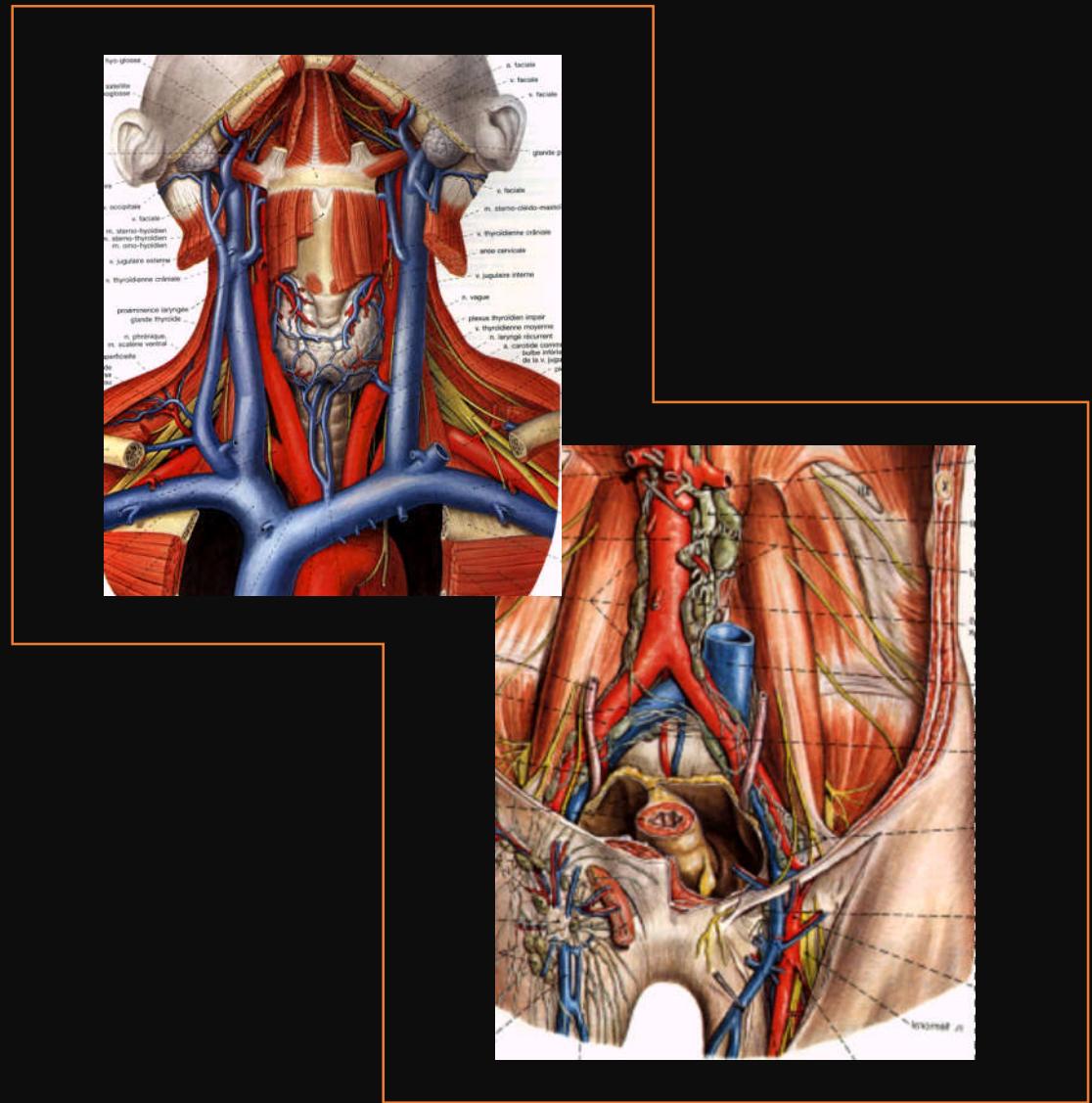
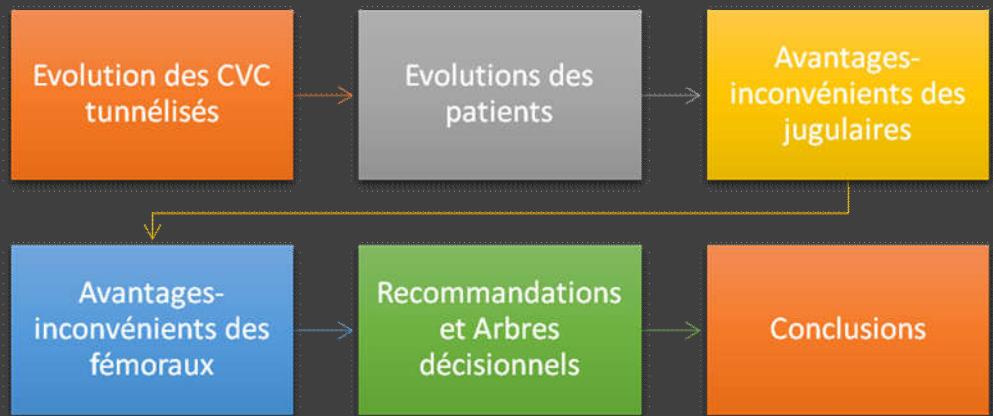


