Are We Overtreating? The Elderly, Frail and Co-Morbid – Who Should Get an AAA Repair?

Paul Petrasek, MD MHCM FRCSC
Peter Lougheed Centre

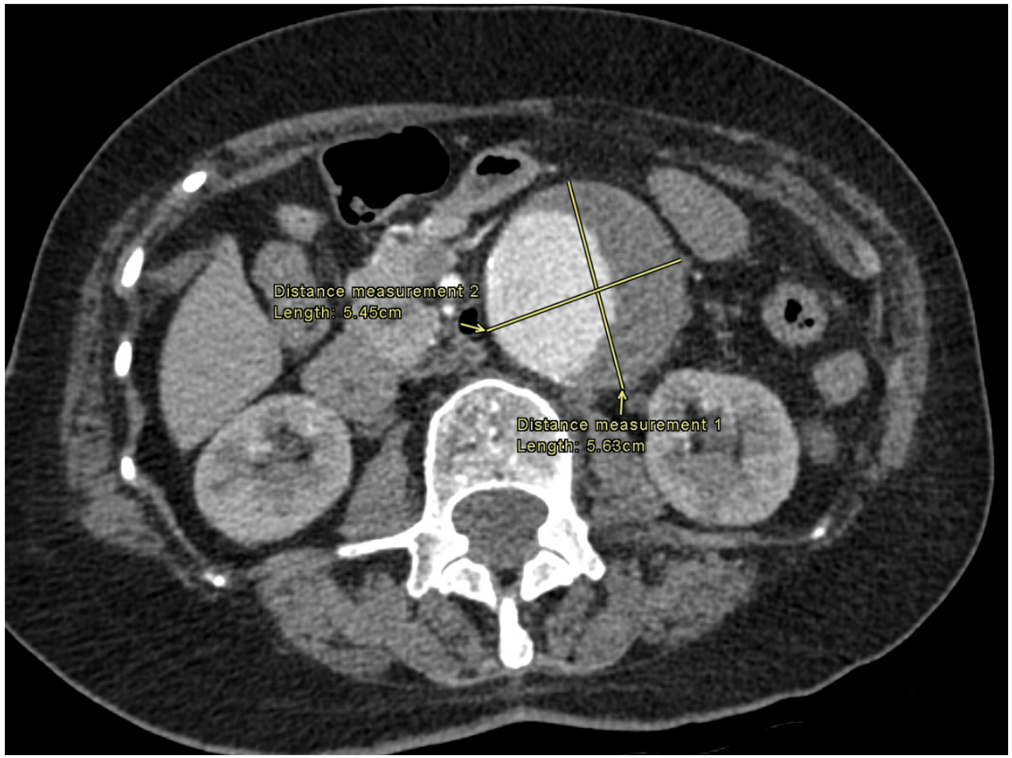
Winnipeg Vascular and Endovascular Symposium
April 2026

UNIVERSITY OF CALGARY

Disclosures: I have no conflicts of interest

Case

- *86 y.o. female*
- *5.6 cm AAA → newly diagnosed, asymptomatic*
- *BMI=18, 150cm, 40.5kg*
- *No diabetes, cardiac or respiratory disease, GFR=45*
- *Lives independently*
- *hypertension → single agent*



Case

- *86 y.o. female*
- *5.6 cm AAA → newly diagnosed, asymptomatic*
- *BMI=18, 150cm, 40.5kg*
- *No diabetes, cardiac or respiratory disease, GFR=45*
- *Lives independently*
- *hypertension → single agent*

UNIVERSITY OF CALGARY

UNIVERSITY OF CALGARY

Live Poll – How would you manage this?

1. *Leave it: wait for growth, or never treat it*
2. *Recommend EVAR*
3. *Quantify operative risk, then decide*

UNIVERSITY OF CALGARY

AAA Repair in the elderly, frail and co-morbid:

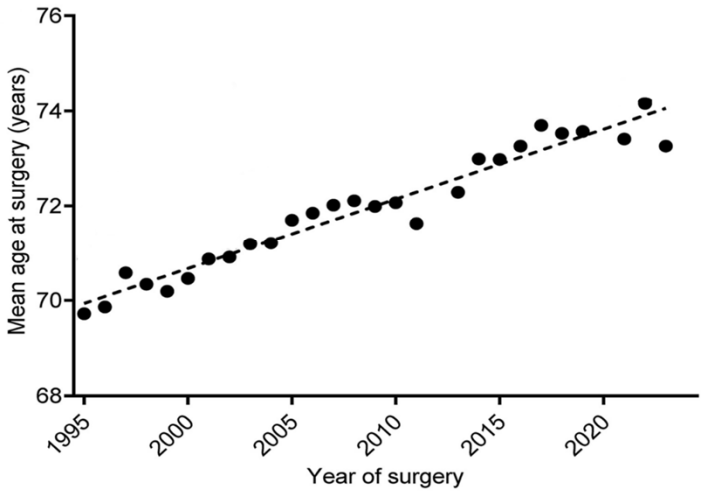
1. *Frailty and how to assess it*
2. *AAA repair outcomes in elderly and frail*
3. *Clinical Practice Guidelines*
4. *Recommendations for your practice*

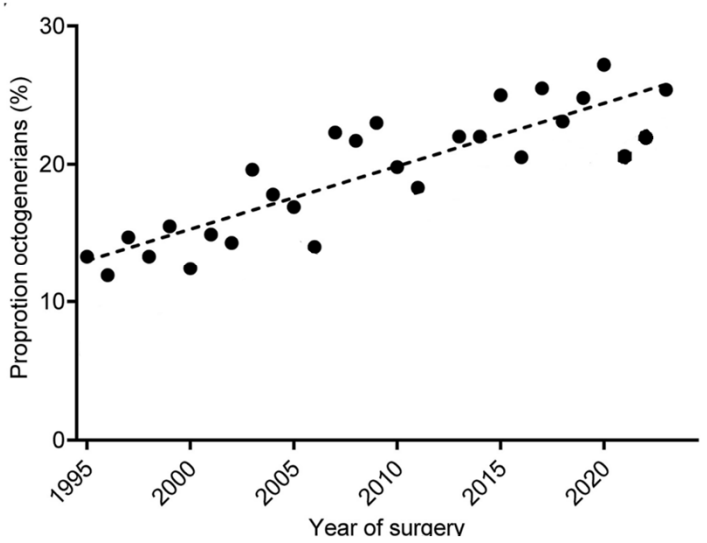
Does aortic aneurysm repair in the elderly, frail and co-morbid prolong life? At what cost?

The Changing AAA Landscape

Demographic Shift: The mean age at AAA repair has increased over the last 30 years, with a rising proportion of octogenarians

48,557 AAA repairs in Netherlands: 1995-2023





Considerations with Respect to Elective Abdominal Aortic Aneurysm Repair in Older People. Ann Vasc Surg 2026; 124: 174–182.

The Changing AAA Landscape

UNIVERSITY OF CALGARY

Ontario:

- EVAR repair in octogenarians more than tripled from 2003 to 2016, the fastest rise of any age group
- Octogenarians are now over 30% of elective EVARs

Elective endovascular aortic repairs

Variable	Abdominal Aortic Aneurysm Repair, No. (%)	
	Elective (n = 19 489)	
	Open Surgical Repair (n = 12 232)	Endovascular Aortic Repair (n = 7257)
Age, mean (SD), y	71.3 (7.8)	75.2 (7.9)
Age quintile, y		
40-64	2397 (20)	732 (10)
65-69	2425 (20)	997 (14)
70-74	2909 (24)	1430 (20)
75-79	2690 (22)	1772 (24)
>79	1811 (15)	2326 (32)

Prevalence of Elective and Ruptured Abdominal Aortic Aneurysm Repairs by Age and Sex From 2003 to 2016 in Ontario, Canada. JAMA Network Open.2018;1(7):e185418.

