΗΣ ΠΡΟΣΠΕΛΑΣΗΣ




C. Lok, Am J Kidney Dis. 85(2):236-252.

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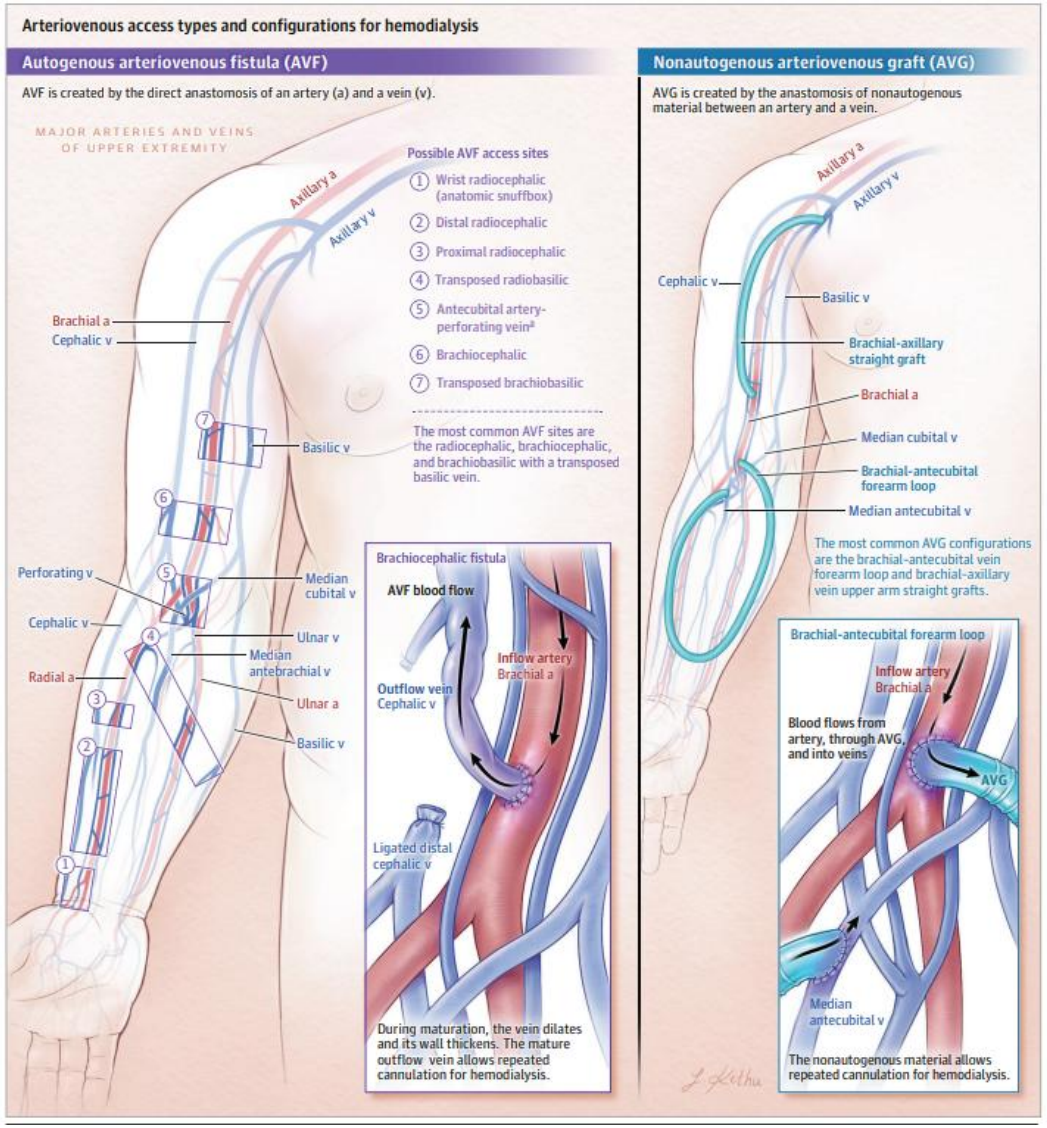


Charmaine Lok, JAMA, 2024;331;(15):1307-1317.

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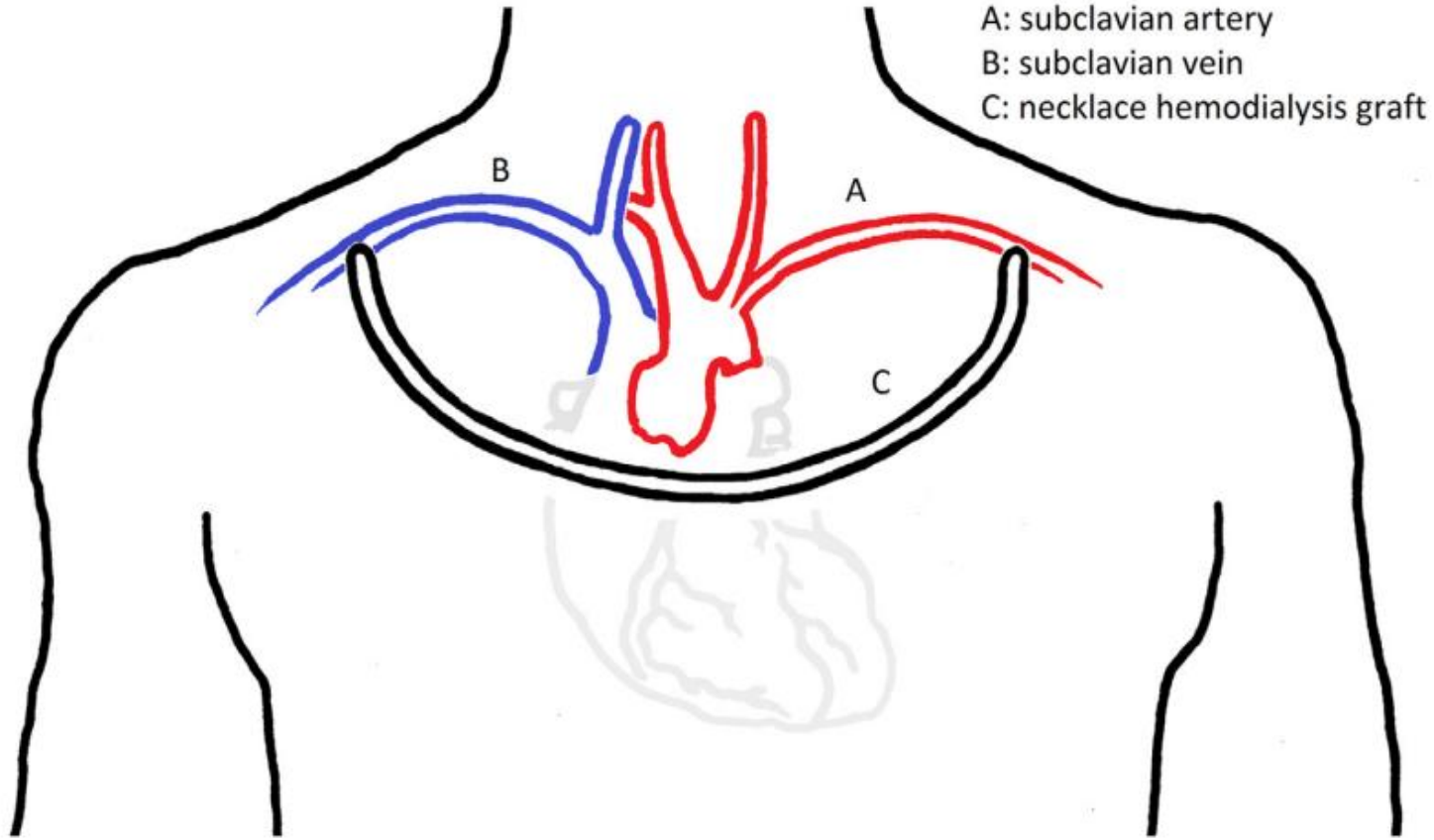
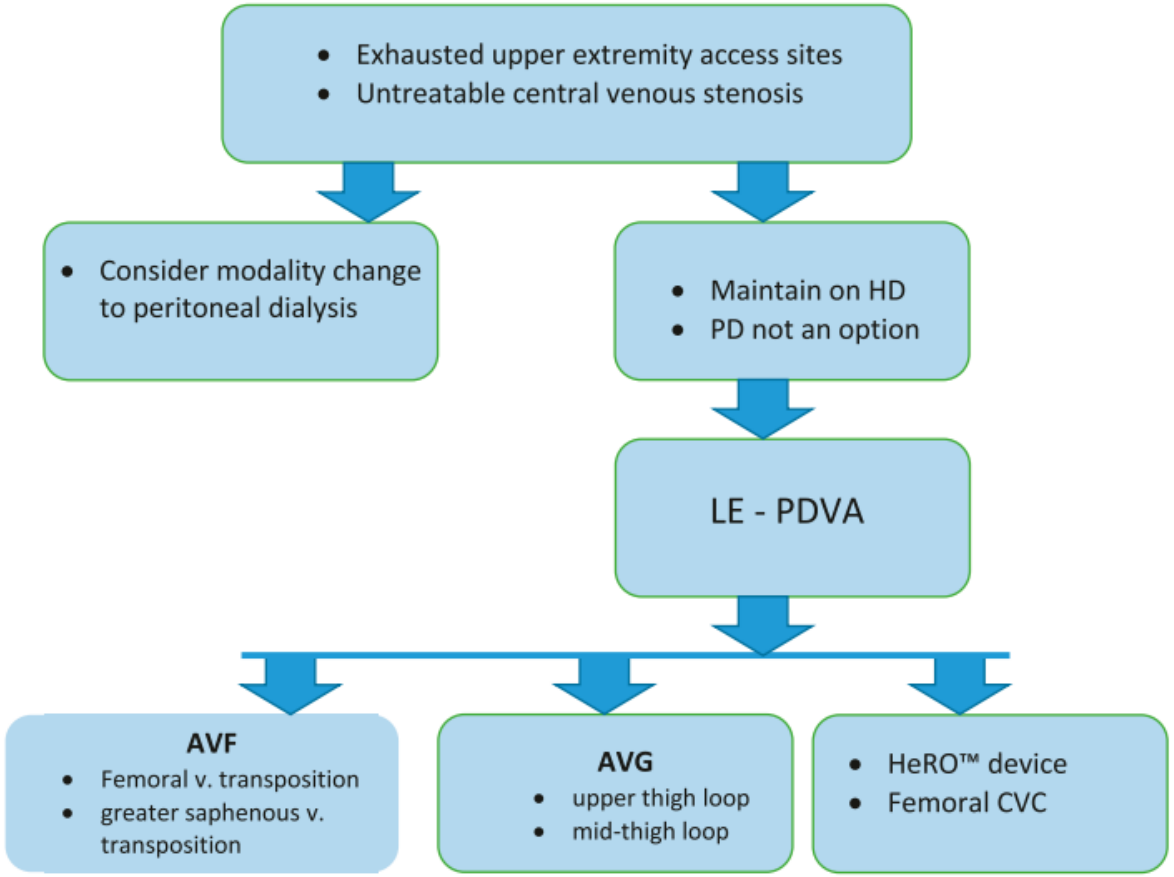



Price A. Journal of Vascular and Interventional Radiology, 2013; 25, 199-205

# ΕΠΙΛΟΓΕΣ ΑΓΓΕΙΑΚΗΣ ΠΡΟΣΠΕΛΑΣΗΣ




V. Parekh, Clin J Am Soc Nephrol 11: 1693–1702, September, 2016

# ΕΠΙΛΟΓΕΣ ΑΓΓΕΙΑΚΗΣ ΠΡΟΣΠΕΛΑΣΗΣ

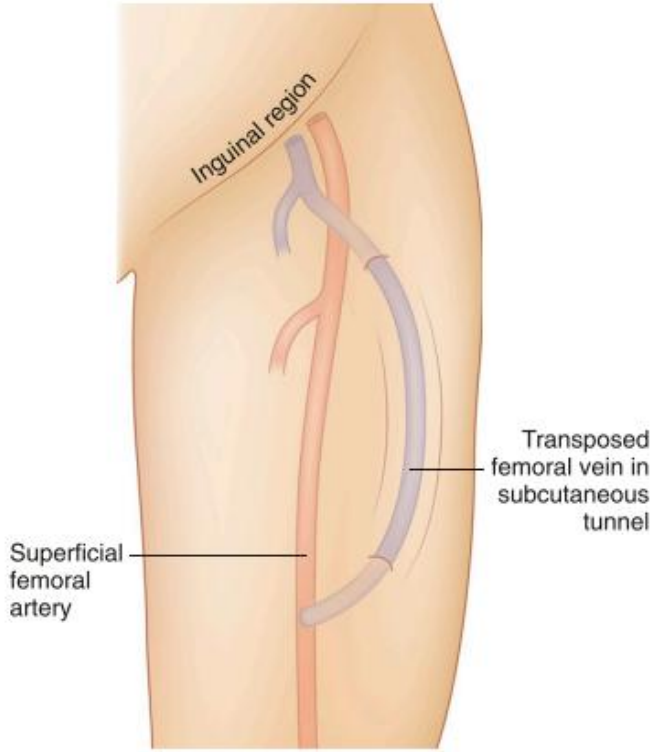



Figure 2. | Schematic representation of transposed femoral vein to femoral artery lower extremity fistula.