# Cathéters tunnélisés: voie jugulaire ou fémorale ?

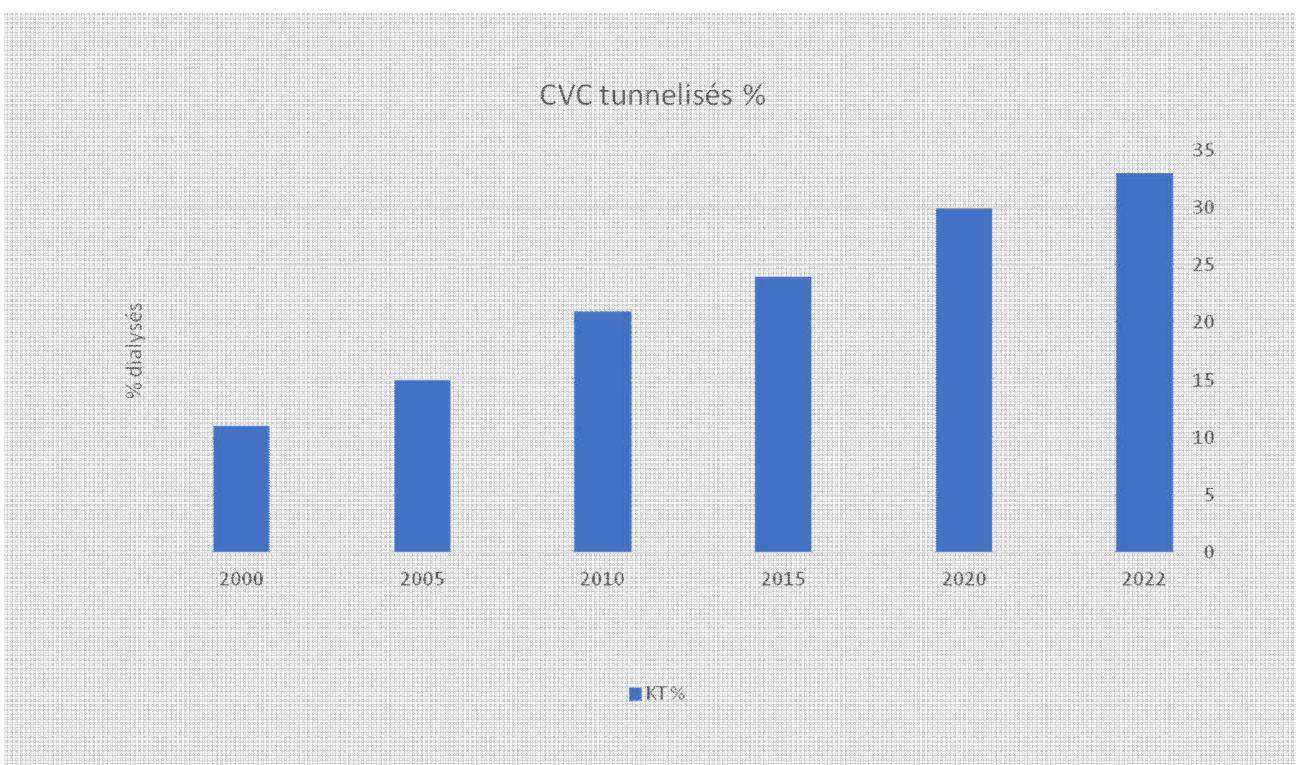
Guillaume JEAN  
Sainte-Foy-Lès-Lyon



# Plan

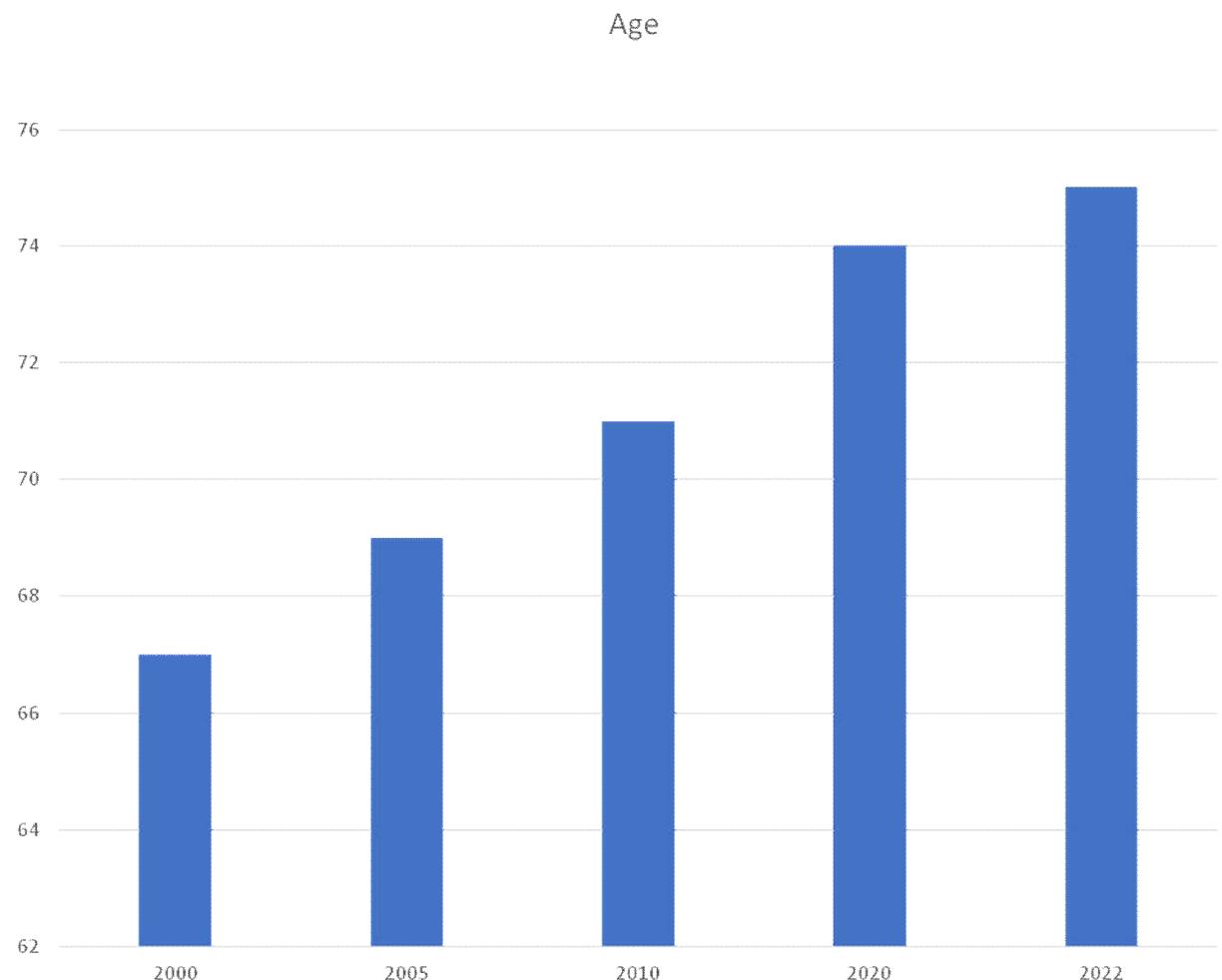


## Evolution du pourcentage de dialysés prévalents avec un cathéter permanent

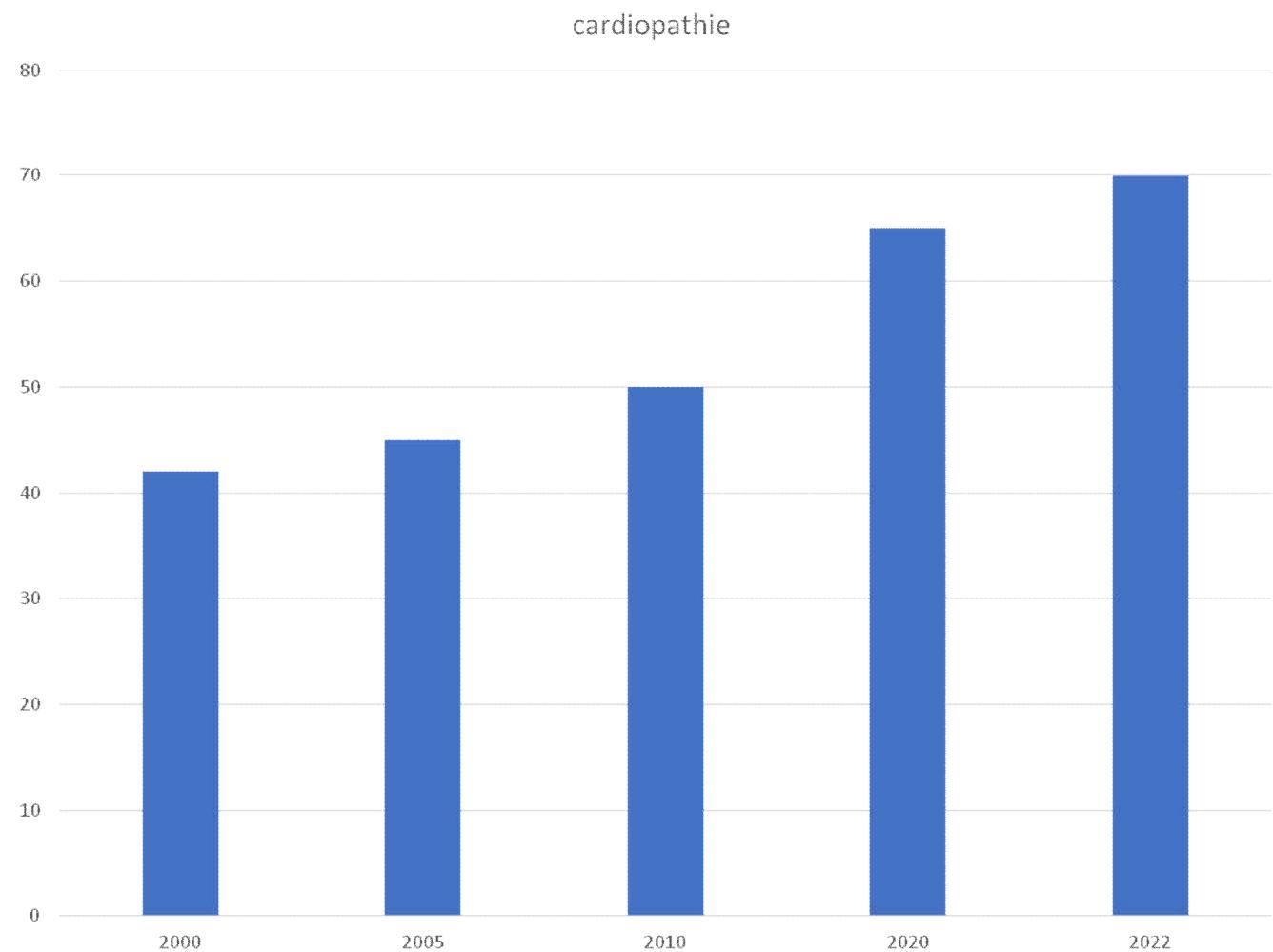


- Données personnelles
- 260 dialysés prévalents

# Evolution de l'âge moyen des patients dialysés



# Evolution du pourcentage de patients dialysés avec une cardiopathie



# Cahier des charges

Pas de dysfonctionnement

Pas d'infection

Pas de sténose/thrombose veineuse

- Epargne capital vasculaire (abord A-V)
- Vaisseaux iliaques (greffe rein)

Confort

Facilité-solidité des pansements

# Journal of Clinical Imaging Science

VENOUS ACCESS	ADVANTAGES	DISADVANTAGES	COMMENTS
Internal Jugular Veins:	<ul style="list-style-type: none"> <li>• Superficial and Easily accessible: US guided access ideal</li> <li>• Largest radii-low risk of stenosis</li> </ul>	<ul style="list-style-type: none"> <li>• Central vein stenoses-can jeopardize functioning AVG/AVF</li> <li>• IJV thrombosis- Usually asymptomatic</li> </ul>	"Preferred" site of vascular access RIJV preferred over LIJV specially in left AVF/AVG
External Jugular Vein:	<ul style="list-style-type: none"> <li>• Superficial location</li> <li>• Straight path to RA</li> <li>• Empties into the SCV, not get affected in IJV thrombosis</li> </ul>	<ul style="list-style-type: none"> <li>• Small radii- challenging access in inexperienced hands</li> <li>• Thrombosis</li> </ul>	REJV especially useful in occluded RIJV and left AVF/AVG