The Changing AAA Landscape

The Problem: Current guidelines (focusing on AAA diameter) don't address the risk-benefit balance in the aged and frail.

UNIVERSITY OF CALGARY

SOCIETY FOR VASCULAR SURGERY® DOCUMENT

The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm

Elliot L. Chaikof, MD, PhD,[a] Ronald L. Dalman, MD,[b] Mark K. Eskandari, MD,[c] Benjamin M. Jackson, MD,[d] W. Anthony Lee, MD,[e] M. Ashraf Mansour, MD,[f] Tara M. Mastracci, MD,[g] Matthew Mell, MD,[b] M. Hassan Murad, MD, MPH,[h] Louis L. Nguyen, MD, MBA, MPH,[i] Gustavo S. Oderich, MD,[j] Madhukar S. Patel, MD, MBA, ScM,[a,k] Marc L. Schermerhorn, MD, MPH,[a] *and* Benjamin W. Starnes, MD,[l]
Boston, Mass; Palo Alto, Calif; Chicago, Ill; Philadelphia, Pa; Boca Raton, Fla; Grand Rapids, Mich; London, United Kingdom; Rochester, Minn; and Seattle, Wash

Clinical Practice Guidelines

Eur J Vasc Endovasc Surg (2024) 67, 192–331

CLINICAL PRACTICE GUIDELINE DOCUMENT

Editor's Choice – European Society for Vascular Surgery (ESVS) 2024 Clinical Practice Guidelines on the Management of Abdominal Aorto-Iliac Artery Aneurysms ☆

Frailty

Reduced physiological reserve, with reduced ability to handle stress.

Stress in the frail can lead to rapid health deterioration and risk of mortality.

-Canadian Frailty Network

Conflation with Age:

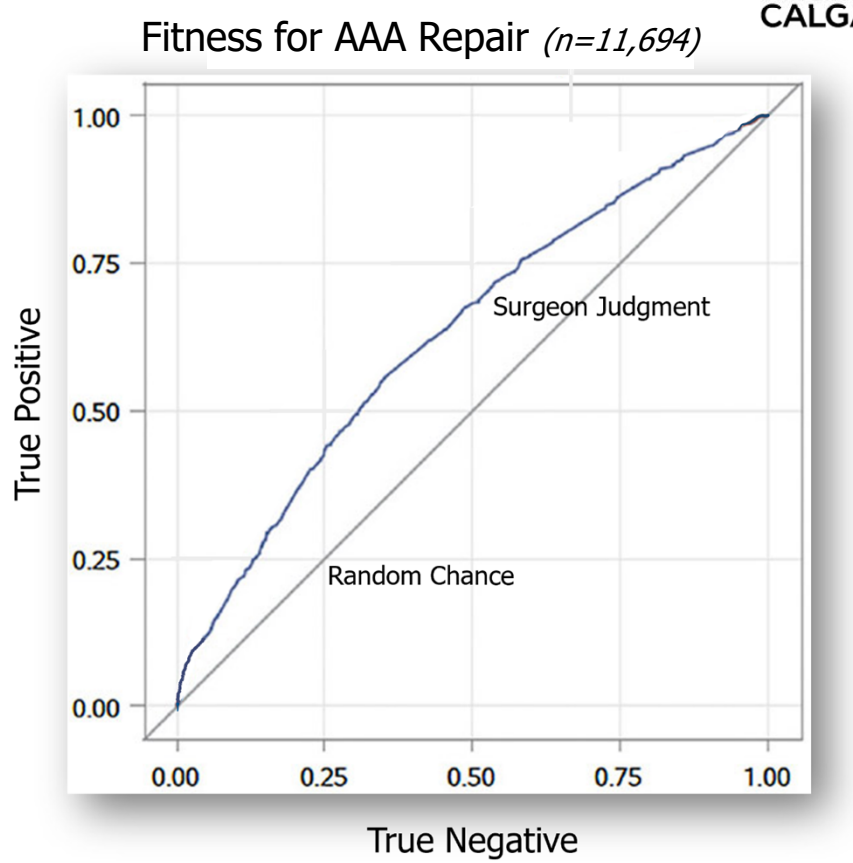
Age is a risk factor for frailty

Frailty (not age) is the cause of a poor outcome

Assessing Frailty

Surgeon Judgement:

"Eyeball Test"



Comparison of Surgeon Assessment to Frailty Measurement in Abdominal Aortic Aneurysm Repair. J Surg Res. 2020 April; 248: 38–44.

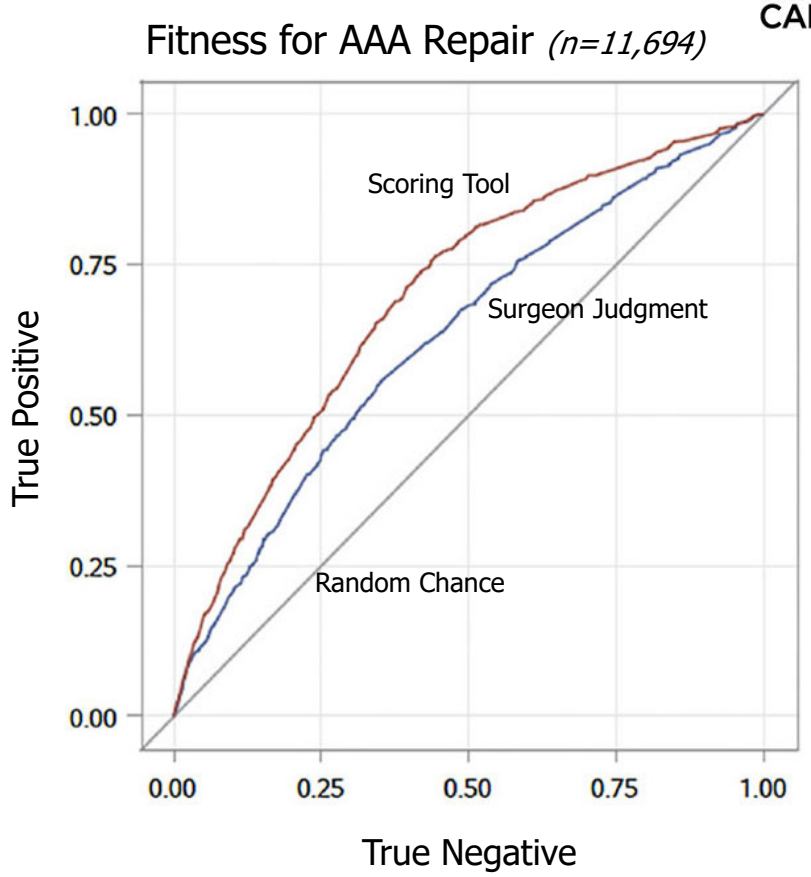
Assessing Frailty

Surgeon Judgement:

"Eyeball Test"

Quantitative Scoring Tool:

Risk Analysis Index (RAI)

