

# **Report of the CSN Vascular Access Working Group (VAWG)**



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## Report of the CSN Vascular Access Working Group (VAWG)

### Members

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The members are all nephrologists and members of the Canadian Society of Nephrology (CSN).

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### Disclaimer

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This document is not an evidence-based guideline. Rather, it reflects the opinions of leaders in vascular access within the Canadian nephrology community. The CSN VAWG's intent is to provide practical, realistic and actionable recommendations to CSN, to provincial and local organizations and to nephrologists that may rapidly change vascular access practice patterns in Canada. These recommendations are not meant to provide specific advice for individual patient care. Indeed, individual patient care should be patient focused, and provide sufficient education to help a patient make truly informed choices about their own optimal vascular access.

## 1. Introduction

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Despite CSN guidelines that have included vascular access recommendation since the mid 1990's(1), and most recently updated in 2006(2), Canada has historically shown a vascular access practice profile that includes a disproportionate reliance on central venous catheters (CVC) and decreasing use of arterio-venous grafts (AVG). By the time of DOPPS II (2002-2004) it was clear that Canada's overreliance on CVC's was a much bigger problem than was seen in most of the other DOPPS countries. (3, 4) Despite a Canada DOPPS specific publication and updated CSN VA guidelines (both in 2006), this national trend is getting worse over time, as shown in figures 1 and 2, based upon CIHI/CORR data from 2008.

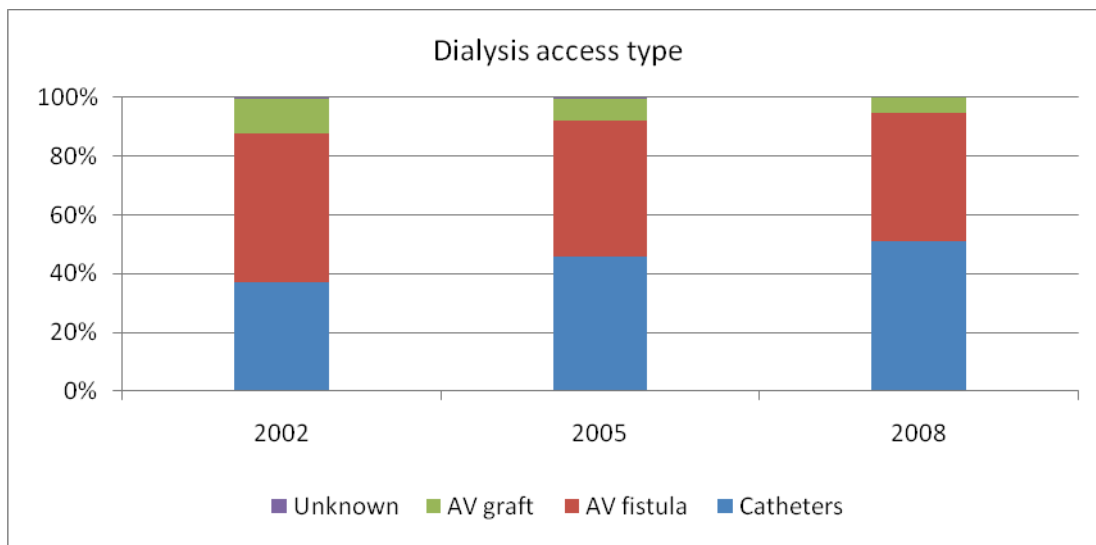


Figure 1: Trends in vascular access type in prevalent Canadian dialysis patients. Data provided by CIHI/CORR

