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In the name of God

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THE DANISH VASCULAR REGISTRY , KARBASE

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BACKGROUND

- DVR was initiated in 1989 FOR :

1. monitoring the results and complications of the vascular surgery

2. creating a nationwide database for research

- TODAY:

the database contains .180,000 procedures and is being integrated with other registries.

AIM OF DATABASE

The main aim of the DVR:

1. improve the quality of procedures and treatment for patients undergoing vascular surgery.
2. stimulate the quality improvement initiatives to:
   standardize the excellence in practice and improve the outcomes.
3. monitor and support the implementation of evidence-based treatment for patients undergoing vascular procedures

AIM OF DATABASE

Data are collected by the vascular surgeon who is responsible for the treatment and entered to the DVR by the surgeon.

but at some departments:

paper forms are still completed by the surgeon and then entered to the database by the secretaries.

STUDY POPULATION

- The DVR includes data on all reconstructive arterial and advanced vein procedures performed at the seven vascular surgical departments in Denmark.

- Patient consent is not required for the entry of data in the DVR
- Patients must possess a Danish unique personal identification number (central person registration number [CPR]) that links to health registers.

STUDY POPULATION

Each year ~9,000 procedures are added.

- The main procedures:

1. 450 carotid endarterectomies
2. 500 open repair for aortic aneurysm
3. 250 endovascular aortic repairs
4. 1,500 open peripheral arterial reconstructions
5. 2,500 endovascular arterial interventions for atherosclerosis
6. 700 arteriovenous fistulas for renal insufficiency

MAIN VARIABLES

The main variables recorded in the DVR:

- patient characteristics:

(sex, height, weight, age, tobacco use, level of self-care, hemoglobin, creatinine, total cholesterol, and high-density lipoprotein)

- Comorbidity:

(previous cerebrovascular or cardiac disease, hypertension, diabetes, and pulmonary disease)

MAIN VARIABLES

- indication for intervention

(claudication, rest pain, wound, necrosis, aneurysm, stroke, bleeding, and infection)

- outcome variables on complications

(infection, bleeding, thrombosis, nerve lesions, pulmonary complication, myocardial infarction, stroke, renal insufficiency, dialysis, stay at intensive care .3 days, deep venous thrombosis, pulmonary embolism, compartment syndrome in the extremities, and multiorgan failure)

MAIN VARIABLES

- Process variables

waiting time from event to examination and intervention, length of hospital stay, and time from pre intervention angiography to intervention

- Outcome variables

mortality, myocardial infarction, stroke, and amputation rate.

MAIN VARIABLES

Depending on the disease, information on distal blood pressure, degree of carotid stenosis, or size of arterial aneurysm is recorded and follow-up information on patency is noted for 1 month, 3 months, and 12 months.

FOLLOW-UP

The DVR reports annually, based on data submitted by the vascular departments in Denmark.

The are discussed at annual meetings with the aim of improvement.

In case of outlier results (positive as well as negative), local audits are performed and results of the audits are published in the final annual report.

Audits are essential for clinical practice and outcomes are dependent on the careful selection of patients, the skills of the surgical, endovascular, and anesthetic teams, and the medical care.

FOLLOW-UP

- Periodic assessments of the quality indicators are published on a monthly basis in the regional information systems where hospital departments have access to their own results.
- This assesments was:

1. to ensure the real-time registration

2. to show the results for the further development and quality assurance in the units.

EXAMPLES OF RESEARCH

1. Impact of β-blockers on patients treated for peripheral arterial disease

2. Influence of type of anesthesia on the patency of peripheral bypass:3 hypothesizing that epidural anesthesia could positively affect 30-day patency because of an increased regional blood flow.

3. Benefit of open repair versus endovascular repair for electively asymptomatic abdominal aortic aneurysm repair was investigated during a 4-year period.

EXAMPLES OF RESEARCH

4 . Cardiovascular risk in patients suffering from aortic aneurysm disease, who had undergone open aortic aneurysm repair compared to the normal Danish population.

5. The DVR has also provided data for the evaluation of national initiatives for quality improvement in decreasing the treatment time after stroke or transient ischemic attack due to carotid stenosis6 in collaboration with the Danish Stroke Registry.