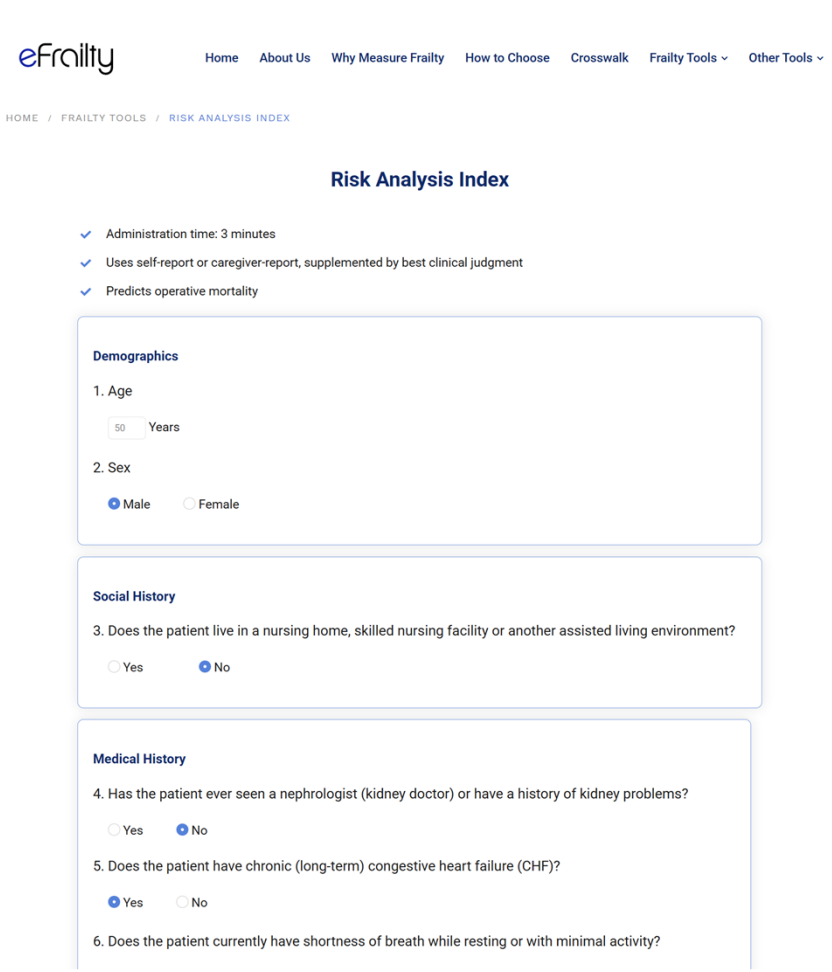


Comparison of Surgeon Assessment to Frailty Measurement in Abdominal Aortic Aneurysm Repair. J Surg Res. 2020 April; 248: 38–44.

Risk Analysis Index (RAI)

Surgical frailty assessment using 14 questions:

1. *Age*
2. *Sex*
3. *Cancer history*
4. *CHF*
5. *COPD*
6. *Renal failure*
7. *Recent weight loss*
8. *Appetite*
9. *Mobility*
10. *Assisted living*
11. *Ability to feed*
12. *Ability to toilet*
13. *Ability to bathe*
14. *Cognitive status*



UNIVERSITY OF CALGARY

Development and Initial Validation of the Risk Analysis Index for Measuring Frailty in Surgical Populations. JAMA Surg. 2017;152(2):175-182.

Risk Analysis Index (RAI)

UNIVERSITY OF CALGARY

RAI Score

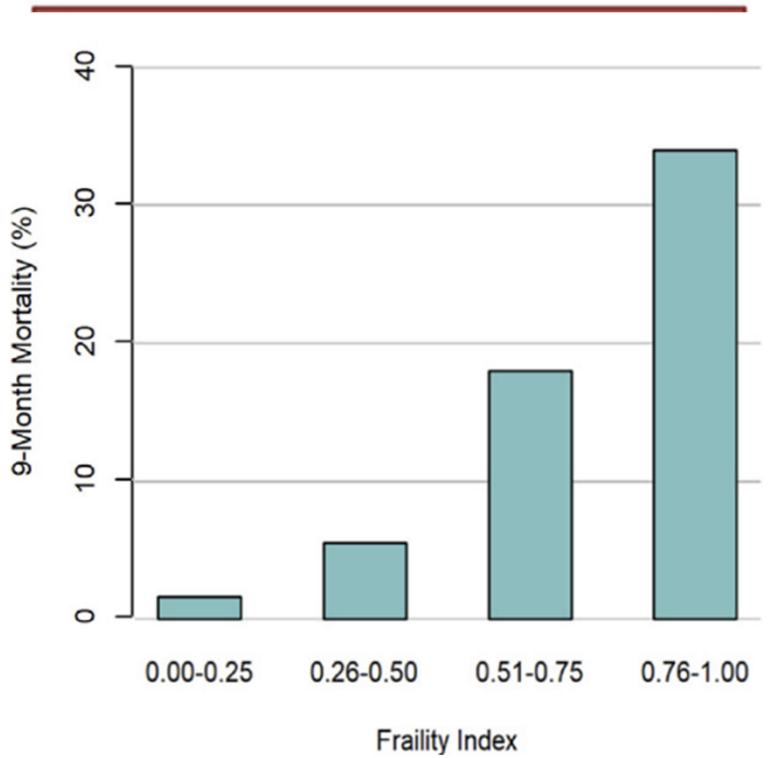
Mortality	***0-15***	***16-25***	***26-35***	***>36***
30-Day	0.3%	0.9%	1.6%	6.6%
180-Day	1.1	3.4	9.0	17.3
365-Day	1.8	7.3	16.7	28.3

Development and Initial Validation of the Risk Analysis Index for Measuring Frailty in Surgical Populations. JAMA Surg. 2017;152(2):175-182.

VQI Frailty Index (VQI-FI)

i. Validated from 265,632 cases across 7 modules in VQI

ii. Shorter questionnaire: 7 variables, rather than 14 (RAI)



A Vascular Quality Initiative frailty assessment predicts post discharge mortality in patients undergoing arterial reconstruction. J Vasc Surg 2022;76:1325-34.

What does the data tell us?

Outcomes of octogenarians receiving aortic repair

Muhammad Saad Hafeez, MBBS,[a] Salim G. Habib, MD,[a] Dana B. Semaan, MD,[a]
Othman Abdul-Malak, MD, MS,[a] Nathan L. Liang, MD, MS,[a] Michael C. Madigan, MD,[a]
Jeffrey J. Siracuse, MD, MBA,[b] *and* Mohammad H. Eslami, MD, MPH,[c] *Pittsburgh, PA; and Boston, MA*

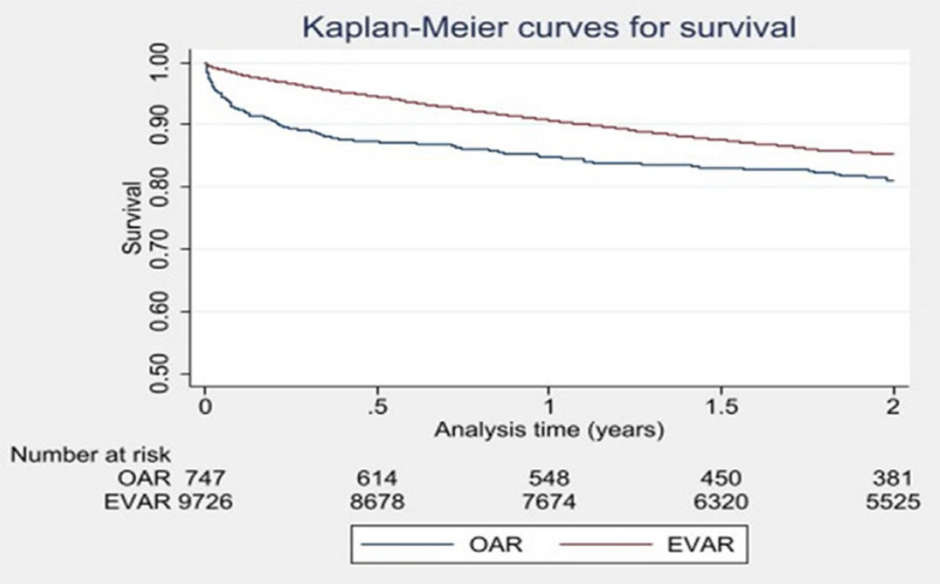
(J Vasc Surg 2024;79:34-43.)

UNIVERSITY OF CALGARY

10,490 AAA repairs in VQI – 2012-2019

- 40% repaired below SVS size criteria
- Among below-threshold repairs, 32% were extremely frail
- 2-year mortality → 14.8% after EVAR, 18.9% after open repair.