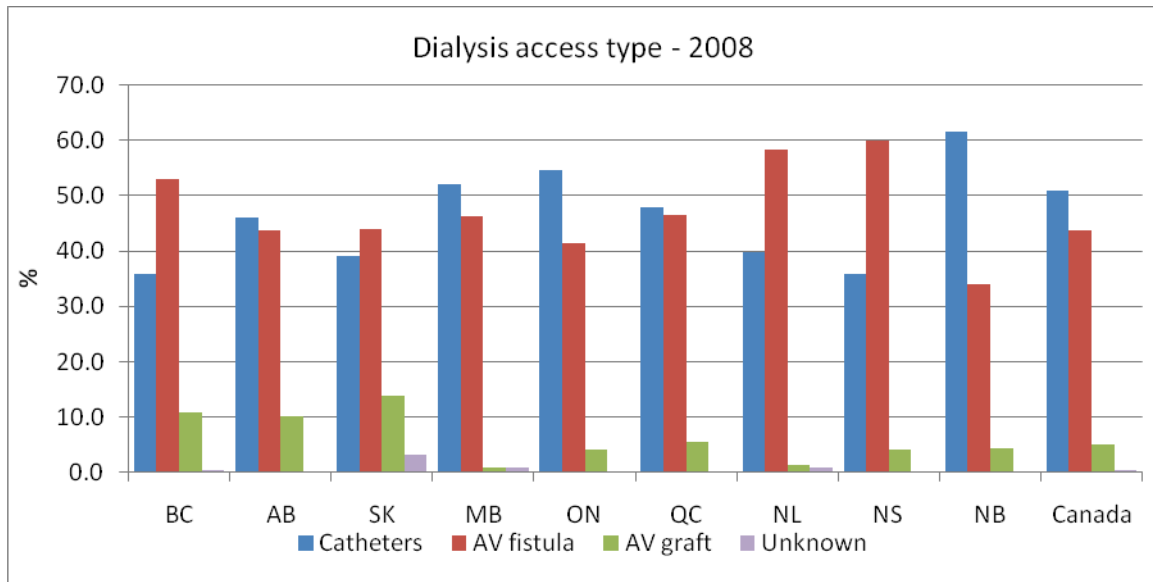


Figure 2: Interprovincial differences in vascular access practice patterns in prevalent hemodialysis patients in 2008. Data provided by CIHI/CORR

At the time of publication of the CSN VA guidelines in 2006, CSN decided to focus its guideline implementation committee on the concurrent CSN position paper “Care and Referral of Adult Patients with Reduced Kidney Function”. There was no corresponding effort to encourage uptake and dissemination of the VA guidelines. The purpose of this CSN VAWG is to alert the Canadian renal community about our national VA performance and to champion the uptake of one particular aspect of the 2006 CSN VA guidelines: to promote more functioning AVF in incident and prevalent hemodialysis patients, while concurrently reducing CVC use.

One challenge for CSN is that health care is administered provincially. Different provinces have placed a different priority on VA issues. Some have formal committees and/or policies in place, while others do not. Any CSN initiative should include the key opinion leaders who are already actively engaged in VA practice pattern improvement in their own province. Recommendations should be concordant with, and supportive of, provincial and local initiatives that are ongoing.

The CSN VAWG held an initial meeting by teleconference on October 15, 2010. The second meeting was face to face on Nov. 18, 2010. Four working group reports were submitted by March 2011 and incorporated into a final draft document. This was reviewed by the VAWG by teleconference on May 17, 2011 and submitted to CSN executive on May 30, 2011. An external review was performed, after which further changes were made to the core document and appendices.

Based upon these deliberations, the CSN VAWG respectfully submits this report to the CSN executive for its consideration.

## 2. **Preamble**

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A subcommittee of the vascular access working group did consider the 2006 CSN guidelines and after review by the entire CSN VAWG, a short commentary is included as Appendix 1. Although it was beyond the scope of the VAWG to formally update the guidelines, the VAWG concluded that the recommendations most relevant to their work (to encourage more functional AVF while reducing CVC use) did not require an update. However, the evidence supporting these recommendations are based only on observational data, as there have been no randomized control trials to date comparing outcomes of AVF vs CVCs.

### a) **National Recommendations**

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- 1) We recommend that CSN establish as a policy that “Functional AVF, which are associated with better outcomes, including patient survival, and which are generally more cost effective, should be encouraged by renal providers for suitable patients.”