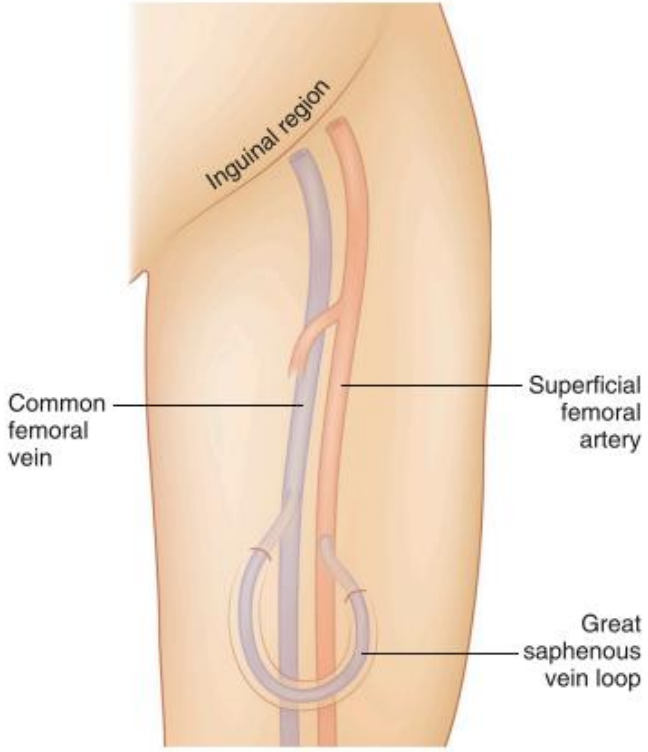
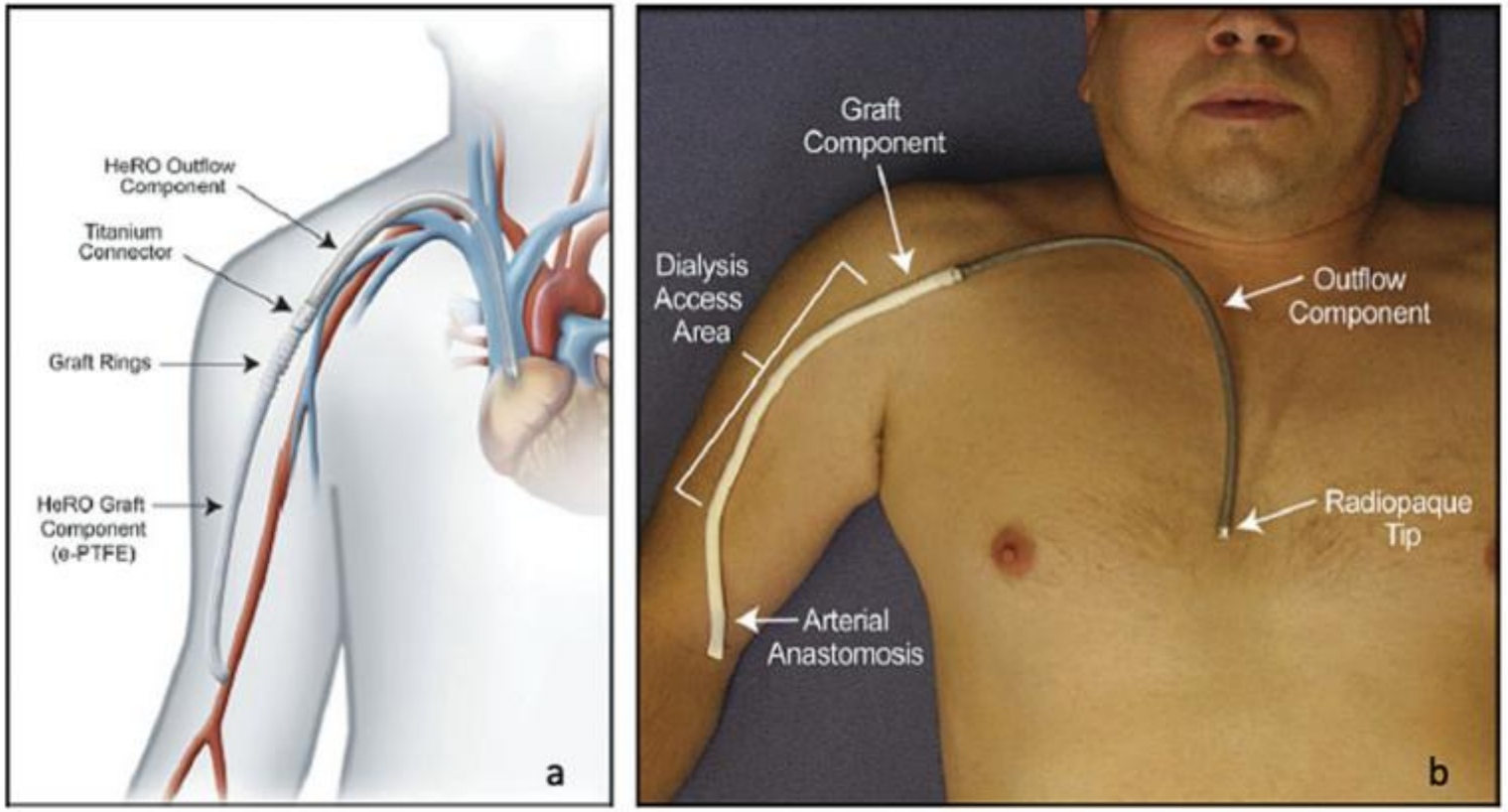



Figure 3. | Schematic representation of great saphenous vein looped arteriovenous fistula.

Figure 4. | Schematic representation of a thigh arteriovenous graft.

V. Parekh, Clin J Am Soc Nephrol 11: 1693–1702, September, 2016

# ΕΠΙΛΟΓΕΣ ΑΓΓΕΙΑΚΗΣ ΠΡΟΣΠΕΛΑΣΗΣ




T. Tabriz, Semin Intervent Radiol 2022;39:82–89

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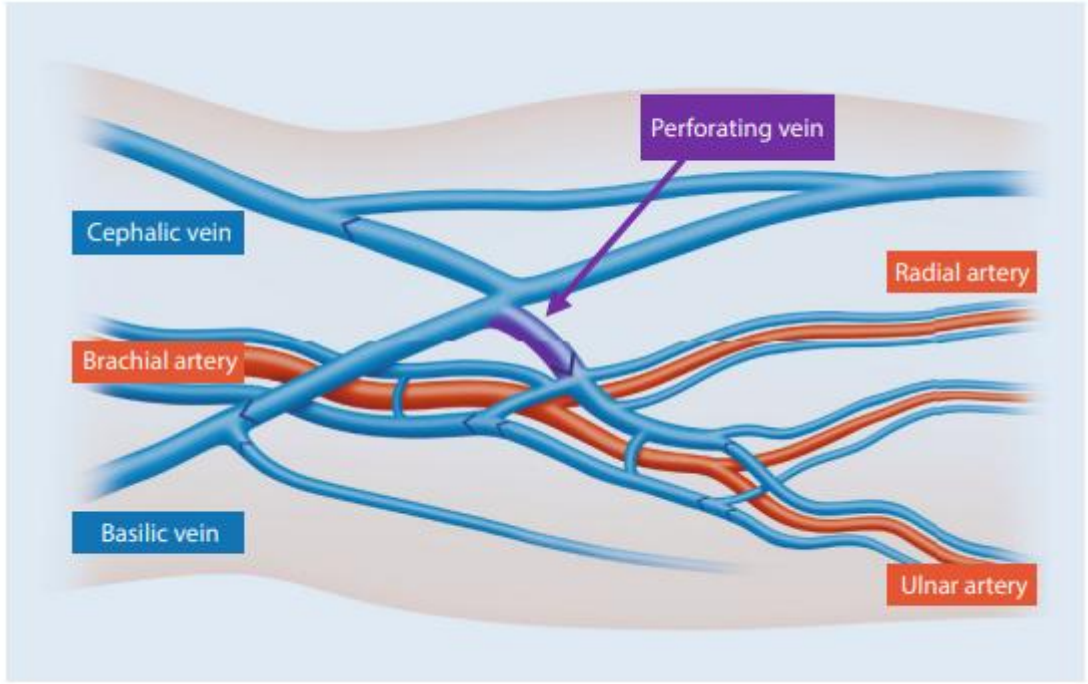
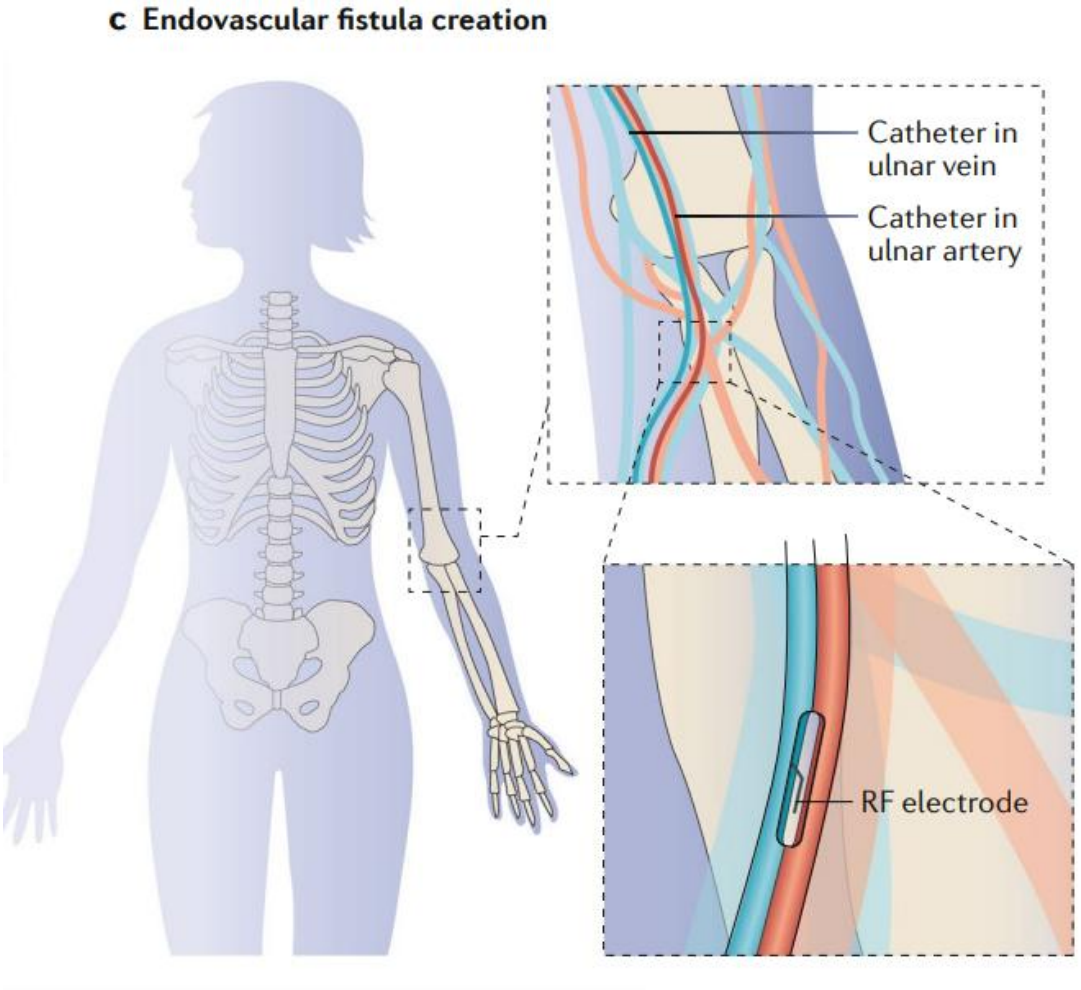
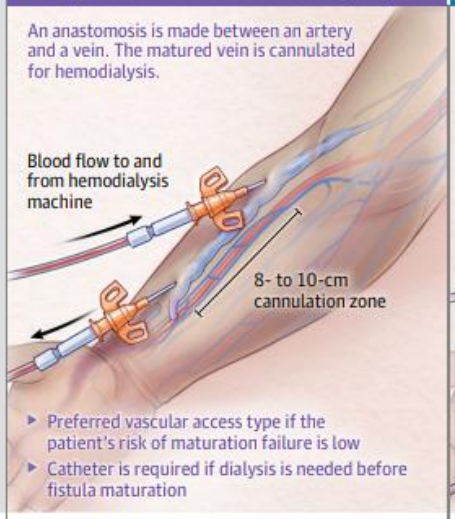
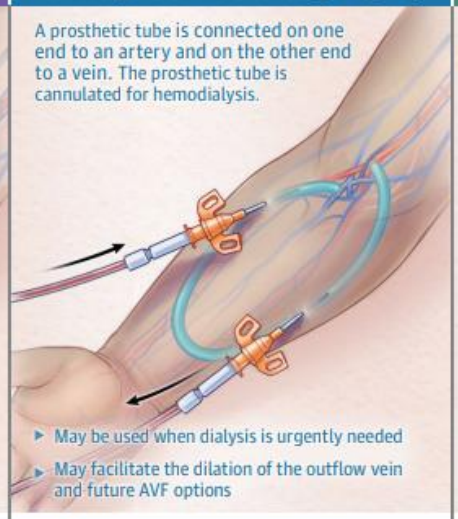
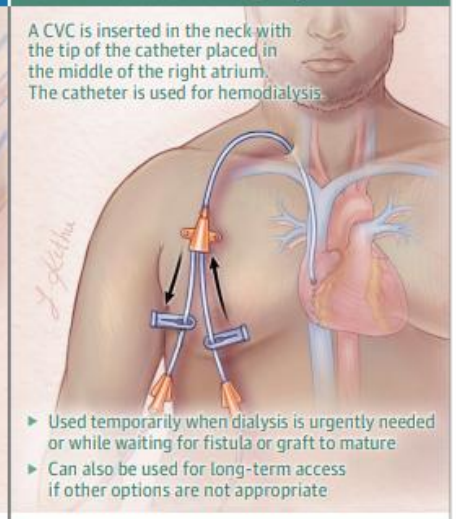