Mortality after aortic repair exceeded the risk of rupture for 5.5-cm abdominal aortic aneurysms



Review

JOURNAL OF ENDOVASCULAR THERAPY

Journal of Endovascular Therapy
2026, Vol. 33(2) 584–597

DOI: 10.1177/15266028241283669
www.jevt.org
Mary Ann Liebert
A Part of Sage

The Safety and Outcomes of Elective Endovascular Aneurysm Repair in the Elderly: A Systemic Review and Meta-Analysis

Department of Vascular Surgery, Oxford University Hospitals NHS Trust, Oxford, UK.

UNIVERSITY OF CALGARY

EVAR in 106,188 octogenarians vs. 208,997 non-octogenarians

Higher Peri-op Risk: >2x increase in 30-day mortality

Increased Complications: CVA (RR 2.83, vs age<80), cardiac (RR 2.5), pulmonary (RR 1.6), renal (OR 1.9)

Poorer Long-term Survival: **A**ll-cause mortality = 32% at 3 yrs, 51% at 5 years (RR 2.5, vs age <80)

Rupture rates of untreated large abdominal aortic aneurysms in patients unfit for elective repair

Fran Parkinson, MB BCh,[a] Stuart Ferguson, MB BChir,[a] Peter Lewis, MB BCh,[a] Ian M. Williams, MD,[b] and Christopher P. Twine, MD,[a] for the South East Wales Vascular Network, *Newport and Cardiff, United Kingdom*

(J Vasc Surg 2015;61:1606-12.)

UNIVERSITY OF CALGARY

Systematic review: 11 studies, 1,514 patients unfit for any type of AAA repair

Risk of AAA rupture:

5.5 to 6.0 cm: ≈3.5% per year.

6.1 to 7.0 cm: ≈4.1% per year.

> 7.0 cm: ≈6.3% per year.

"The risk of rupturing a large AAA was half that of death from any other cause" (19% vs 42%, P < .001)

The futility of surveillance for old and small aneurysms

Mark Rockley, MD,[a] Aleksandar Radonjic, BSc,[a] Dominic LeBlanc, MD,[b] *and* Prasad Jetty, MD, FRCSC,[a]
Ottawa and London, Ontario, Canada

(J Vasc Surg 2020;72:162-70.)

UNIVERSITY OF CALGARY

1,231 patients in Ottawa: AAA < 5cm: Age 80+, vs. younger cohort

- **Slower Growth:** AAAs in age 80+ grow significantly slower than younger pts (<1.5 mm/yr, vs. ≥1.7mm/y)
- **Competing Risks:** Older patients were more likely to die from other causes, than AAA rupture

Frailty index predicts long-term mortality and postoperative complications in patients undergoing endovascular aortic aneurysm repair

Wayne Tse, MD,[a,b] Daniel Newton, MD,[a] Michael Amendola, MD,[a,b] Matthew George, MD,[a] *and* John Pfeifer, MD,[a,b] *Richmond, Va*

(J Vasc Surg 2020;72:1674-80.)

UNIVERSITY OF CALGARY

Richmond Virginia VA Hospital 2002-2019

	Frail (RAI ≥30)	**Non-frail (RAI <30)**	
Postoperative Complications	43%	21%	P = .02
Hospital Stay	3.9 days	2.3 days	P = .02
Average Survival	60 months	84 months	P < .001

Frailty in patients with abdominal aortic aneurysm predicts prognosis after elective endovascular aneurysm repair

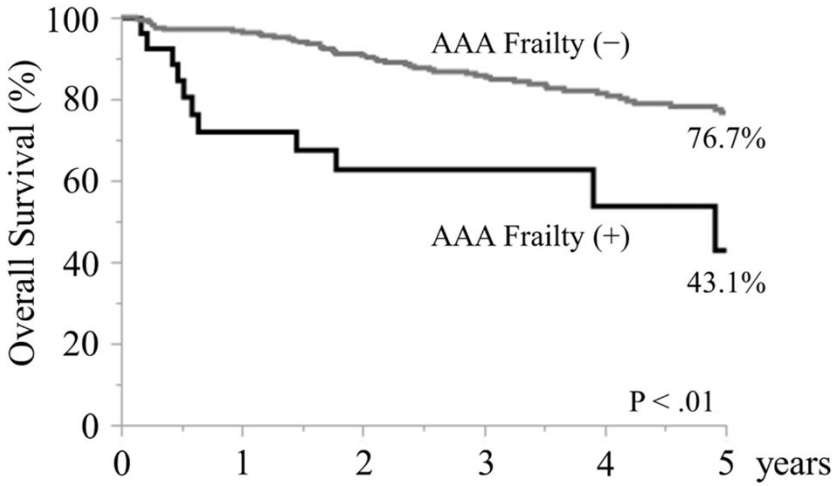
Koichi Morisaki, MD, PhD,[a] Tadashi Furuyama, MD, PhD,[a] Keiji Yoshiya, MD,[b] Shun Kurose, MD,[a] Shinichiro Yoshino, MD,[a] Ken Nakayama, MD,[a] Sho Yamashita, MD,[c] Eisuke Kawakubo, MD,[a] Takuya Matsumoto, MD, PhD,[c] *and* Masaki Mori, MD,[a] *Fukuoka and Tochigi, Japan*

(J Vasc Surg 2020;72:138-43.)

UNIVERSITY OF CALGARY

Kyushu University Hospital: n=306 EVAR (n=30 frail or extremely frail)

i. Frail patients were more likely to have EVAR outside IFU
ii. Frail were more likely to need post-EVAR reintervention
iii. Reintervention was predictive of early mortality



Endovascular Repair of Aortic Aneurysm in Patients Physically Ineligible for Open Repair

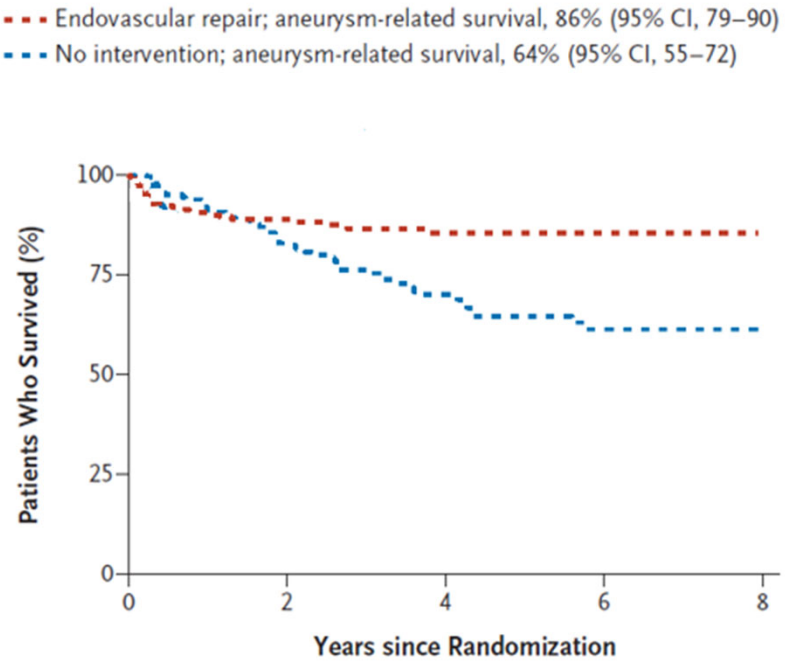
The United Kingdom EVAR Trial Investigators*

N Engl J Med 2010;362:1872-80.

UNIVERSITY OF CALGARY

EVAR-2 Trial (n=404 "unfit" for OSR: EVAR vs. no treatment)

EVAR reduced ***aneurysm-related death*** (hazard ration 0.53)



Endovascular Repair of Aortic Aneurysm in Patients Physically Ineligible for Open Repair

The United Kingdom EVAR Trial Investigators*

N Engl J Med 2010;362:1872-80.