Femoral vein:	<ul style="list-style-type: none"> <li>• Superficial and Easily accessible</li> </ul>	<ul style="list-style-type: none"> <li>• Prone to infection: addressed by a lateral tunnel</li> <li>• Prone to occlusion: Addressed by placement of tip beyond confluence of CIV</li> <li>• Restricted mobility</li> </ul>	'Operators choice' in many after occlusion of IJV's
Subclavian vein:	<ul style="list-style-type: none"> <li>• Large radius</li> </ul>	<ul style="list-style-type: none"> <li>• Pneumothorax</li> <li>• Subclavian vein thrombosis and stenosis-excludes use of arm veins for AVF/AVG</li> </ul>	Infrequently used – not recommended by DOQI guidelines specially when AVF/AVG in arm is planned
Collateral veins:	<ul style="list-style-type: none"> <li>• Direct path to RA</li> <li>• Catheter care easy</li> <li>• Patient comfort</li> </ul>	<ul style="list-style-type: none"> <li>• Technical difficulties including accessibility</li> <li>• Complications like hemorrhage</li> </ul>	Most compelling reason for use is preservation of other access sites for future use
Translumbar Inferior vena cava:	<ul style="list-style-type: none"> <li>• Large radius</li> <li>• Thrombosis rare</li> <li>• Anatomic position reliable</li> <li>• Safe procedure</li> </ul>	<ul style="list-style-type: none"> <li>• Technically challenging and time consuming</li> <li>• Frequent exchanges due to poor blood flow and catheter-related infection</li> <li>• Catheter dislodgment- due to adipose tissue along tract</li> </ul>	Safe, alternate access for short-term bridge to dialysis