Lawson, J.H, *Nat Rev Nephrol* **16**, 586–602 (2020).

# ΣΥΓΚΡΙΣΗ ΑΓΓΕΙΑΚΩΝ ΠΡΟΣΠΕΛΑΣΕΩΝ

**A** Comparison of arteriovenous access types

| | Autogenous arteriovenous fistula (AVF) | Nonautogenous arteriovenous graft (AVG) | Central venous catheter (CVC) |
|---|---|---|---|
| Procedure and indications | An anastomosis is made between an artery and a vein. The matured vein is cannulated for hemodialysis.<br>  <br>▸ Preferred vascular access type if the patient's risk of maturation failure is low<br>▸ Catheter is required if dialysis is needed before fistula maturation | A prosthetic tube is connected on one end to an artery and on the other end to a vein. The prosthetic tube is cannulated for hemodialysis.<br>  <br>▸ May be used when dialysis is urgently needed<br>▸ May facilitate the dilation of the outflow vein and future AVF options | A CVC is inserted in the neck with the tip of the catheter placed in the middle of the right atrium. The catheter is used for hemodialysis.<br>  <br>▸ Used temporarily when dialysis is urgently needed or while waiting for fistula or graft to mature<br>▸ Can also be used for long-term access if other options are not appropriate |
| Time to usage and duration | • 2- to 6-mo maturation time<br>• 20%-60% Risk of maturation failure<br>• Long term<br>*May need multiple interventions to facilitate maturation* | • 2 to 4 wk to cannulation (if standard graft)<br>• Can use within 72 h if using early-cannulation graft<br>• Long term<br>*May need multiple interventions to maintain patency* | • Immediately usable<br>• Short or long term<br>*May require multiple catheter changes* |
| Risks of possible complications | • **Stenosis** (11%-16% risk) and **thrombosis**<br>• **Aneurysm** (risk worsened by poor cannulation, high flows, and stenosis)<br>• **Steal syndrome** (greater in arm vs forearm)<br>• **High-output heart failure**<br>• **Infection** risk dependent on cannulation technique (lowest risk with rope ladder cannulation)<br>*Fistulas that achieve unassisted maturation have fewest complications* | • **Stenosis** (35% risk) and **thrombosis** (3x greater risk than fistulas after first year)<br>• **Pseudoaneurysm** (worsened by poor cannulation, high flows, and stenosis)<br>• **Steal syndrome** (greater in arm vs forearm)<br>• **High-output heart failure** risk typically less than with fistulas<br>• **Infection** risk slightly greater than or similar to that with fistulas but less than that with catheters | • **Central venous stenosis** or **occlusion** (may prevent future fistula or graft creation)<br>• **Greatest risk of infection** across all vascular access types<br>• **Catheter displacement risk** (may fall out or become embedded in heart or blood vessels) |
| Patient satisfaction | • Can bathe, shower, and swim<br>• High patient satisfaction | • Can bathe, shower, and swim<br>• Moderate patient satisfaction | • Cannot shower without proper protection and cannot swim<br>• Variable patient satisfaction<br>• No cannulation pain |

Charmaine Lok, JAMA, 2024;331;(15):1307-1317.

# ΣΥΓΚΡΙΣΗ ΑΓΓΕΙΑΚΩΝ ΠΡΟΣΠΕΛΑΣΕΩΝ

**B** Comparison of arteriovenous access characteristics

| | Time to usage and durability | | | Risk of complications | | | | Health care needs | |
|---|---|---|---|---|---|---|---|---|---|
| | Immediate use | Adequate blood flow for dialysis | Long lasting (>2 y) | Infection | Stenosis and thrombosis | Cardiac complications | Steal syndrome | Additional hospital visits | Additional remedial procedures |
| AVF | No | Yes | Yes | Low[a]-medium | Low-medium[b] | High | High | Reduced[c] | Reduced[d] |
| AVG | Yes[e] | Yes | Yes[f] | Low-medium | Low-medium[g] | Medium | Medium | Reduced | Reduced[f,h] |
| CVC | Yes | Yes[i] | Sometimes | High | High[j] | Low | Low | Increased | Increased |

[a] With rope ladder cannulation.

[b] After successful maturation and use.

[c] Reduced complications requiring hospital admission.

[d] Needs procedure to start using AVF.

[e] With use of early-cannulation graft.

[f] Short-term patency improvement with acetylsalicylic acid/dipyridamole or fish oil.

[g] Low thrombosis risk short term, but higher risk long term.

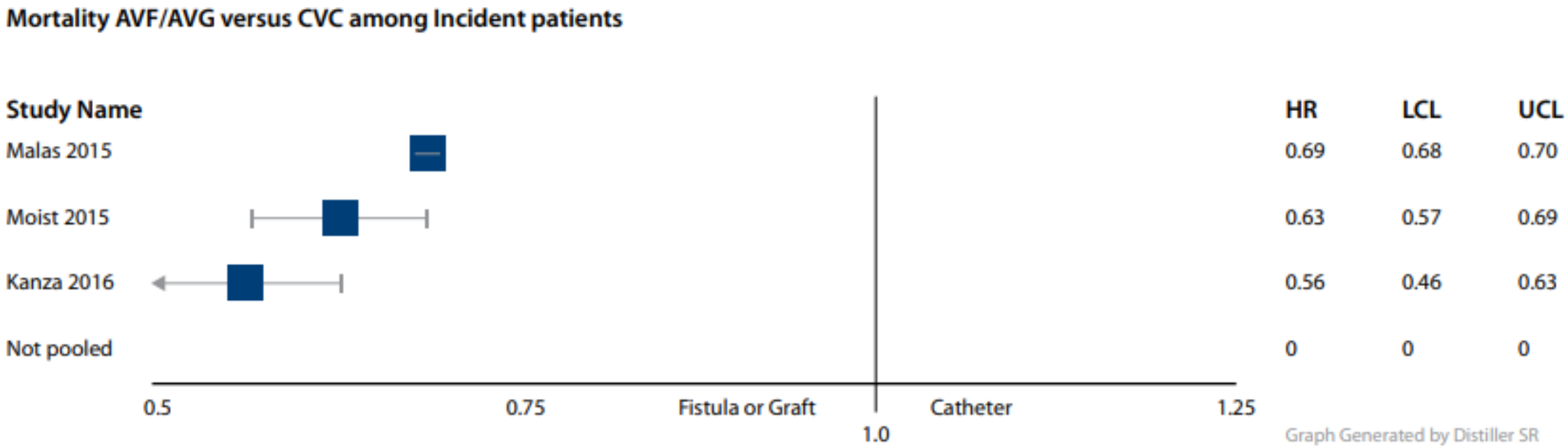
[h] Autogenous arteriovenous graft needs procedures to maintain patency.

[i] Depends on prescription, including dialysis duration and blood pump speed of dialysis machine.

[j] Central vein stenosis and CVC lumen thrombosis.

Charmaine Lok, JAMA, 2024;331;(15):1307-1317.