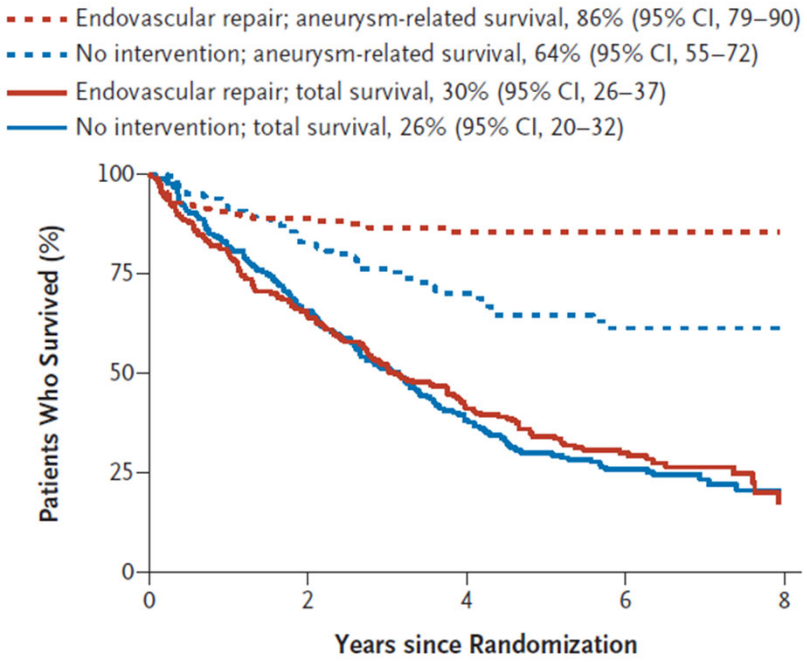
UNIVERSITY OF CALGARY

EVAR-2 Trial (n=404 "unfit" for OSR: EVAR vs. no treatment)

EVAR reduced ***aneurysm-related death*** (hazard ration 0.53)

EVAR did not improve ***overall survival***

Most patients in "No Intervention" group died from non–AAA causes



Endovascular Repair of Aortic Aneurysm in Patients Physically Ineligible for Open Repair

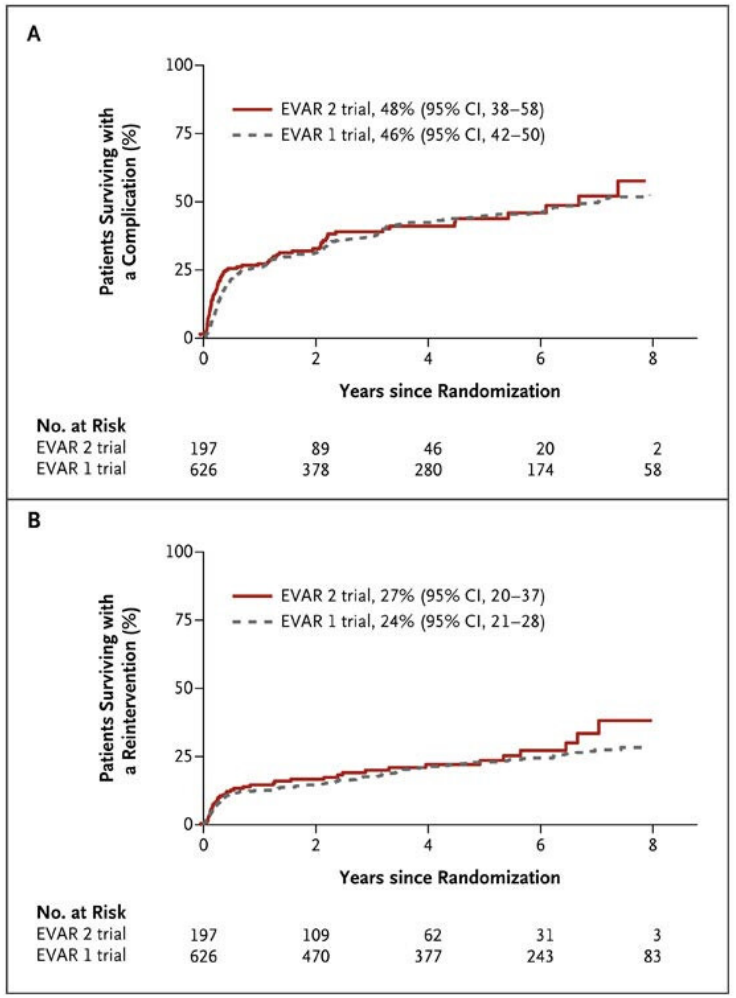
The United Kingdom EVAR Trial Investigators*

N Engl J Med 2010;362:1872-80.

Complications and Reintervention:

48% of EVAR group had graft-related complications.

27% required ≥1 reintervention within 6 years.



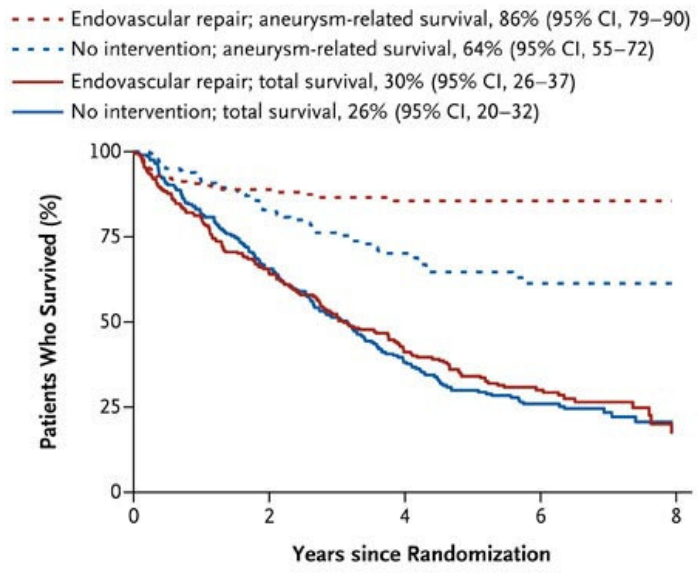
Endovascular Repair of Aortic Aneurysm in Patients Physically Ineligible for Open Repair

The United Kingdom EVAR Trial Investigators*

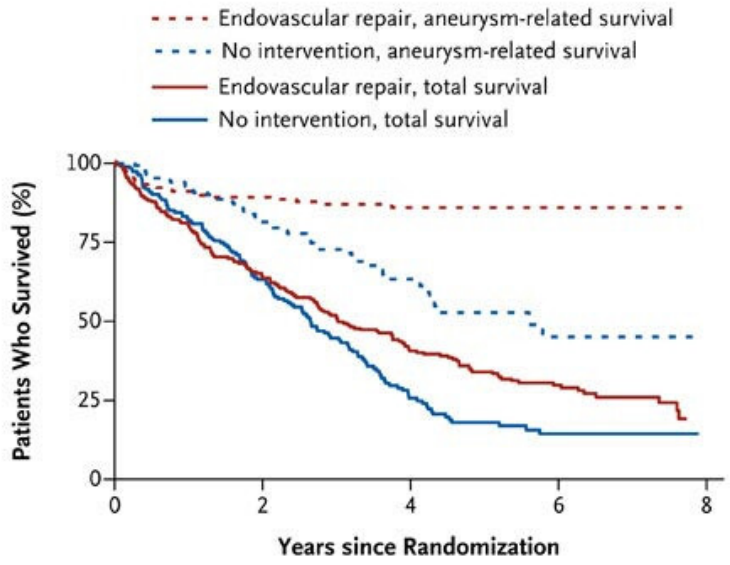
N Engl J Med 2010;362:1872-80.