Hepatic vein:	<ul style="list-style-type: none"> <li>• Useful last resort option in IVC occlusions</li> </ul>	<ul style="list-style-type: none"> <li>• Technically challenging and time consuming</li> <li>• Frequent exchanges due to poor blood flow and catheter-related infection</li> <li>• Catheter dislodgment- due to respiratory excursions of liver</li> <li>• Hemorrhage during access</li> </ul>	Safe, alternate access for short-term bridge to dialysis in case of complete IVC obstruction

Figure 10 Summary of advantages and disadvantages of various access options. Reproduced under Open Access charter from: Pereira K, Osiason A, Salsamendi J. Vascular Access for Placement of Tunneled Dialysis Catheters for Hemodialysis: A Systematic Approach and Clinical Practice Algorithm. Available from: <https://dx.doi.org/10.4103/2156-7514.157858> Journal of Clinical Imaging Science (<https://clinicalimagingscience.org>)

# Les cathéters jugulaires internes

## Contre indication:

- Thrombose veineuse cave supérieure

## Avantages:

- Echec rare
- Saignement contrôlable
- Malposition rare à droite

## Inconvénients:

- Difficile chez les obèses
- Faux trajets à gauche
- Sténose/Thrombose veineuse : risque pour abord A-V-  
Δ Pace maker
- Traumatisme carotide
- Pansement (non tunnelisé)

# Les cathéters fémoraux

## Contre indication:

- Thrombose veineuse, obésité, diarrhée, chirurgie (vasculaire)

## Avantages:

- Pose simple (sous echo)
- Protection du capital cave supérieur (abord A-V)

## Inconvénients:

- Risque de thrombose veineuse (future greffe rénale)
- Risque infectieux (?)
- Risque de fistule A-V traumatique
- Dysfonction (?)