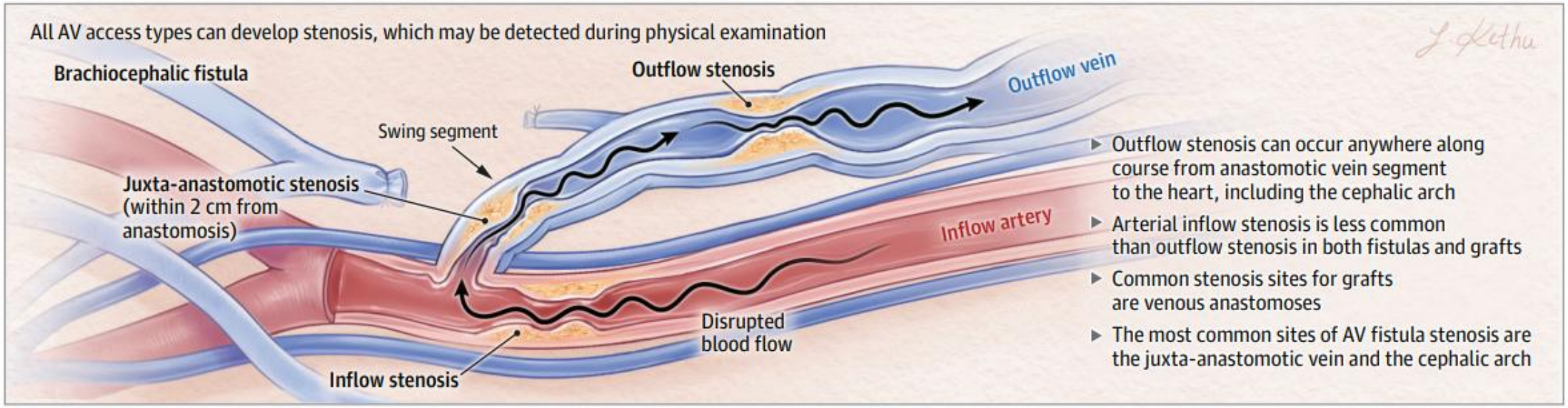
# ΣΥΓΚΡΙΣΗ ΑΓΓΕΙΑΚΩΝ ΠΡΟΣΠΕΛΑΣΕΩΝ




KDOQI Clinical Practice Guideline for Vascular Access: 2019 Update

# ΕΠΙΠΛΟΚΕΣ AV access

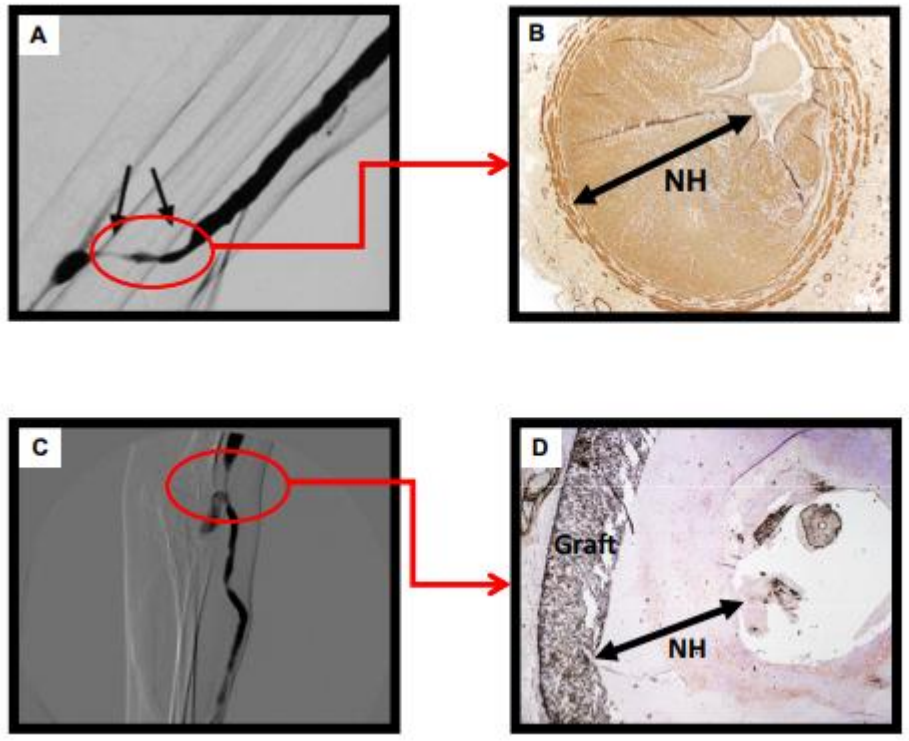
**A** Common sites of arteriovenous (AV) access stenosis




Charmaine Lok, JAMA, 2024;331;(15):1307-1317.

# ΕΠΙΠΛΟΚΕΣ AVF & AVG

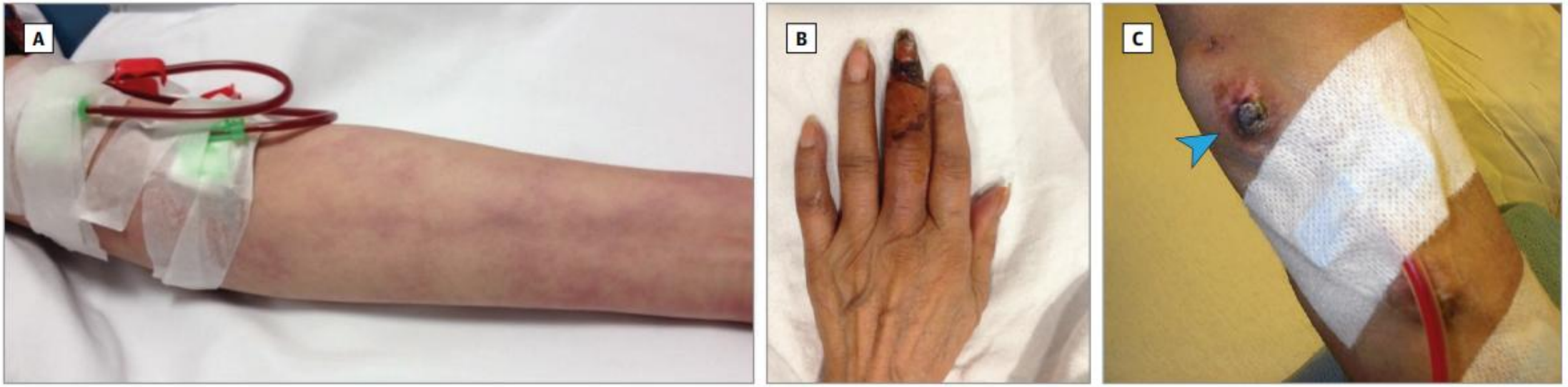
- Η **φλεβική στένωση** είναι η συχνότερη αγγειογραφική βλάβη που παρατηρείται στην αποτυχία ωρίμανσης της AVF και στην αποτυχία του AVG.
- Η **στένωση στην AVF** εμφανίζεται συχνότερα στην περιοχή δίπλα στην αναστόμωση της AVF (**juxta-anastomotic region**)
- Η υπερπλασία του έσω χιτώνα (**intimal hyperplasia**) είναι η συχνότερη ιστολογική βλάβη που εμφανίζεται στην αποτυχία ωρίμανσης της AVF.
- Η **στένωση στο AVG** εμφανίζεται συχνότερα στην αναστόμωση μεταξύ φλέβας και μοσχεύματος (**vein-graft anastomosis**) ,ενώ η **υπερπλασία του έσω χιτώνα** είναι η συχνότερη ιστολογική βλάβη που παρατηρείται




C. Lok, Am J Kidney Dis. 85(2):236-252.

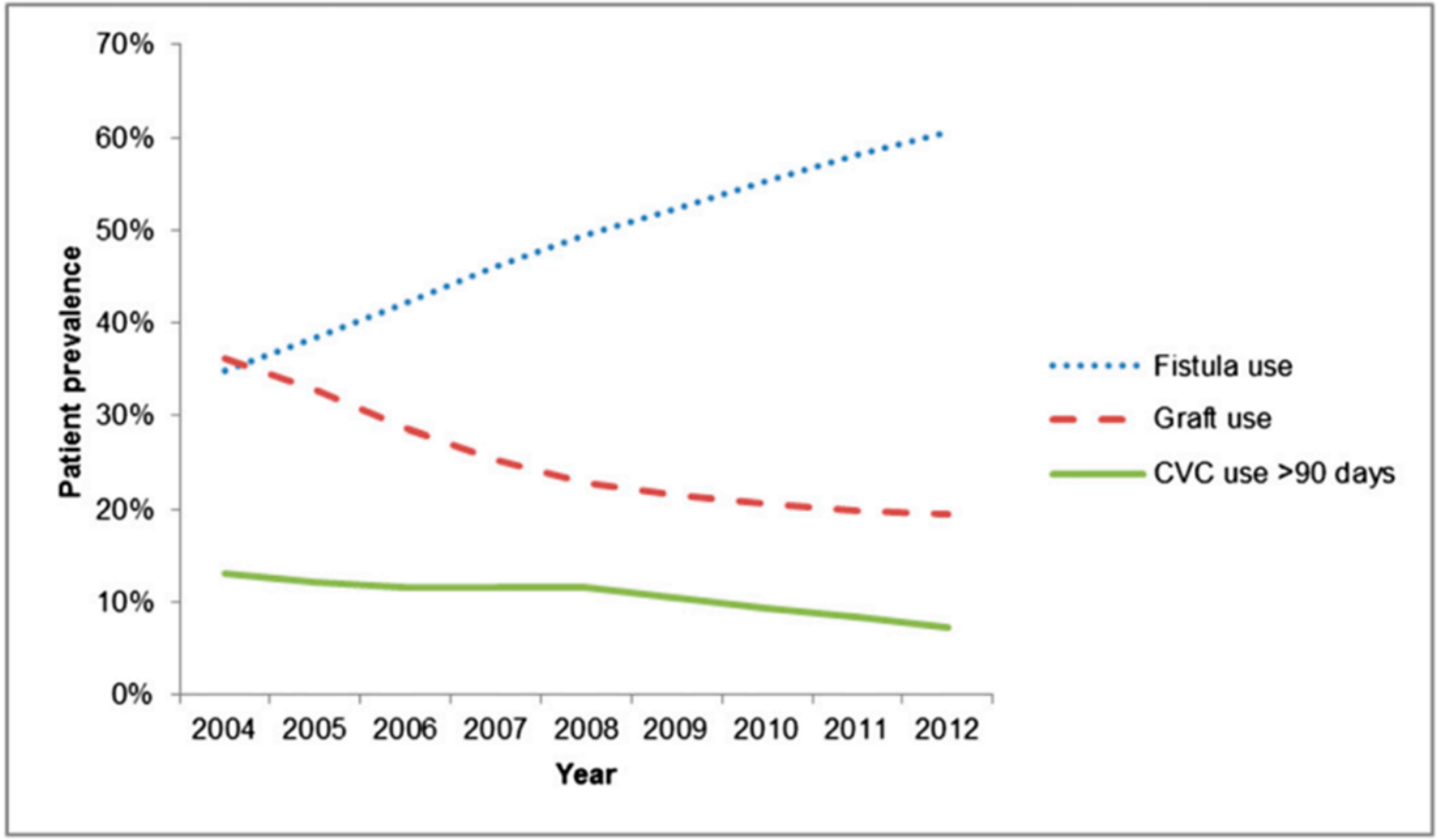
# ΕΠΙΠΛΟΚΕΣ AV access

Figure 4. Arteriovenous Access Problems




Charmaine Lok, JAMA, 2024;331;(15):1307-1317.