UNIVERSITY OF CALGARY

Intention to Treat Analysis



Per-Protocol Analysis



Endovascular Repair of Aortic Aneurysm in Patients Physically Ineligible for Open Repair

The United Kingdom EVAR Trial Investigators*

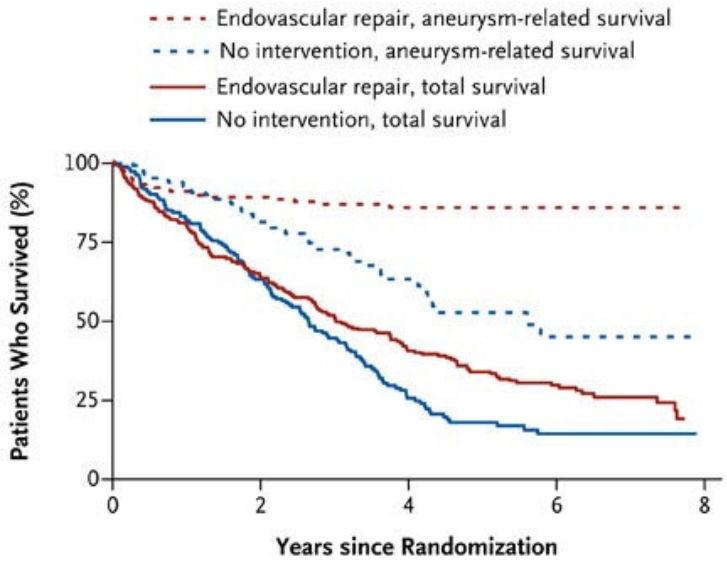
N Engl J Med 2010;362:1872-80.

UNIVERSITY OF CALGARY

EVAR Long-term Survivors:

	Survived >8 yrs	Survived <8 yrs.
Age	75	77
BMI	28	26
GFR	63	57
FEV_1 (% predicted)	70	64

Per-Protocol Analysis



Clinical Practice Guidelines

UNIVERSITY OF CALGARY

SOCIETY FOR VASCULAR SURGERY® DOCUMENT

The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm

Elliot L. Chaikof, MD, PhD,[a] Ronald L. Dalman, MD,[b] Mark K. Eskandari, MD,[c] Benjamin M. Jackson, MD,[d] W. Anthony Lee, MD,[e] M. Ashraf Mansour, MD,[f] Tara M. Mastracci, MD,[g] Matthew Mell, MD,[b] M. Hassan Murad, MD, MPH,[h] Louis L. Nguyen, MD, MBA, MPH,[i] Gustavo S. Oderich, MD,[j] Madhukar S. Patel, MD, MBA, ScM,[a,k] Marc L. Schermerhorn, MD, MPH,[a] *and* Benjamin W. Starnes, MD,[i]
Boston, Mass; Palo Alto, Calif; Chicago, Ill; Philadelphia, Pa; Boca Raton, Fla; Grand Rapids, Mich; London, United Kingdom; Rochester, Minn; and Seattle, Wash

ABSTRACT

Background: Decision-making related to the care of patients with an abdominal aortic aneurysm (AAA) is complex. Aneurysms present with varying risks of rupture, and patient-specific factors influence anticipated life expectancy, operative risk, and need to intervene. Careful attention to the choice of operative strategy along with optimal treatment of medical comorbidities is critical to achieving excellent outcomes. Moreover, appropriate postoperative surveillance is necessary to minimize subsequent aneurysm-related death or morbidity.

Methods: The committee made specific practice recommendations using the Grading of Recommendations Assessment, Development, and Evaluation system. Three systematic reviews were conducted to support this guideline. Two focused on evaluating the best modalities and optimal frequency for surveillance after endovascular aneurysm repair (EVAR). A third focused on identifying the best available evidence on the diagnosis and management of AAA. Specific areas of focus included (1) general approach to the patient, (2) treatment of the patient with an AAA, (3) anesthetic considerations and perioperative management, (4) postoperative and long-term management, and (5) cost and economic considerations.

Results: Along with providing guidance regarding the management of patients throughout the continuum of care, we have revised a number of prior recommendations and addressed a number of new areas of significance. New guidelines are provided for the surveillance of patients with an AAA, including recommended surveillance imaging at 12-month intervals for patients with an AAA of 4.0 to 4.9 cm in diameter. We recommend endovascular repair as the preferred method of treatment for ruptured aneurysms. Incorporating knowledge gained through the Vascular Quality Initiative and other regional quality collaboratives, we suggest that the Vascular Quality Initiative mortality risk score be used for mutual decision-making with patients considering aneurysm repair. We also suggest that elective EVAR be limited to hospitals with a documented mortality and conversion rate to open surgical repair of 2% or less and that perform at least 10 EVAR cases each year. We also suggest that elective open aneurysm repair be limited to hospitals with a documented mortality of 5% or less and that perform at least 10 open aortic operations of any type each year. To encourage the development of effective systems of care that would lead to improved outcomes for those patients undergoing emergent repair, we suggest a door-to-intervention time of <90 minutes, based on a framework of 30-30-30 minutes, for the management of the patient with a ruptured aneurysm. We recommend treatment of type I and III endoleaks as well as of type II endoleaks with aneurysm expansion but recommend continued surveillance of type II endoleaks not associated with aneurysm expansion. Whereas antibiotic prophylaxis is recommended for patients with an aortic prosthesis before any dental procedure involving the manipulation of the gingival or periapical region of teeth or perforation of the oral mucosa, antibiotic prophylaxis is not recommended before respiratory tract procedures, gastrointestinal or genitourinary procedures, and dermatologic or musculoskeletal procedures unless the potential for infection exists or the patient is immunocompromised. Increased utilization of color duplex ultrasound is suggested for postoperative surveillance after EVAR in the absence of endoleak or aneurysm expansion.

CLINICAL PRACTICE GUIDELINE DOCUMENT

Editor's Choice – European Society for Vascular Surgery (ESVS) 2024 Clinical Practice Guidelines on the Management of Abdominal Aorto-Iliac Artery Aneurysms☆

Anders Wanhainen [a,*], Isabelle Van Herzeele [a], Frederico Bastos Goncalves [a], Sergi Bellmunt Montoya [a], Xavier Berard [a], Jonathan R. Boyle [a], Mario D'Oria [a], Carlota F. Prendes [a], Christos D. Karkos [a], Arkadiusz Kazimierczak [a], Mark J.W. Koelemay [a], Tilo Kölbel [a], Kevin Mani [a], Germano Melissano [a], Janet T. Powell [a], Santi Trimarchi [a], Nikolaos Tsilimparis [a]

ESVS Guidelines Committee [b], George A. Antoniou, Martin Björck, Raphael Coscas, Nuno V. Dias, Philippe Kolh, Sandro Lepidi, Barend M.E. Mees, Timothy A. Resch, Jean Baptiste Ricco, Riikka Tulamo, Christopher P. Twine

Document Reviewers [c], Daniela Branzan, Stephen W.K. Cheng, Ronald L. Dalman, Florian Dick, Jonathan Golledge, Stephan Haulon, Joost A. van Herwaarden, Nikola S. Ilic, Arkadiusz Jawien, Tara M. Mastracci, Gustavo S. Oderich, Fabio Verzini, Kak Khee Yeung

Objective: The European Society for Vascular Surgery (ESVS) has developed clinical practice guidelines for the care of patients with aneurysms of the abdominal aorta and iliac arteries in succession to the 2011 and 2019 versions, with the aim of assisting physicians and patients in selecting the best management strategy.
Methods: The guideline is based on scientific evidence completed with expert opinion on the matter. By summarising and evaluating the best available evidence, recommendations for the evaluation and treatment of patients have been formulated. The recommendations are graded according to a modified European Society of Cardiology grading system, where the strength (class) of each recommendation is graded from I to III and the letters A to C mark the level of evidence.
Results: A total of 160 recommendations have been issued on the following topics: Service standards, including surgical volume and training; Epidemiology, diagnosis, and screening; Management of patients with small abdominal aortic aneurysm (AAA), including surveillance, cardiovascular risk reduction, and indication for repair; Elective AAA repair, including operative risk assessment, open and endovascular repair, and early complications; Ruptured and symptomatic AAA, including peri-operative management, such as permissive hypotension and use of aortic occlusion balloon, open and endovascular repair, and early complications, such as abdominal compartment syndrome and colonic ischaemia; Long term outcome and follow up after AAA repair, including graft infection, endoleaks and follow up routines; Management of complex AAA, including open and endovascular repair; Management of iliac artery aneurysm, including indication for repair and open and endovascular repair; and Miscellaneous aortic problems, including mycotic, inflammatory, and saccular aortic aneurysm. In addition, Shared decision making is being addressed, with supporting information for patients, and Unresolved issues are discussed.
Conclusion: The ESVS Clinical Practice Guidelines provide the most comprehensive, up to date, and unbiased advice to clinicians and patients on the management of abdominal aorto-iliac artery aneurysms.