# Pas toujours moins bon en femoral ?

Shindo et al

Dovejix

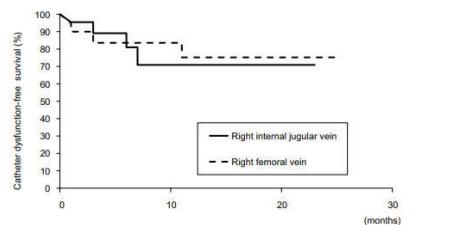


Figure 3 Kaplan-Meier curves for catheter dysfunction.

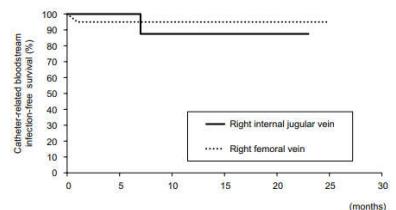
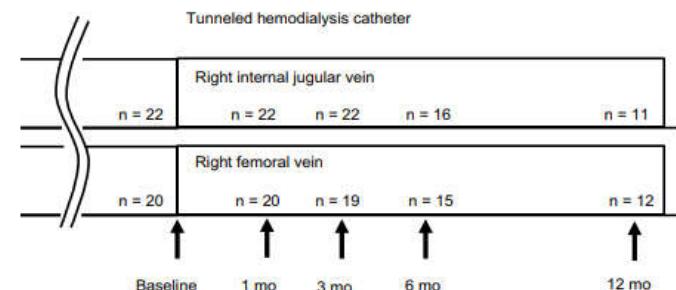


Figure 4 Kaplan-Meier curves for catheter-related bloodstream infections.

**Table 3** Catheter-related problems

	Right internal jugular vein	Right femoral vein	p-value
<b>Dysfunction</b>	3/22 (13.6%)	3/20 (15.0%)	0.46
<b>Catheter-related infections</b>			
Bloodstream infection	1/22 (4.5%)	1/20 (5.0%)	0.49
Exit site infection	0/22 (0.0%)	0/20 (0.0%)	–

Note: “–” indicates not calculated.



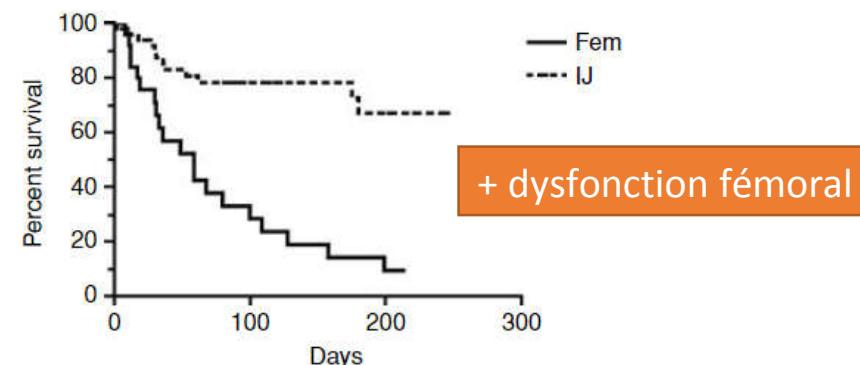
**Table 1.** Baseline characteristics of the study patients

Parameter	Fem catheter	IJ catheter	P value
N pts	27	54	
Age	52 ± 13	55 ± 12	0.25
Race N (% black)	24 (92.3%)	40 (74.1%)	0.06
Sex N (% male)	11 (40.7%)	22 (40.7%)	1.00
Diabetes N (%)	9 (34.6%)	25 (46.3%)	0.32
Hypertension N (%)	24 (92.3%)	46 (85.2%)	0.37
CAD N (%)	9 (34.6%)	11 (20.4%)	0.17
PVD	2 (7.7%)	10 (18.5%)	0.20
Years on HD	4.1 ± 3.4	1.8 ± 2.8	0.0015

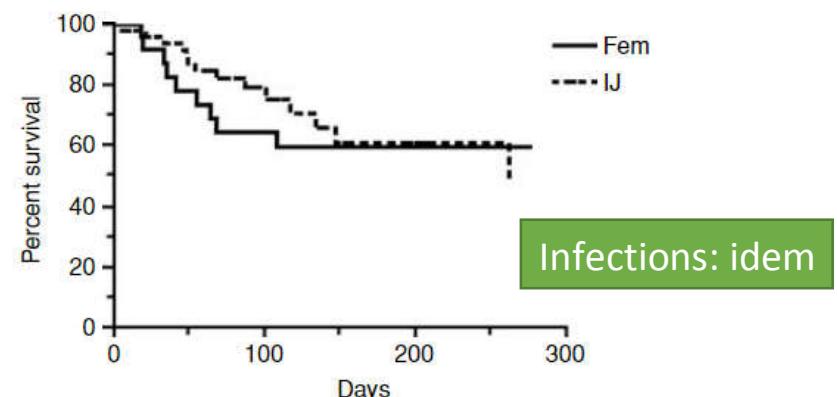
*Kidney International, Vol. 68 (2005), pp. 2886–2889*