# Fistula First



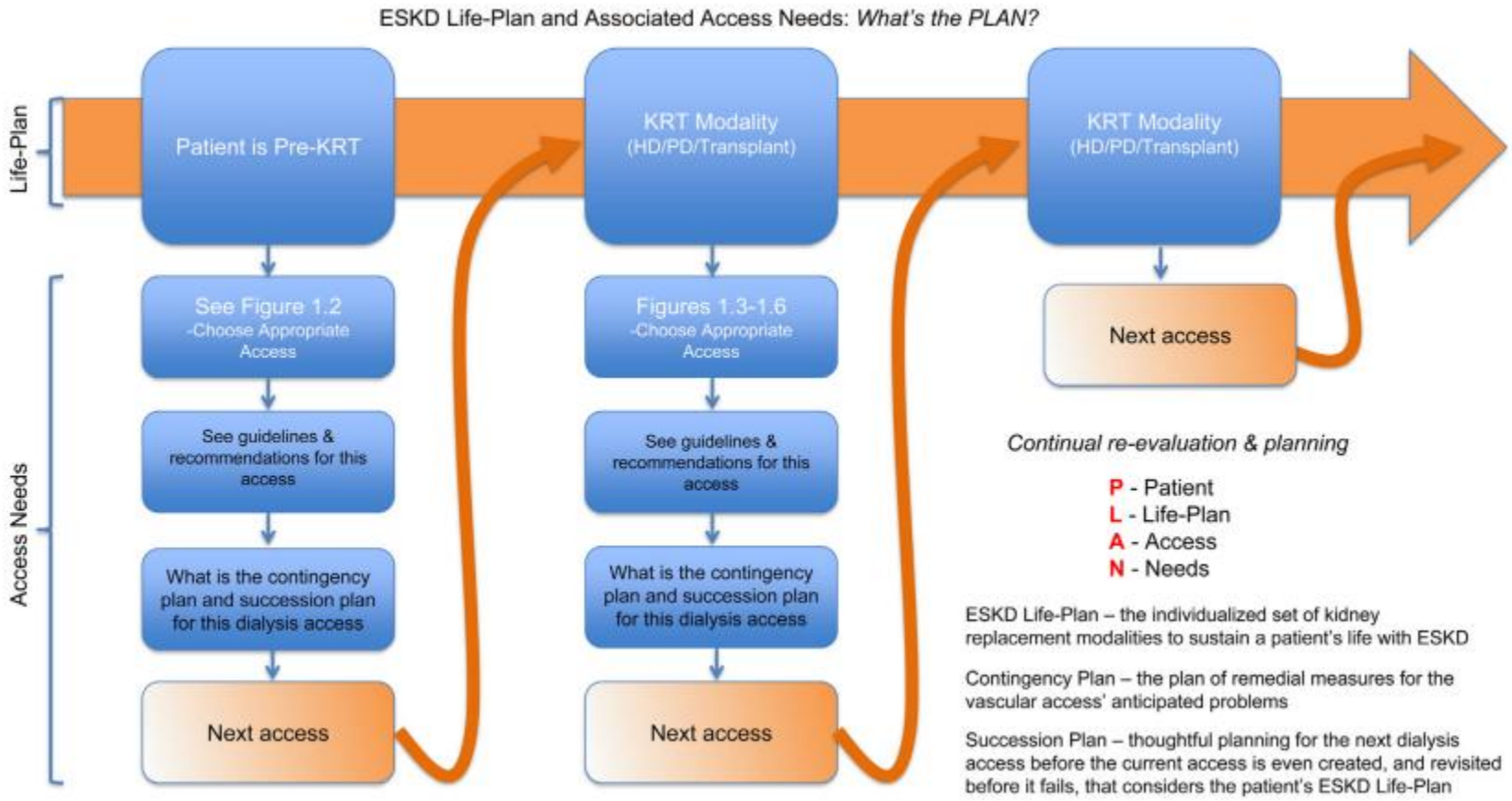

Gomes, Amanda, Re-envisioning Fistula First in a Patient-Centered Culture. Clinical Journal of the American Society of Nephrology 8(10):p 1791-1797, October 2013.

# LIFE PLAN

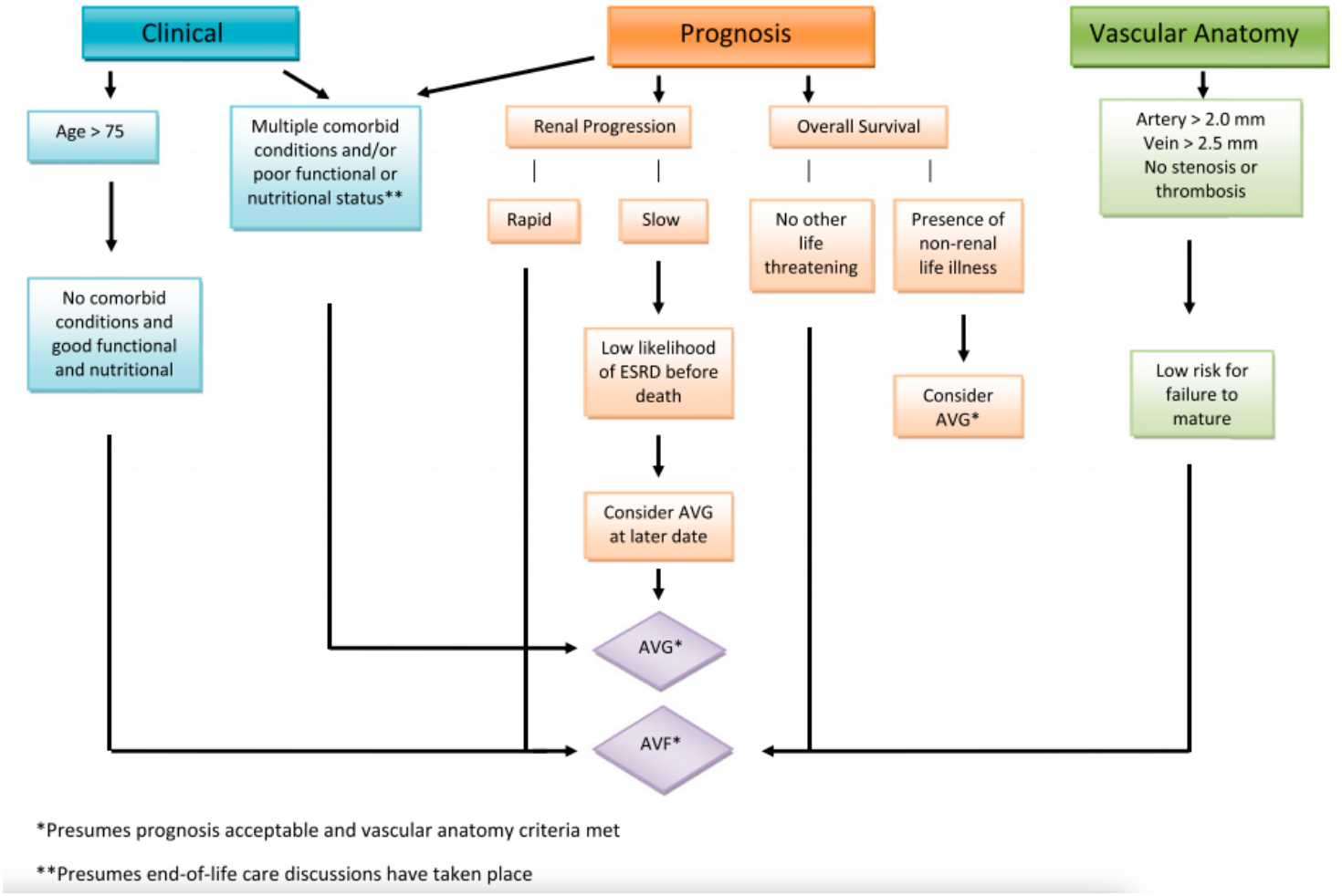
- Θεμελιώδες για την αγγειακή πρόσβαση στην αιμοκάθαρση είναι το ***ESKD Life-Plan***, το οποίο αποτελεί μια **εξατομικευμένη στρατηγική για τη ζωή με τελικού σταδίου νεφρική νόσο** (ESKD) και εισήχθη στις Κατευθυντήριες Οδηγίες Αγγειακής Πρόσβασης του 2019 (KDOQI).

- Το ***ESKD Life-Plan***, που αναπτύσσεται από κοινού **μεταξύ του ασθενούς και της ομάδας φροντίδας του**, είναι ένας εξατομικευμένος «οδικός χάρτης» των μεθόδων υποκατάστασης της νεφρικής λειτουργίας - **αιμοκάθαρση** (HD), **περιτοναϊκή κάθαρση** (PD) και **μεταμόσχευση νεφρού** - καθώς και των **σχετικών αγγειακών προσβάσεων** για όλη τη διάρκεια της ζωής του ασθενούς

# LIFE PLAN


ESKD Life-Plan and Associated Access Needs: What's the PLAN?
Life-Plan
Access Needs
Patient is Pre-KRT
KRT Modality (HD/PD/Transplant)
KRT Modality (HD/PD/Transplant)
See Figure 1.2 -Choose Appropriate Access
Figures 1.3-1.6 -Choose Appropriate Access
Next access
See guidelines & recommendations for this access
See guidelines & recommendations for this access
What is the contingency plan and succession plan for this dialysis access
What is the contingency plan and succession plan for this dialysis access
Next access
Next access
Continual re-evaluation & planning
P - Patient
L - Life-Plan
A - Access
N - Needs
ESKD Life-Plan – the individualized set of kidney replacement modalities to sustain a patient's life with ESKD
Contingency Plan – the plan of remedial measures for the vascular access' anticipated problems
Succession Plan – thoughtful planning for the next dialysis access before the current access is even created, and revisited before it fails, that considers the patient's ESKD Life-Plan

# LIFE PLAN




Gomes, Amanda, Re-envisioning Fistula First in a Patient-Centered Culture. Clinical Journal of the American Society of Nephrology 8(10):p 1791-1797, October 2013.

# ΠΑΡΑΓΟΝΤΕΣ ΠΟΥ ΚΑΘΟΡΙΖΟΥΝ ΤΟ LIFE-PLAN

❖ ***ΙΑΤΡΙΚΟΙ ΠΑΡΑΓΟΝΤΕΣ***

- ✓ Αγγειακή ανατομία
- ✓ Συνοσηρότητες & ηλικία
- ✓ Προσδόκιμο επιβίωσης
- ✓ Επείγουσα έναρξη ΑΚ

❖ ***ΤΕΧΝΙΚΟΙ ΠΑΡΑΓΟΝΤΕΣ***

- ✓ Διαθεσιμότητα αγγείων
- ✓ Ιστορικό προηγούμενων προσπελάσεων

❖ ***ΠΡΟΤΙΜΗΣΕΙΣ ΑΣΘΕΝΟΥΣ***

- ✓ Ποιότητα ζωής
- ✓ Εργασία/ τρόπος ζωής
- ✓ Επιθυμία για μεταμόσχευση

❖ ***ΣΤΡΑΤΗΓΙΚΑ ΣΤΟΙΧΕΙΑ***

- ✓ Πιθανές επιπλοκές
- ✓ Επόμενες προσπελάσεις

# ΕΝΔΕΙΞΕΙΣ ΧΡΗΣΗΣ ΚΦΚ ΑΙΜΟΚΑΘΑΡΣΗΣ

❖ ***Βραχυπρόθεσμη χρήση***:

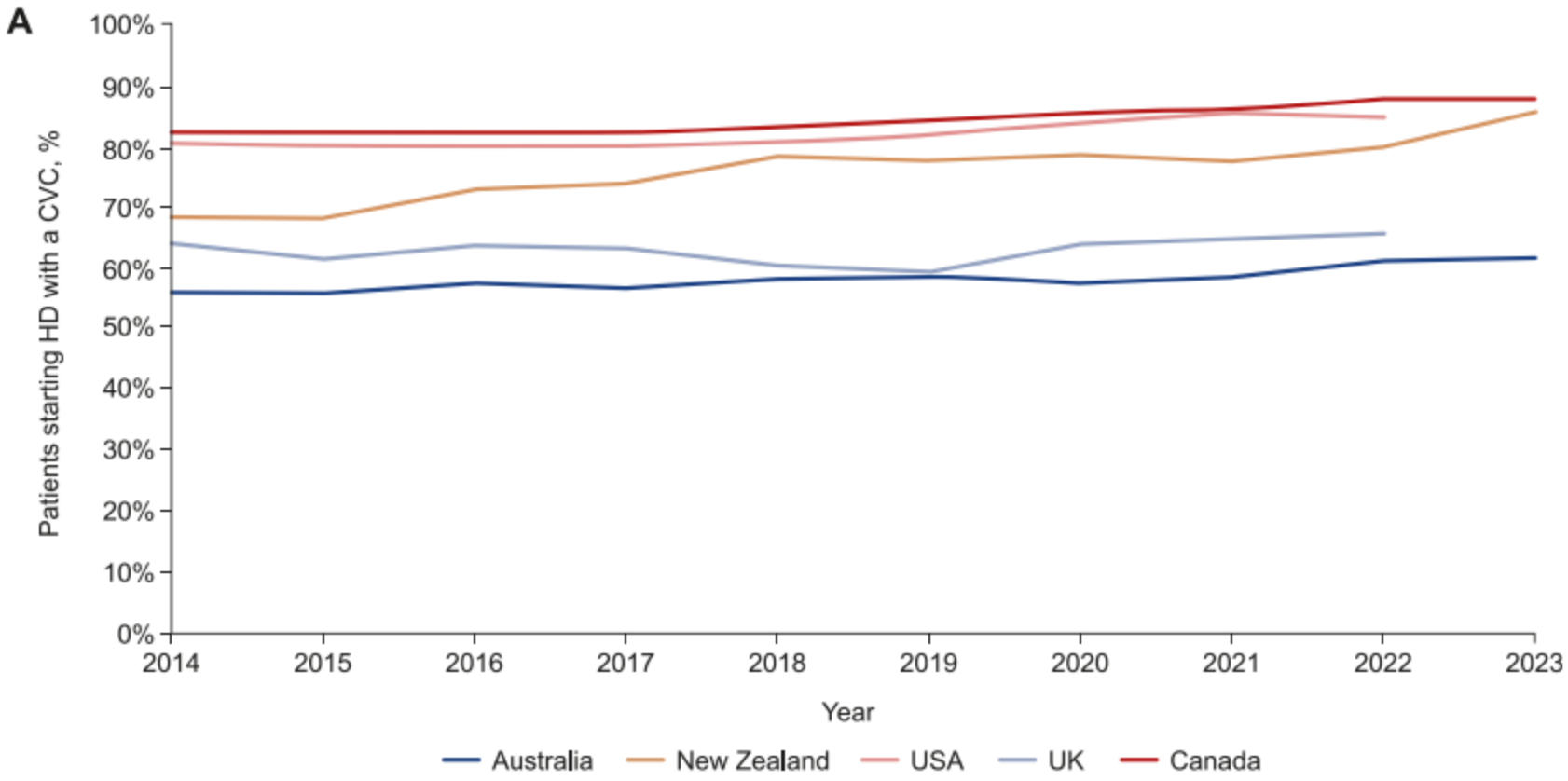
- Δημιουργία ***AVF ή AVG που δεν έχουν ακόμα ωριμάσει*** & επείγει η έναρξη ΑΚ
- ***Οξεία απόρριψη μοσχεύματος*** ή άλλη επιπλοκή που απαιτεί ΑΚ ή PLEX
- Ασθενείς σε ***περιτοναϊκή κάθαρση με επιπλοκές*** που απαιτούν προσωρινά ΑΚ
- Ασθενής με ***ζώντα δότη για μεταμόσχευση*** με προγραμματισμένη επέμβαση στο άμεσο μέλλον (π.χ. <90 ημέρες) που χρειάζεται ΑΚ
- ***Επιπλοκές AVF ή AVG*** (π.χ. σοβαρή λοίμωξη/τραυματισμός) που απαιτούν προσωρινή αποχή από τη χρήση μέχρι να επιλυθεί το πρόβλημα

# ΕΝΔΕΙΞΕΙΣ ΧΡΗΣΗΣ ΚΦΚ ΑΙΜΟΚΑΘΑΡΣΗΣ

❖ ***Μακροπρόθεσμη ή αόριστης διάρκειας χρήση:***

- Πολλαπλές ***προηγούμενες αποτυχημένες αγγειακές προσβάσεις*** χωρίς διαθέσιμες εναλλακτικές
- ***Προτιμήσεις ασθενούς***, όπου η χρήση AV πρόσβασης θα περιόριζε σοβαρά την ποιότητα ζωής ή την επίτευξη στόχων ζωής
- ***Περιορισμένο προσδόκιμο επιβίωσης***
- Απουσία δυνατοτήτων δημιουργίας AV πρόσβασης λόγω συνδυασμένων προβλημάτων αρτηριακής εισροής και φλεβικής εκροής ή σε ***βρέφη/παιδιά*** με πολύ μικρά αγγεία
- ***Ειδικές ιατρικές καταστάσεις***