SOCIETY FOR VASCULAR SURGERY® DOCUMENT

UNIVERSITY OF CALGARY

The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm

Elliot L. Chaikof, MD, PhD,[a] Ronald L. Dalman, MD,[b] Mark K. Eskandari, MD,[c] Benjamin M. Jackson, MD,[d] W. Anthony Lee, MD,[e] M. Ashraf Mansour, MD,[f] Tara M. Mastracci, MD,[g] Matthew Mell, MD,[b] M. Hassan Murad, MD, MPH,[h] Louis L. Nguyen, MD, MBA, MPH,[i] Gustavo S. Oderich, MD,[j] Madhukar S. Patel, MD, MBA, ScM,[a,k] Marc L. Schermerhorn, MD, MPH,[a] *and* Benjamin W. Starnes, MD,[l]

Boston, Mass; Palo Alto, Calif; Chicago, Ill; Philadelphia, Pa; Boca Raton, Fla; Grand Rapids, Mich; London, United Kingdom; Rochester, Minn; and Seattle, Wash

(J Vasc Surg 2018;67:2-77.)

Role of elective EVAR in the high-risk and unfit patient

Recommendation	Level of recommendation	Quality of evidence
We suggest informing high-risk patients of their VQI perioperative mortality risk score for them to make an informed decision to proceed with aneurysm repair.	2	C

CLINICAL PRACTICE GUIDELINE DOCUMENT

Editor's Choice – European Society for Vascular Surgery (ESVS) 2024 Clinical Practice Guidelines on the Management of Abdominal Aorto-Iliac Artery Aneurysms☆

Anders Wanhainen [a,*], Isabelle Van Herzeele [a], Frederico Bastos Goncalves [a], Sergi Bellmunt Montoya [a], Xavier Berard [a], Jonathan R. Boyle [a], Mario D'Oria [a], Carlota F. Prendes [a], Christos D. Karkos [a], Arkadiusz Kazimierczak [a], Mark J.W. Koelemay [a], Tilo Kölbel [a], Kevin Mani [a], Germano Melissano [a], Janet T. Powell [a], Santi Trimarchi [a], Nikolaos Tsilimparis [a]

ESVS Guidelines Committee [b], George A. Antoniou, Martin Björck, Raphael Coscas, Nuno V. Dias, Philippe Kolh, Sandro Lepidi, Barend M.E. Mees, Timothy A. Resch, Jean Baptiste Ricco, Riikka Tulamo, Christopher P. Twine

Document Reviewers [c], Daniela Branzan, Stephen W.K. Cheng, Ronald L. Dalman, Florian Dick, Jonathan Golledge, Stephan Haulon, Joost A. van Herwaarden, Nikola S. Ilic, Arkadiusz Jawien, Tara M. Mastracci, Gustavo S. Oderich, Fabio Verzini, Kak Khee Yeung

Eur J Vasc Endovasc Surg (2024) 67, 192–331

UNIVERSITY OF CALGARY

Recommendation 67			Unchanged
For patients with limited life expectancy, elective abdominal aortic aneurysm repair is not recommended, either open or endovascular repair.			
Class	Level	References	ToE
III	B	Greenhalgh *et al.* (2010)[268]	

Vascular Surgery

Five Tests and Treatments to Question

by
Canadian Society for Vascular Surgery
Last updated: July 2023

4 **Don't perform endovascular repair of abdominal aortic aneurysms in most asymptomatic high-risk patients with limited life expectancy.**

Repair of asymptomatic abdominal aortic aneurysms is recommended when the risk of rupture exceeds the risk of repair and is performed in patients with sufficient life expectancy to allow them to benefit from such a prophylactic procedure. Most elderly, or medically high risk patients, have insufficient life expectancy and are at higher risk of complications following endovascular repair to warrant intervention.

Endovascular Aortic Repair in Nonagenarian Patients

Carlota F. Prendes, MD,[a] Anand Dayama, MD, PhD,[b] Jean M. Panneton, MD, PhD,[c] Jan Stana, MD, PhD,[a]
Barbara Rantner, MD, PhD,[a] Francisco Álvarez Marcos, MD, PhD,[c] Kevin Mani, MD, PhD,[d]
Anders Wanhainen, MD, PhD,[d] Nikolaos Tsilimparis, MD, PhD[a]

(J Am Coll Cardiol 2021;77:1891-9)

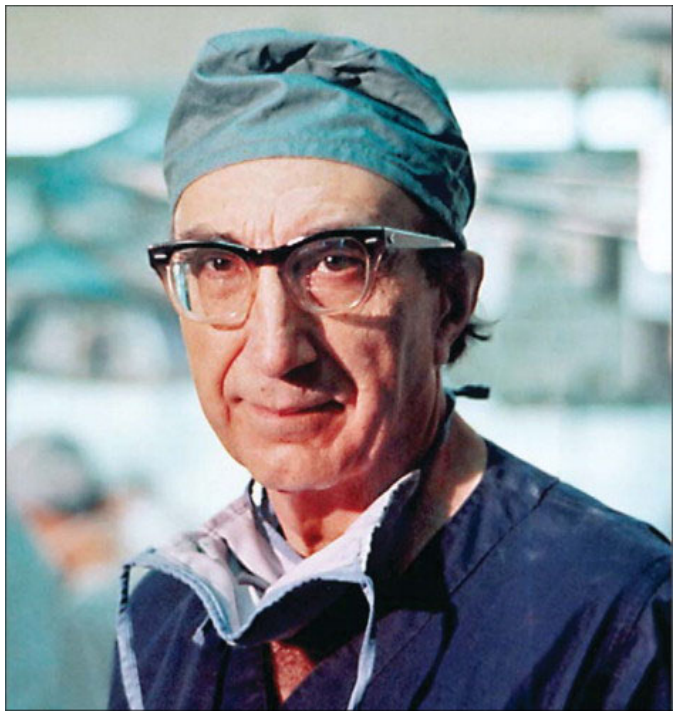
UNIVERSITY OF CALGARY

EVAR in NSQIP 2011-2017: 11,902 Age <90 vs. 365 Age 90+

Mortality (Unadjusted): 9.9% Age 90+
2.2% Age <90 (p<0.001)

***Propensity-Matched Mortality*:** 5.3% Age 90+
3.0% Age <90 (p=NS)

Predictors of Mortality: Pre-op functional dependency
Pre-op dialysis
AAA Rupture
Post-op respiratory failure



The New York Times
THE DOCTOR'S WORLD

The Man on the Table Devised the Surgery

The Patient Dr. Michael E. DeBakey, seated, became the oldest patient to benefit from heart surgery he devised. From left are Carlos Hinojosa Salcedo, an aide; Kenneth Miller, a physical therapist; and Dr. George P. Noon, Dr. DeBakey s surgical partner.
Michael Stravato for The New York Times

By Lawrence K. Altman
Dec. 25, 2006

In late afternoon last Dec. 31, Dr. Michael E. DeBakey, then 97, was alone at home in Houston in his study preparing a lecture when a sharp pain ripped through his upper chest and between his shoulder blades, then moved into his neck.