## Outcomes of tunneled femoral hemodialysis catheters: Comparison with internal jugular vein catheters

IVAN D. MAYA and MICHAEL ALLON



**Fig. 1.** Primary patency (time from initial placement to first exchange) of tunneled dialysis catheters placed in the femoral vein (solid line) and internal jugular vein (dashed line).  $P < 0.0001$  by the log rank test.



**Fig. 2.** Infection-free survival (time from catheter placement to first episode of catheter-related bacteremia) of tunneled dialysis catheters placed in the femoral vein (solid line) and internal jugular vein (dashed line). Infection-free survival was calculated independently of need for catheter exchange due to malfunction.  $P = 0.66$  by the log rank test.

Comparative Study > Int Urol Nephrol. 2015 Oct;47(10):1727-34.

doi: 10.1007/s11255-015-1089-7. Epub 2015 Sep 2.

## Longer duration of catheter patency, but similar infection rates with internal jugular vein versus iliac vein tunneled cuffed hemodialysis catheters: a single-center retrospective analysis

Fémoral: pas plus d'infection mais plus de dysfonction

**Results:** We found that the average primary catheter patency was substantially shorter in iliac vein TCCs than in internal jugular vein TCCs (373 vs. 641 catheter-days). Patients with iliac vein TCCs underwent more frequent exchanges than those with internal jugular vein TCCs. Infection-free survival was similar for both groups ( $p = 0.748$ ), but dysfunction-free survival was significantly poorer in iliac vein TCC group than that in internal jugular vein TCC group ( $p = 0.001$ ). Age and previous catheter placement were the independent risk factors for TCCs survival.

**Methods:** In the present study, we reviewed the clinical parameters of 127 patients aged over 65 years with 207 new TCC placements and measured the incidence of catheter patency, infection, dysfunction, and survival of TCCs.

# KDOQI CLINICAL PRACTICE GUIDELINE FOR VASCULAR ACCESS: 2019 UPDATE

AJKD Vol 75 | Iss 4 | Suppl 2 | April 2020

KT jugulaires en 1ere intention, du coté opposé à la FAV, surtout si une TX est envisagée

- 3.2 KDOQI considers it reasonable to **choose the site** (location) of the CVC after careful consideration of the patient's ESKD Life-Plan as follows (Expert Opinion):
  - **Upper extremity before lower** extremity, *only if choices are equivalent*
  - There are valid reasons for CVC use (Guideline Statement 2.2) and its duration of use is expected to be limited (eg, <3months):
  - *AV access is likely to be ready for use in near future*—consider preferential use of tunneled cuffed CVC in **opposite extremity to anticipated AV access**
  - **Transplant is anticipated** in near future (ie, **preserve iliac vessels**)—consider preferential use of tunneled cuffed right Internal Jugular

# KDOQI CLINICAL PRACTICE GUIDELINE FOR VASCULAR ACCESS: 2019 UPDATE

AJKD Vol 75 | Iss 4 | Suppl 2 | April 2020

En urgence et si pas de Tx, un KT fémoral est possible, il préserve le réseau veineux cave supérieur  
Les CI: chirurgie ou thrombose des vaisseaux fémorauxiliaques, diarrhée, obésité

- Some experts support that in **urgent dialysis start situations**, under limited use circumstances (eg, [\*\*<1 month\*\*](#)) and transplant is not an option, **use of a tunneled, cuffed femoral CVC is acceptable** (unless contraindicated) until the AV-access or PD catheter can be quickly created and used.
- **Use of the femoral vein preserves the upper extremity vessels for future AV access creation.**
- Note: **Contraindications to femoral vein CVC include femoral or iliac vessel pathology or prior surgery/reconstruction; hygienic reasons(eg, chronic unresolved diarrhea), morbid obesity (BMI > 35 kg/m<sup>2</sup>), or other difficult vein access,**

# KDOQI CLINICAL PRACTICE GUIDELINE FOR VASCULAR ACCESS: 2019 UPDATE

AJKD Vol 75 | Iss 4 | Suppl 2 | April 2020

En cas d'utilisation prolongée, préférer la voie jugulaire, plutôt à droite ou du côté opposé à la FAV