# Χρήση ΚΦΚ Αιμοκάθαρσης

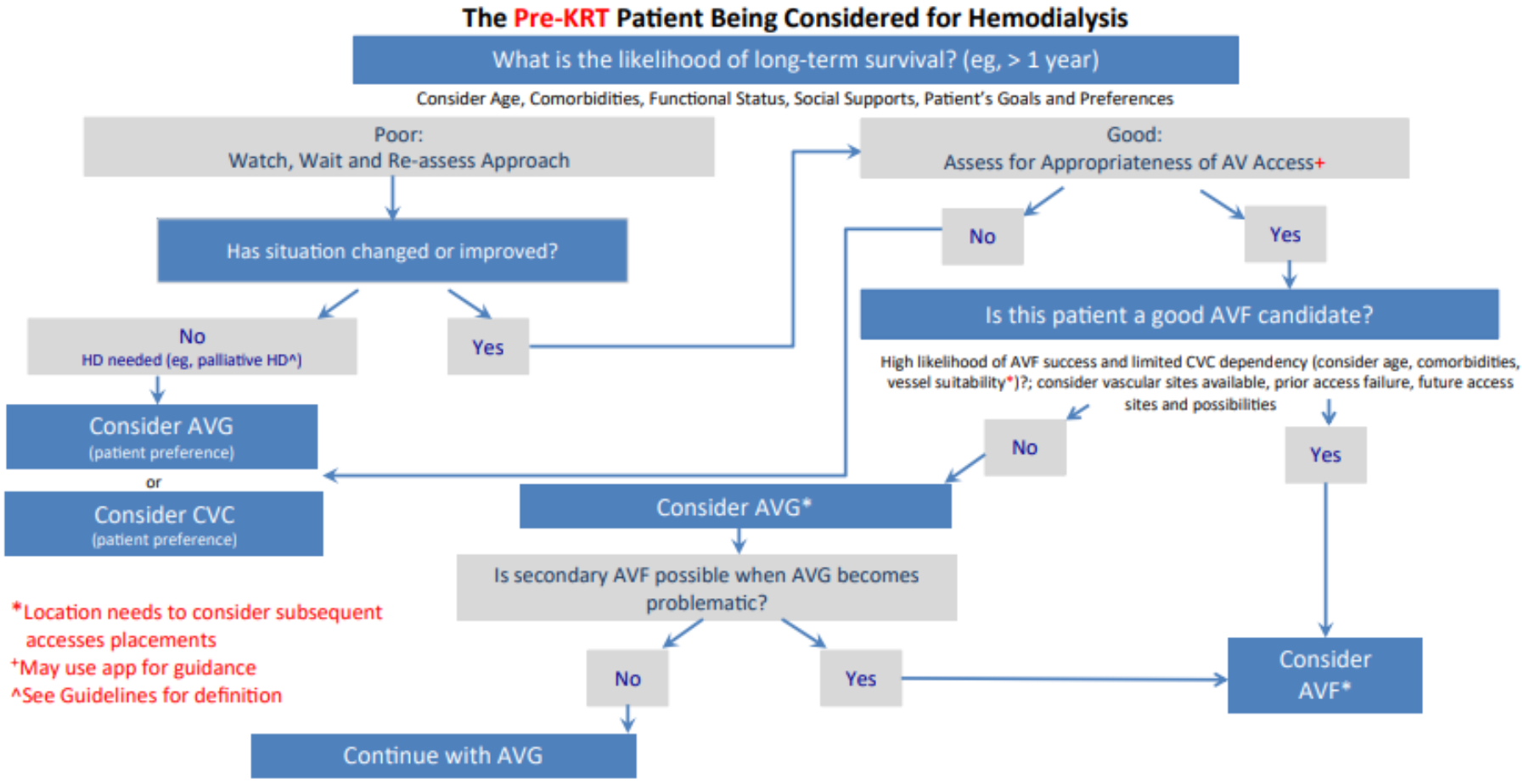



B. Lazarus, J Am Soc Nephrol. 2025 May 1;36(5):952-966

# Χρήση ΚΦΚ Αιμοκάθαρσης

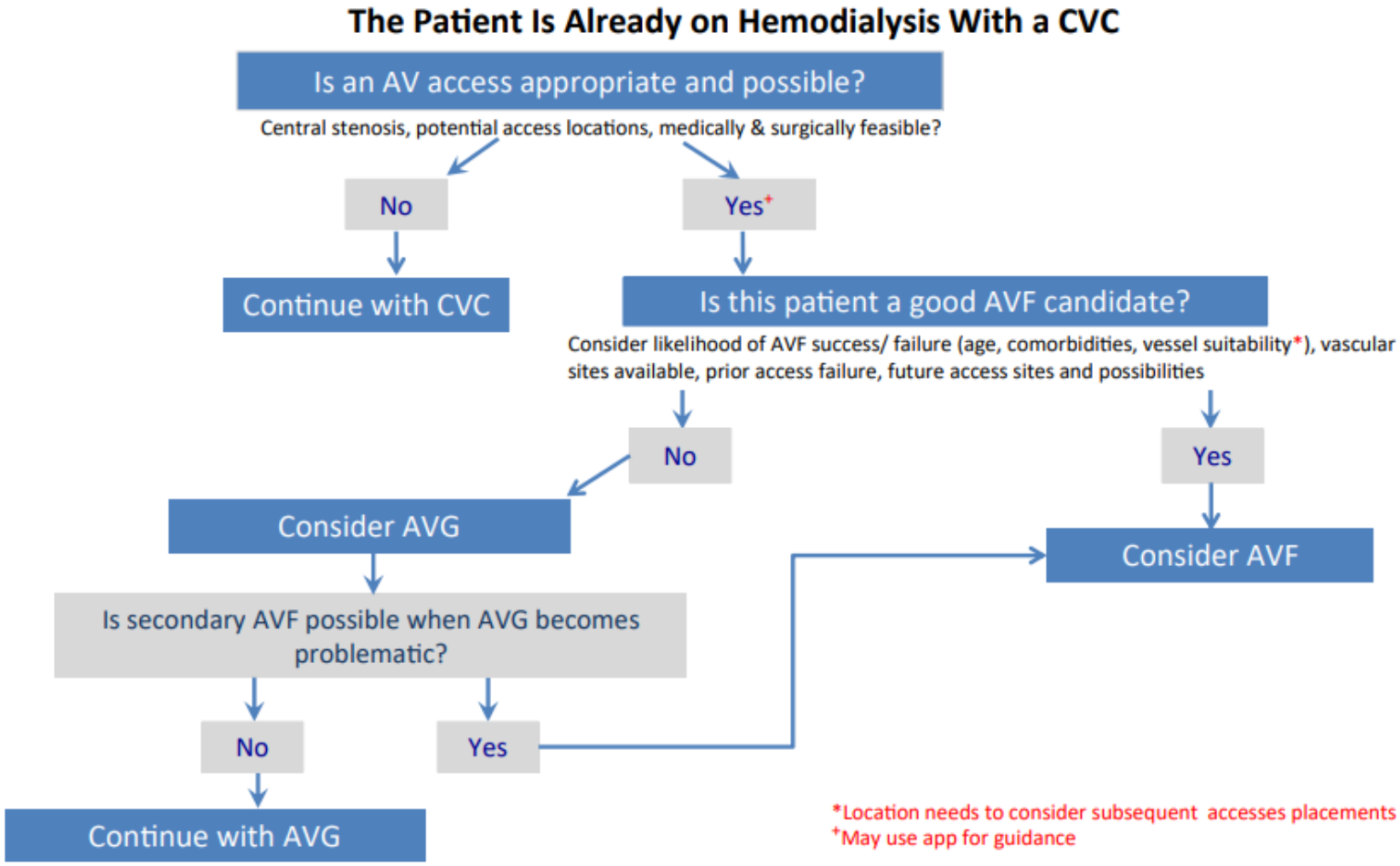

B. Lazarus, J Am Soc Nephrol. 2025 May 1;36(5):952-966

# ΑΣΘΕΝΗΣ ΠΡΙΝ ΤΗΝ ΕΝΑΡΞΗ ΕΞΩΝΕΦΡΙΚΗΣ ΚΑΘΑΡΣΗΣ



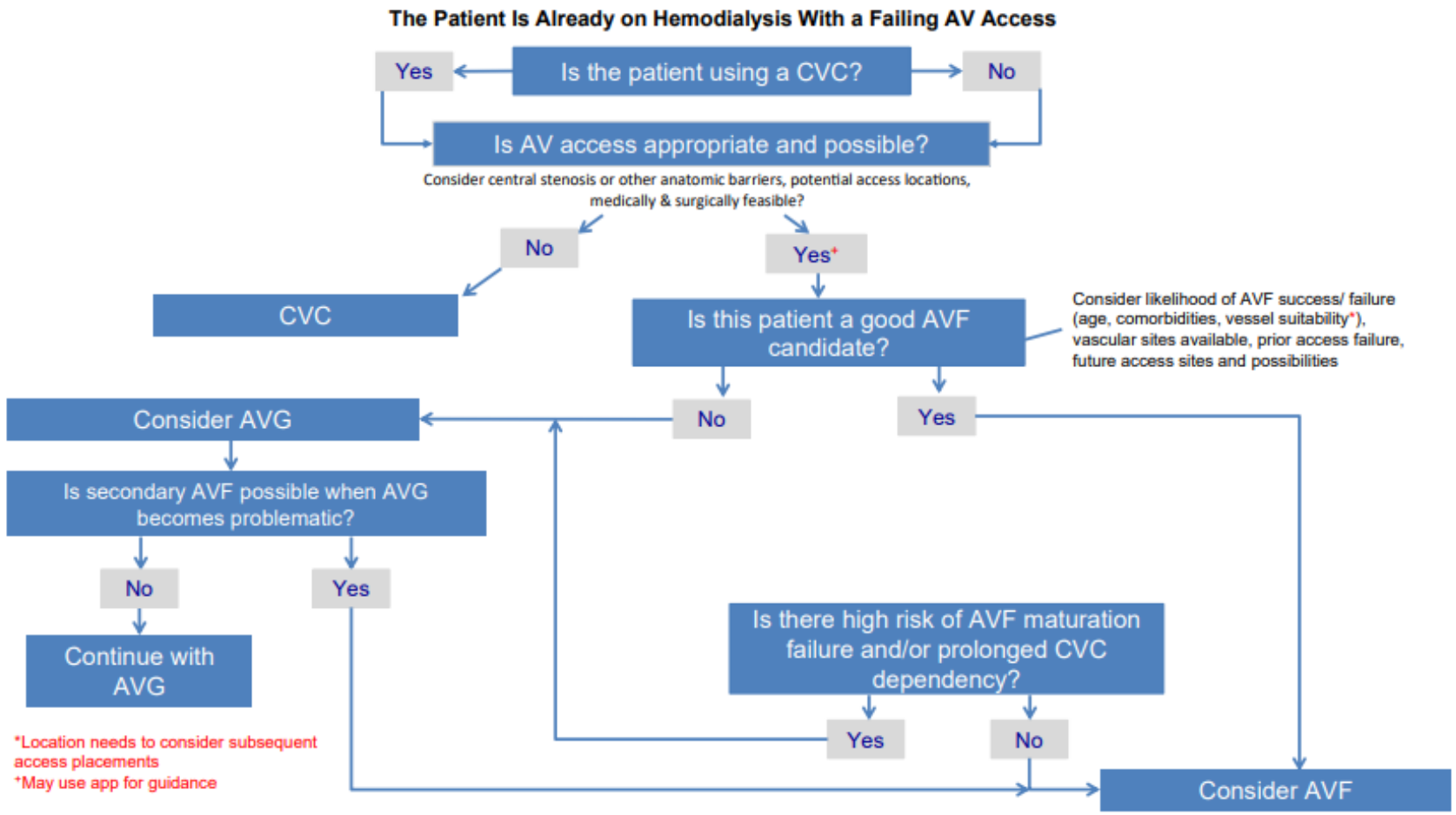

National Kidney Foundation® | KDOQI® Kidney Disease Outcomes Quality Initiative

# ΑΣΘΕΝΗΣ ΣΕ ΑΙΜΟΚΑΘΑΡΣΗ ΜΕ ΚΦΚ




National Kidney Foundation® | KDOQI® Kidney Disease Outcomes Quality Initiative

# ΑΣΘΕΝΗΣ ΣΕ ΑΚ ΜΕ ΑΠΟΤΥΧΗΜΕΝΗ ΦΛΕΒΙΚΗ ΠΡΟΣΒΑΣΗ

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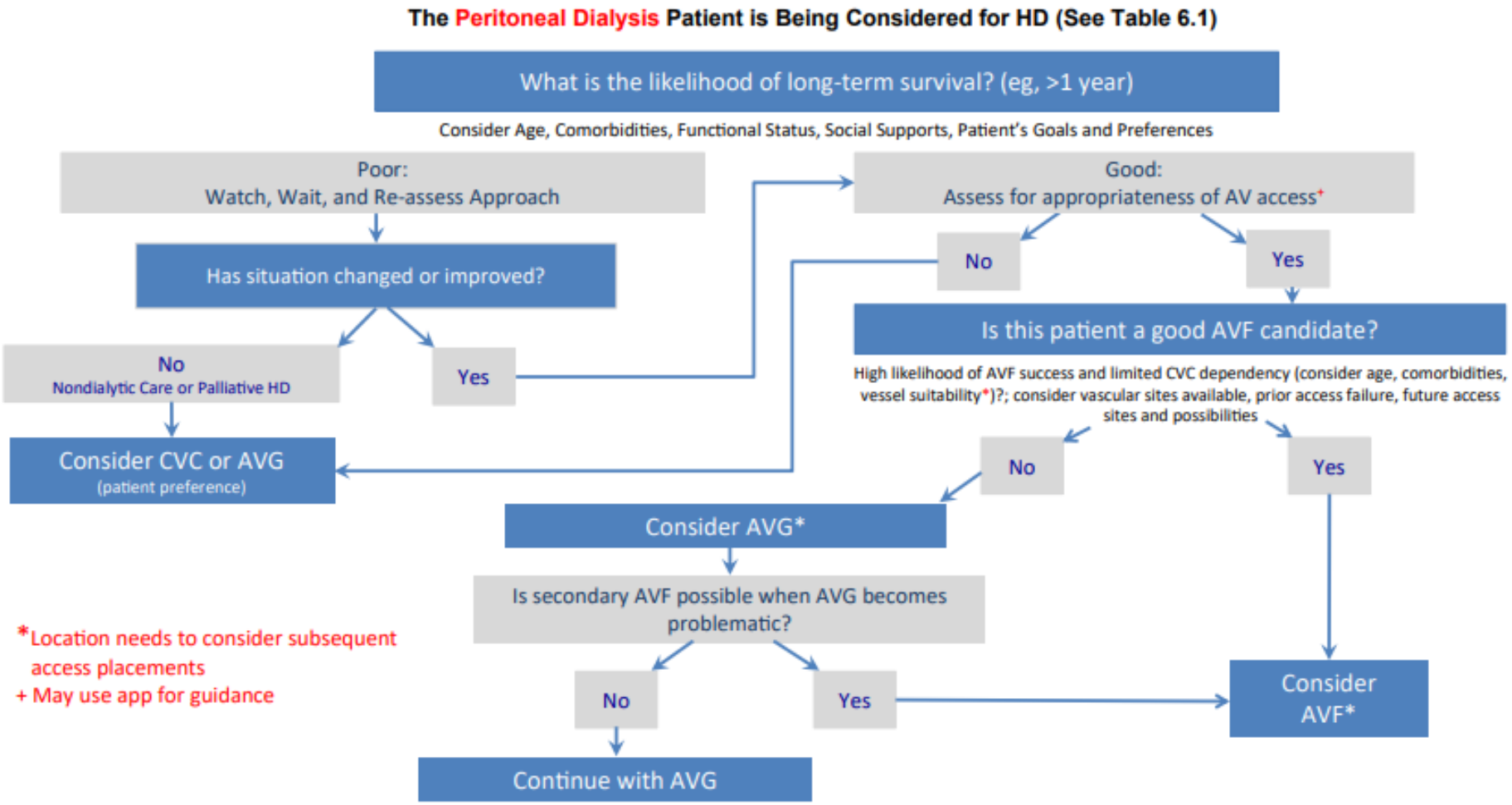
# ΑΣΘΕΝΗΣ ΥΠΟ ΠΕΡΙΤΟΝΑΪΚΗ ΚΑΘΑΡΣΗ

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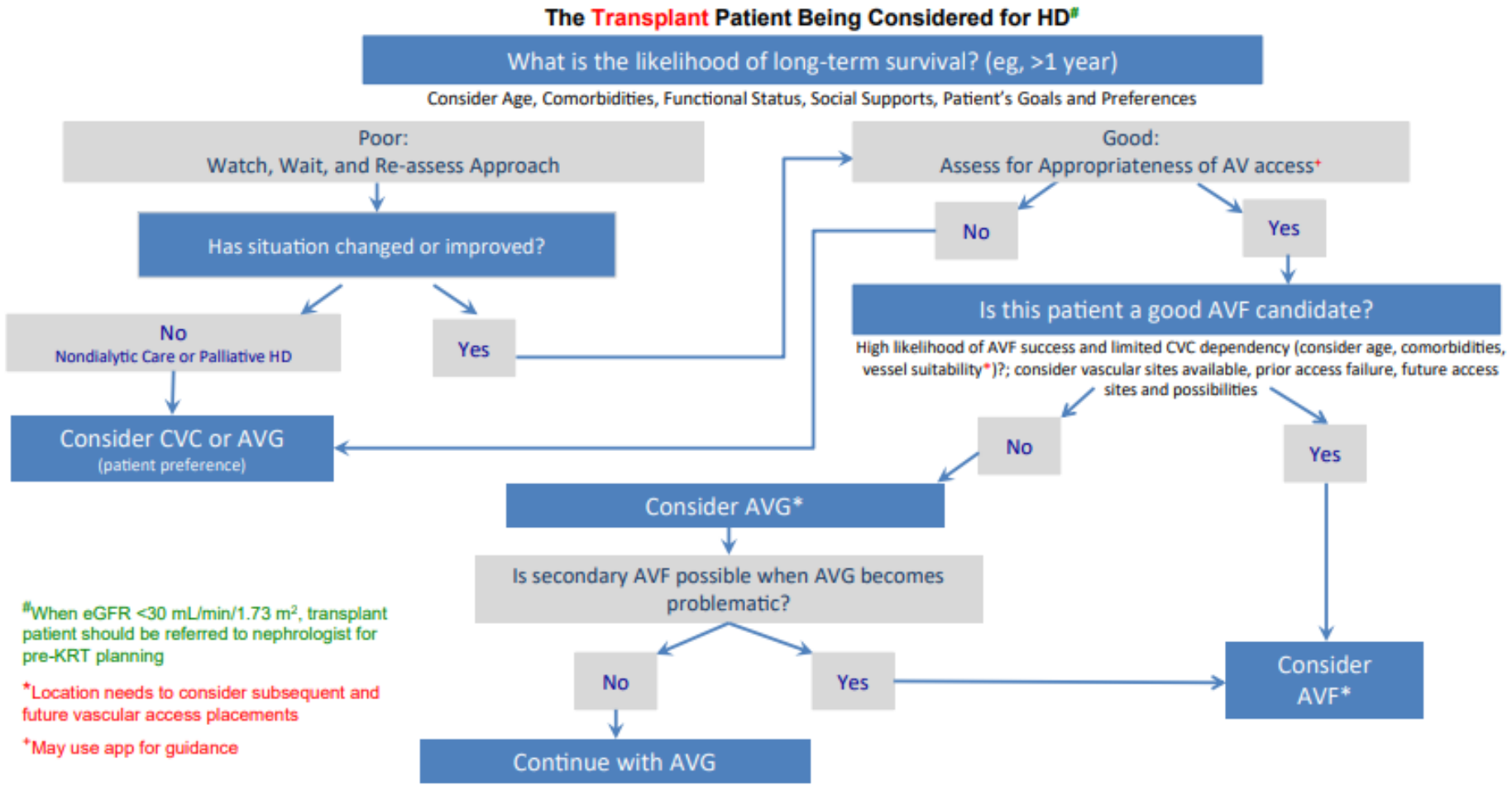
# ΜΕΤΑΜΟΣΧΕΥΜΕΝΟΣ ΑΣΘΕΝΗΣ