*This statement mirrors an existing CSN policy that is widely supported by Canadian nephrologists (Home and Self Care, which generally are more cost effective, should be encouraged by renal care providers, but not be mandatory(5).*

- 2) We interpret the evidence available to suggest that CVC’s are, in general, the least preferred type of vascular access for most patients, and that AVG’s are preferred over CVC in most instances when an AVF is not possible.
- 3) We suggest that the optimal access distribution will include a minority of patients with AVG or CVC. Indications for an AVG/CVC include patients with a) limited life expectancy, b) in whom AVF maturity is not likely to occur and/or c) expected transition to PD or transplantation in the near future.
- 4) We recommend that patients who are failing peritoneal dialysis or transplant should have optimal vascular access created before they need to initiate hemodialysis.
- 5) We recommend that CSN request that CORR/CIHI report trends in VA nationally, and by province, on an annual basis. This report should be provided electronically with the ability to customize provincial and national data by patient age, sex and comorbidity status and other significant determinants of VA outcomes if they are available. Further, we recommend that CSN request that CORR/CIHI report facility level data (with provincial and national trends) to each facility annually around these metrics. This

should be sent out to each facility with the annual dialysis Standardized Mortality Rate (SMR) reports.

- 6) We recommend that certain basic metrics be collected and reported to CORR/CIHI from each facility, and that CORR/CIHI report them all back to each facility (with provincial and national trends). Consideration of an evolving approach to metrics, from this initial basic approach, to a comprehensive approach is recommended and preliminary work is presented in Appendix 2.
- 7) We recommend that CSN create and adequately resource a standing VA committee, whose job is to monitor VA trends in Canada, and to maintain an inventory of provincial activities and policy documents. The standing VA committee will work with CORR/CIHI to develop, validate, and implement an augmented and comprehensive reporting of VA outcomes, as indicated in recommendation 6 above. This committee will also create and update a CSN VA toolkit (for a preliminary version, see appendix 3), and publicize and make available its contents for use by nephrologists, surgeons, interventional radiologists, patients and other stakeholders across Canada. Membership on the toolkit team should include representatives from the vascular access coordinator group. This committee would report to the membership at every CSN annual general meeting.
- 8) We recommend that CSN set national wait time and resource availability targets, as follows:
  - a. Maximum time from VA referral to surgical consult
  - b. Maximum time from surgical consult to surgery
  - c. Maximum time for interventional radiology procedures
  - d. OtherDetailed preliminary recommendations for wait times and resource availability are provided in Appendix 4.
- 9) We recommend that CSN specify a precise CVC target change per year, with a long term target followed by reassessment. Assuming that CSN adopts the VAWG recommendations in 2011, when prevalent CVC utilization is approximately 51% (CORR 2008 data), then a change of 2% per year is possible and the CSN 5 year CVC target becomes 41% in 2016. Beyond that, the CVC target becomes 31% in 2021. Once Canada approaches 30% CVC utilization, then the standing CSN VA committee should consider recommendations to further reduce CVC targets, based on evidence and opinion at that time. To achieve this will require more AVF's and AVG's.

*The successful USA Fistula First initiative has led to a prevalent AVF percent change from 42% in 2002 to 60% in 2010. The rate of change (18%/8 years) is a bit more than 2% per year, therefore this rate of change is achievable.*

*The CSN VAWG does not know the ultimate target for CVC utilization in Canada. Indeed its members disagree about how low prevalent CVC utilization can be driven. However all agree that the ultimate percent target is below 30%. Based on that, 30% is recommended as a CSN interim target.*

- 10) We recommend that future CSN policy consider setting specific targets for tasks during CKD Stage 3, 4 and 5 management according to the rate of decline of eGFR:
- a. Assuming a usual rate of decline of 2 – 5 ml/min/yr, modality education should usually begin at eGFR = 30 ml/min, modality decisions should usually be finalized by eGFR = 20 ml/min, and that those who choose HD (and who are expected to survive long enough and are suitable), should usually be referred to a vascular surgeon for consideration/evaluation of AVF when eGFR = 15 – 20 ml/min (as per 2006 CSN guideline).
  - b. In patients whose rate of decline of eGFR over time is greater than 5 ml/min/year, these tasks should be undertaken earlier than proposed above.
  - c. In elderly (and other stable) patients with non progressive CKD who are not expected to need to initiate hemodialysis, these task targets may or may not be relevant.