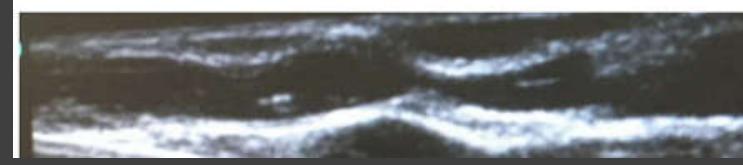
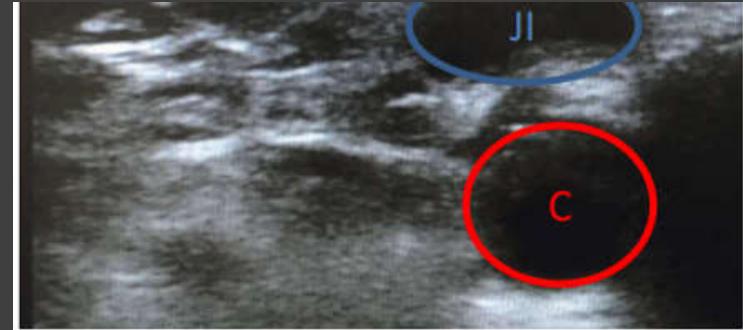
- When there are valid reasons for CVC use (Guideline Statement 2.2) and duration of use is expected to be prolonged(eg, **>3 months**) without anticipated use of AV access, CVC may be placed in the following locations in order of preference:
  - **Internal jugular**
  - External jugular
  - Femoral
  - Subclavian
  - Lumbar
- Note: In the absence of contraindications, prior pathology (eg, central stenosis) or intervention (eg, pacemaker) CVC insertion on **the right side is preferable** to the left side due to more direct anatomy.
- If one side has pathology that limits AV access creation but allows for CVC insertion, this side should be used for the CVC to **preserve the other side for AV access creation**