EXAMPLES OF RESEARCH

the DVR is a major contributor in providing data to research-year and PhD students.

It is of major interest to determine to which extent the differences in health care systems influence clinical practice and results.

ADMINISTRATIVE ISSUES AND FUNDING

DVR :

- was taken by a group of enthusiastic vascular surgeons in 1989.
- was approved by the Danish Health Authority in 1993.
- is run by a steering committee and representatives from each department of vascular surgery.

ADMINISTRATIVE ISSUES AND FUNDING

Meeting:

Each year, the steering committee and the local representatives meet to discuss the recent annual report .

The steering committee meets four to six times a year to plan the development of the database.

ADMINISTRATIVE ISSUES AND FUNDING

The DVR is a part of the Danish Clinical Registries (RKKP), which is funded by the Danish Regions.

Access to data can be obtained by applying to the Danish Clinical Registries.

Table 1 Indicators of Danish Vascular Registry from 2016–2017

Procedure	Subgroup of procedure	30-day mortality, myocaridal infarct, stroke, reintervention within 3 months, amputation 30 days, 3 months, and 12 months	Treatment duration (time from event, referral, examination, angiography, and treatment)	Wound infection and complications	Medical treatment with antithrombotic and statin at discharge, 3 months and 12 months	Access monitoring	Venous rethrombosis and pulmonary emboli after 3 months and 12 months	Length of stay
Carotid surgery		X	X		X			X
Supraaortical reconstructions		X			X			
Visceral reconstructions								
	Renal artery	X			X			
	Mesenteric artery	X			X			
	Visceral arteries	X			X			
Aorta/iliac–peripheral bypass		X			X			X
Abdominal aortic aneurysm								
	Open repair							
	Rupture	X			X			X
	Acute	X	X		X			X
	Elective	X	X		X			X
	Others	X			X			
	Endovascular repair							
	Acute and rupture	X	X		X			X
	Elective	X	X		X			X
	Others	X			X			
Other aneurysms		X			X			
Aorta–iliac TEA		X		X	X			
Other TEA		X		X	X			X
Fem–fem crossover bypass		X	X	X	X			X
Infrainguinal bypass								
	Femoral–popliteal bypass above knee	X	X	X	X			X
	Prothesis	X	X	X				X
	In situ	X	X	X				X
	Others	X	X	X				

(*Continued*)

Table 1 *(Continued)*

Procedure	Subgroup of procedure	30-day mortality, myocaridal infarct, stroke, reintervention within 3 months, amputation 30 days, 3 months, and 12 months	Treatment duration (time from event, referral, examination, angiography, and treatment)	Wound infection and complications	Medical treatment with antithrombotic and statin at discharge, 3 months and 12 months	Access monitoring	Venous rethrombosis and pulmonary emboli after 3 months and 12 months	Length of stay
	Femoral–popliteal bypass below knee	X	X	X	X			X
	Prothesis	X	X	X				X
	In situ	X	X	X				X
	Others	X	X		X			
	Femoral–crural bypass							
	Prothesis	X	X	X	X			X
	In situ	X	X	X	X			X
	Others	X	X		X			
Other arterial bypasses 12 embolectomi/ thrombectomi		X	X		X			
	Graft	X		X	X			
	Genuine vessel	X		X	X			
Arterial thrombolysis		X	X		X			X
14 endovascular		X	X		X			X
	Aortoiliac	X	X		X			
	Femorocruralt	X	X		X			
	Graft	X	X		X			
	Others	X						
Other arterial operations		X			X			
Access surgery						X		
Advanced venous surgery							X	
	Varicose veins	X					X	
	Thrombolysis/ thrombectomi	X					X	
	Other venous surgeries	X					X	
Reoperation		X						
Other vascular operations		X			X			

Abbreviation: TEA, thromboendarterectomy.

CONCLUSION

The DVR:

- is monitoring all arterial and advanced vein interventions for quality improvement
- for research and contains information about baseline characteristics, comorbidity, procedures conducted, complications, and medical treatment status.

Thanks for Your Attention

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