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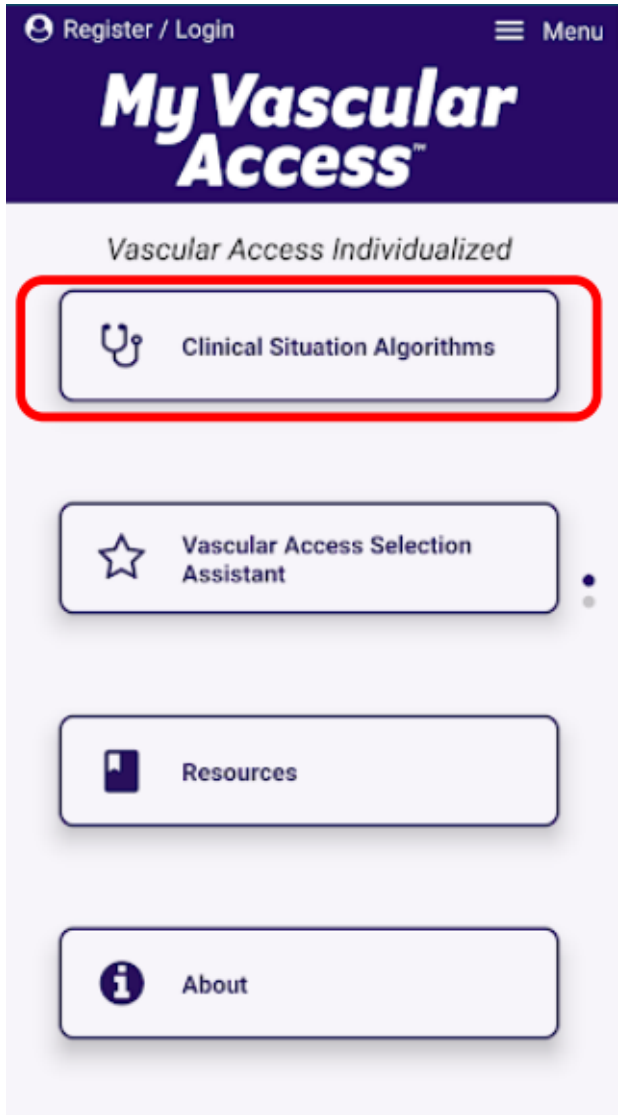


## Patient Information

Patient Age

- 59 years or younger
- 60 to 75 years
- 76 years or older

Need for Dialysis

- Imminent / On dialysis
- Not imminent

Functional Status | More Info

- Independent
- Assisted (lives at home)
- Dependent (lives in a facility)

Next →

## Patient Anatomy

BMI

- Normal (less than 30.0)
- Obese (30.0 to 40.0)
- Morbidly Obese (40.0 or higher)

Cephalic Vein

- Poor ( < 2.0 mm)
- Intermediate (2.0 to 2.5 mm)
- Good ( > 2.5 mm)

Basilic Vein

- Poor ( < 2.0 mm)
- Intermediate (2.0 to 2.5 mm)
- Good ( > 2.5 mm)

Artery Radial

- < 2.0 mm
- ≥ 2.0 mm

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✕ Cancel

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## AV-Access (Fistula or Graft) Appropriateness Ranking

What does this mean?

Radial-cephalic Fistula

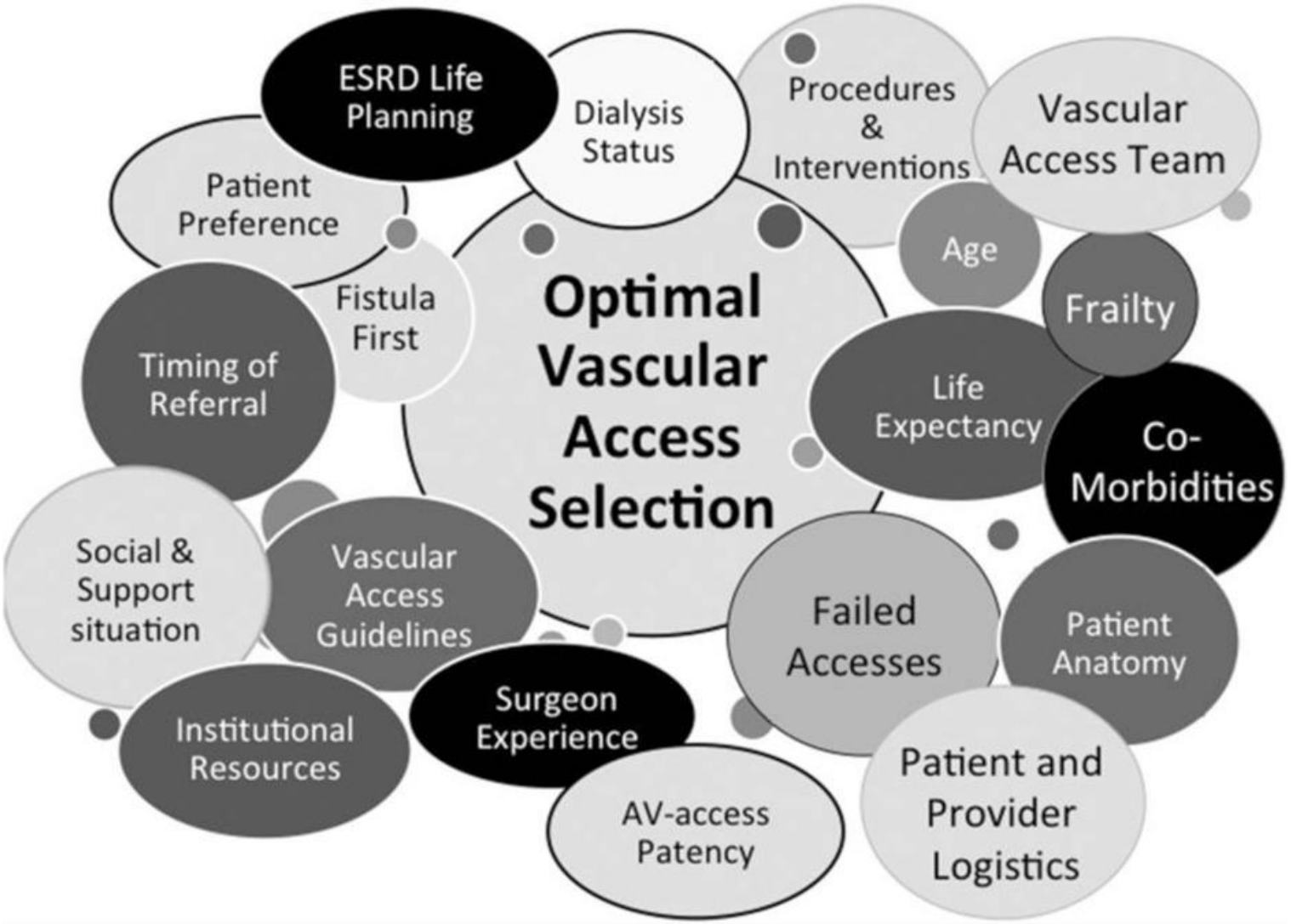
Brachial-cephalic Fistula

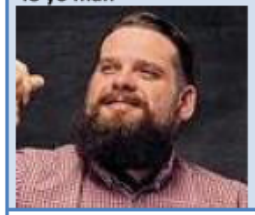
Forearm Loop AV Graft

Upper Arm AV Graft

Catheter

More about our process »


ESRD Life Planning
Dialysis Status
Procedures & Interventions
Vascular Access Team
Patient Preference
Age
Frailty
Fistula First
Optimal Vascular Access Selection
Timing of Referral
Life Expectancy
Co-Morbidities
Social & Support situation
Vascular Access Guidelines
Failed Accesses
Patient Anatomy
Surgeon Experience
Institutional Resources
AV-access Patency
Patient and Provider Logistics

| Case | Description | ESKD Life-Plan Modality Choice | Dialysis Access | Comments |
|---|---|---|---|---|
| **14 yo girl**  | Congenital cause of kidney damage, CKD nondialysis (eGFR 22 mL/min) has living donor for transplant, active – wants to be a teacher, right handed | 1. Living donor transplant<br>2. PD<br>3. Home NHD | 1. Transplant - NA<br>2. PD catheter<br>3. RC-AVF (left) | • Follow closely, long life anticipated<br>• Flexibility required - Life-Plan may change<br>• Life-Plan must consider multiple modalities and optimize dialysis access |
| **26 yo woman**  | GN, on HD; failed PD with temporary CVC, has potential living donors, actively working during day, R hand dominant | 1. Home NHD<br>2. Transplant | 1. RC-AVF (left)<br>2. BC-AVF (left) | Anticipating patient will get transplant – reassess annually for change in Life-Plan and AV access needs |
| **48 yo man**  | DM, HTN, AFib, obese. Copes poorly and non-adherent to medical management and presented needing to urgently start HD, works in outdoor maintenance, L handed | 1. IC-HD<br>2. Transplant wait list<br>3. PD may be possible later | 1. Early cannulation forearm loop graft (right)<br>2. BC-AVF<br>3. PD catheter | IC-HD most appropriate; poor self care makes patient poor home PD or HD candidate – may change over time – reassessment necessary |
| **64 yo man**  | HTN, PCKD; ESKD on HD x7 years; R handed; Jehovah witness; sudden loss of RC-AVF (left) | 1. IC-HD<br>2. PD may be possible | 1. CVC (left, IJ)<br>2. BC-AVF (R)<br>3. PD catheter | Transplant not an option due to personal reasons; continue to preserve site for future HD access; patient reluctant to consider PD due to poor home situation |
| **77 yo woman**  | Frail, DM, CAD, PVD, urgently started dialysis, with CVC, lives alone, R handed | 1. IC-HD<br>2. PD may be possible | 1. BC-AVF (left)<br>2. Upper arm graft (left)<br>3. PD catheter | Patient likely has limited life expectancy; focus on AV access and limiting CVC dependency vs preserving sites for future access |
| **88 yo man**  | Palliative patient and very frail but still enjoys time with family | 1. IC-HD | 1. CVC (right IJ) | Patient preference for CVC vs graft for palliative patients |