Dr. DeBakey, one of the most influential heart surgeons in history, assumed his heart would stop in a few seconds.

"It never occurred to me to call 911 or my physician," Dr. DeBakey said, adding: "As foolish as it may appear, you are, in a sense, a prisoner of the pain, which was intolerable. You're thinking, What could I do to relieve myself of it. If it becomes intense enough, you're perfectly willing to accept cardiac arrest as a possible way

AAA Repair in the Elderly, Frail and Highly Comorbid

UNIVERSITY OF CALGARY

i. AAA grow slowly in the very old

ii. Elderly and frail have greater chance of death from “competing comorbidities”, vs. AAA rupture

iii. Treatment:
   - Greater burden of peri-op complications, increased peri-op mortality
   - More device failures
   - Greater need for reintervention

iv. No overall long-term survival benefit

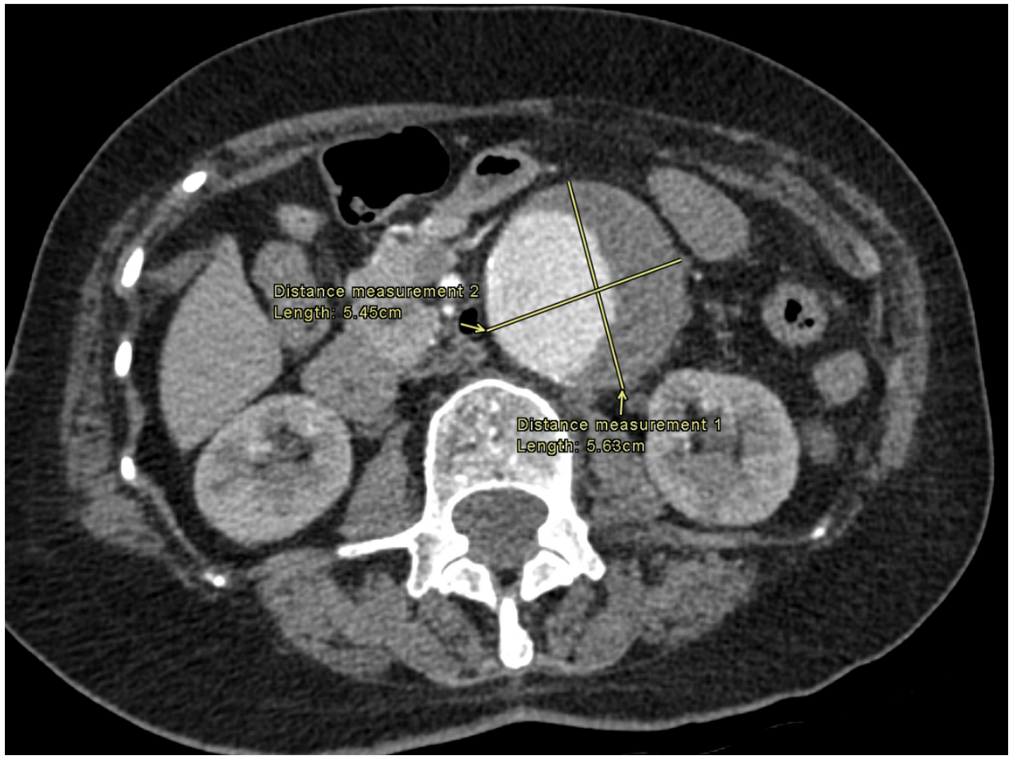
Recommendations for practice:

UNIVERSITY OF CALGARY

i. If in doubt, use Risk Analysis Index
ii. Adapt your threshold for intervention, based upon age and risk
iii. Don't surveille AAA < 4 cm in very frail and very elderly
iv. Have a "x"-year expected survival rule (2-year or 3-year), to qualify for surgery
v. Practice shared decision making

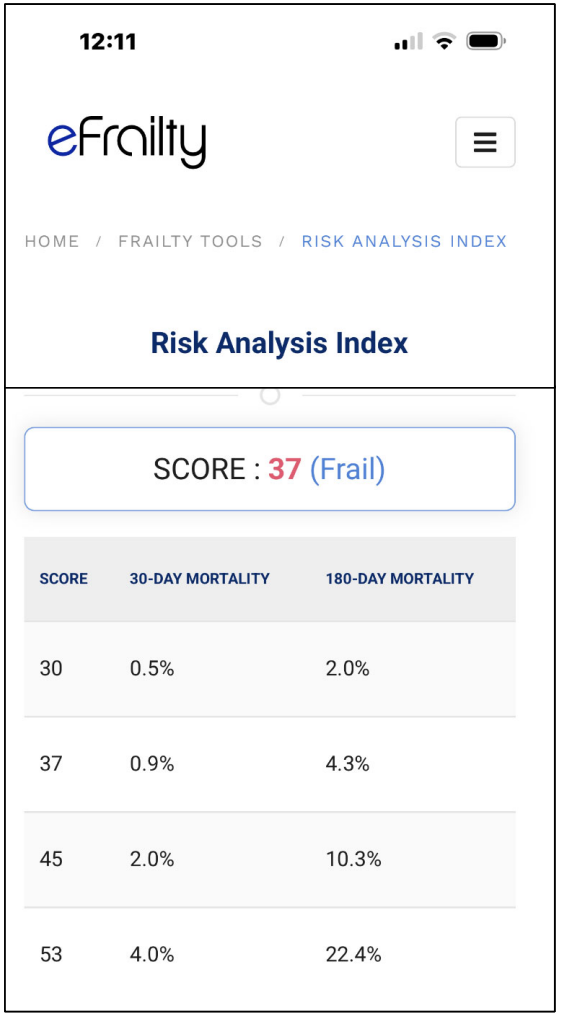
Case

- *86 y.o. female*
- *5.6 cm AAA → newly diagnosed, asymptomatic*
- *BMI=18, 150cm, 40.5kg*
- *No diabetes, cardiac or respiratory disease, GFR=45*
- *Lives independently*
- *hypertension → single agent*

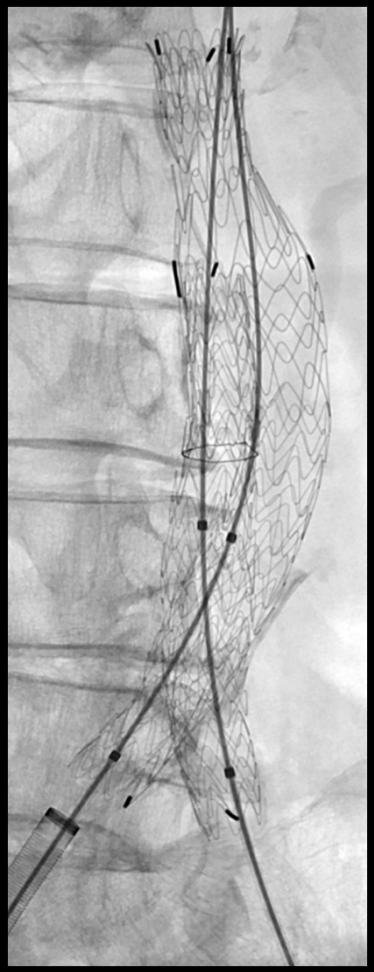


Case

- *86 y.o. female*
- *5.6 cm AAA → newly diagnosed, asymptomatic*
- *BMI=18, 150cm, 40.5kg*
- *No diabetes, cardiac or respiratory disease, GFR=35*
- *hypertension → single agent*



UNIVERSITY OF CALGARY



Thank you!