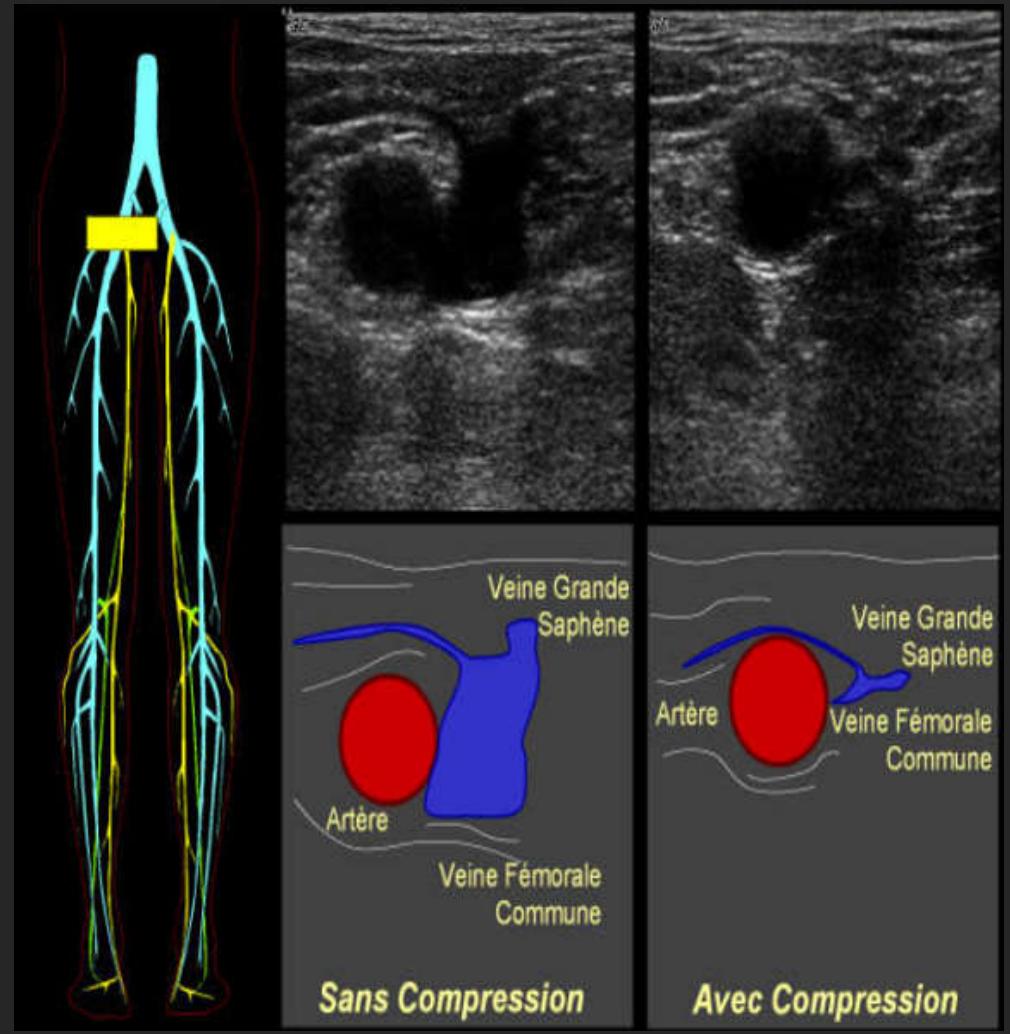
# KDOQI CLINICAL PRACTICE GUIDELINE FOR VASCULAR ACCESS: 2019 UPDATE

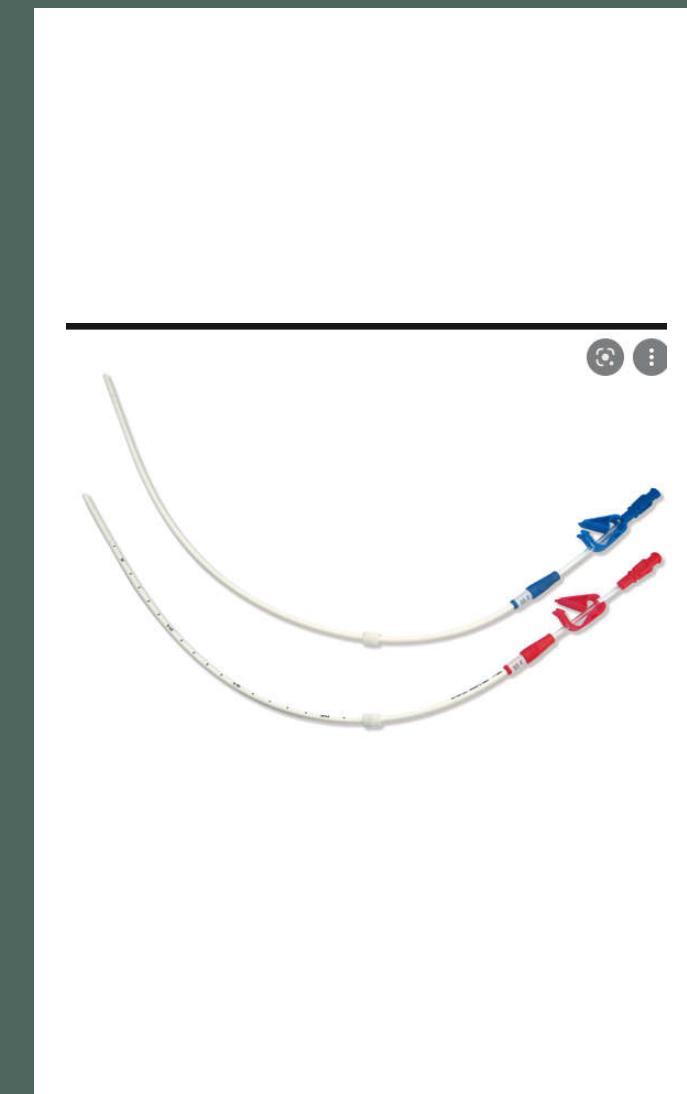
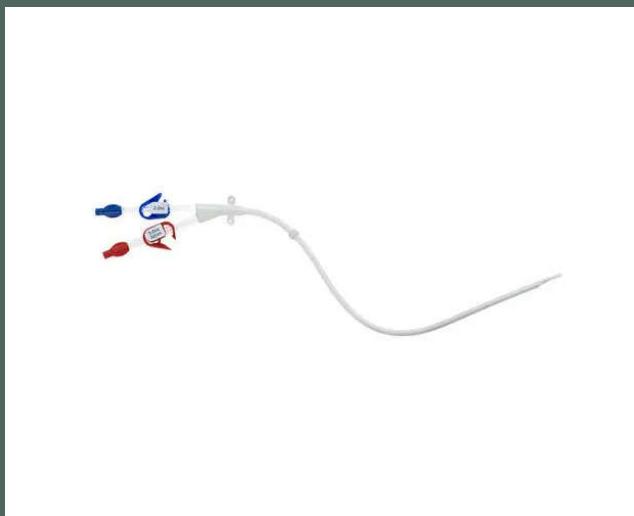
AJKD Vol 75 | Iss 4 | Suppl 2 | April 2020

Les KT tunnélisé fémoraux n'ont pas plus de complication que les jugulaires

- In select patients and **limited circumstances**, **tunneled cuffed-femoral vein catheterization may be reasonable**. For example, in situations where patients **urgently start dialysis** and are **not transplant candidates** but are in clinical environments that are conducive to quick dialysis access creation/insertion (ie, within 1 month), tunneled cuffed femoral CVC may serve several beneficial purposes,
- First, **it will preserve central veins to ensure that AV access** is feasible (assuming central veins not previously damaged or stenosed by other processes).
- Second, use of femoral vein CVC re-minds patients and providers **that CVC is only for temporary purposes**.
- This strategy is effective only if the facility can coordinate rapid AV access creation for patients destined for HD (eg, early cannulation AVG or AVF in a patient with high likelihood of maturation success) or PD catheter insertion for patients who have chosen PD.
- Issues such as proper placement of the exit site to ensure patient comfort and dignity must be considered (Fig 3.1). Of note, RCTs, metanalyses, and systematic reviews have **demonstrated equivalent or superior outcomes with regard to CVC thrombosis and infection**, using tunneled femoral vein CVC. However, precaution with femoral CVC use, as with any CVC use, must be taken







# Conclusion 1: cathéters transitoires

## Voie jugulaire interne droite

- Changement pour cathéter tunnelisé sur guide (< 15j)

## Voie fémorale droite

- Changement pour cathéter jugulaire interne tunnelisé
- Ou tunnelisation fémorale si contre indication jugulaire (thrombose cave supérieure)

## Conclusion 2: cathéters tunnelisés

### Voie jugulaire en 1<sup>ère</sup> intention

- Plutôt à droite (faux trajets à gauche)
- Coté opposé à l'abord A-V possible ou existant

### Voie fémorale en seconde intention (thrombose cave supérieure)

- Surrisque de dysfonction et de thrombose
- KDIGO: pas de surrisque (non tunnelisé) et protection réseau veineux membre supérieur