*In addition, given that the primary failure rate of AVF may be up to 50% patients should be aware that multiple interventions or surgeries may be required to obtain a functioning fistula. Because AVF and CVC do not require the same time dependent maturation process as AVF, the eGFR targets set out above do not apply to patients who are not suitable for AVF.*

*CSN VAWG notes that a recent Australian publication shows modality education begins when eGFR is 13 ml/min, and another Australian publication shows vascular surgery occurred when eGFR was 7 ml/min(6). Clearly, this is too late to avoid CVC in most incident HD patients. A recent study did show that amongst patients known to Canadian nephrologists for more than 12 months prior to HD initiation, 80% experienced suboptimal initiation with a CVC, or with a hospitalization, or both(7). Finally, a British Columbia study showed that patients who had AVF attempt prior to dialysis did so at an eGFR of 12 ml/min, but many more patients had no attempt prior to dialysis(8). Increased focus on the timing and completion of pre-ESRD tasks would be expected to lead to markedly improved VA status at initiation of HD.*

- 11) Assuming that local resources are available, we recommend that if and when patients reach eGFR = 15 ml/min and are unable or unwilling to make a

modality decision, consideration should be given to refer suitable patients to the vascular access surgical team for assessment concerning possible dialysis access options. This appointment may catalyze modality decision making and some of these patients may then choose PD and avoid VA surgery before the initiation of dialysis, while others may proceed more quickly to an AVF/AVG attempt. Note that this recommendation is about when to consider referral to the surgeon for evaluation, and does not contemplate when vascular surgery is to be scheduled.

- 12) We recommend that CSN influence program directors in nephrology, vascular surgery and interventional radiology such that their trainees receive augmented education around hemodialysis vascular access.

### **b) Provincial Recommendations:**

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- 13) We recommend that every province track VA outcomes annually, using standardized definitions, and have a standing committee that examines trends and applies specific interventions to improve VA practice patterns in that province.
- 14) We recommend that provincial committees emphasize efforts to alter the 2 major pathways leading to CVC utilization, that is a) decreasing CVC use in incident patients and b) converting prevalent patients with CVC to AVF/AVG.

### **c) Facility Level Recommendations:**

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- 15) We recommend that each facility have a clearly identified nephrologist in a VA champion/advocate role. Amongst the duties of this nephrologist is to monitor local trends, implement measures to improve the VA mix in both incident and prevalent patients, to motivate and engage the local surgeons, interventional radiologists, nephrologists, and facility administration and to lead the local VA team. CSN VAWG recommends that the local VA team should include a vascular access coordinator, where available, and at least one surgeon and interventional radiologist. CSN VAWG acknowledges that at the level of a satellite facility, these resources may not be available. However, such a satellite facility must be able to access a local VA team at a regional centre.

Canadian experience shows that establishing a VA team leads to earlier AVF surgery (at higher and more appropriate eGFR)(9).

- 16) We recommend that each facility provide sufficient resources to support the above described physician champion and the local VA team in order to track VA practice patterns and for each facility to formally apply principles of continuous quality improvement to VA practice in order to optimize VA practice patterns.

**d) Concluding Recommendations:**

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- 17) We recommend that quality improvement and research into HD vascular access become a national priority. Tracking of VA interventions, outcomes, and complications at the facility level, once aggregated nationally, have the potential to greatly augment and inform the evidence base.

*CSN VAWG acknowledges that while there is ample observational data, there are still many areas of deficient evidence concerning vascular access. Because of this there remain many areas of controversy and often, a lack of consensus. Canada has the opportunity to use its pre-existing infrastructure and willingness to collaborate to make major contributions to the understanding of hemodialysis vascular access, and to the optimization of system wide processes of care that are required to improve the VA practice pattern profile of this population.*

Respectfully Submitted by the,

**CSN Vascular Access Working Group**

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