



# The Australasian Vascular Audit : 3 year Carotid Stent Data ( 2010-2012)

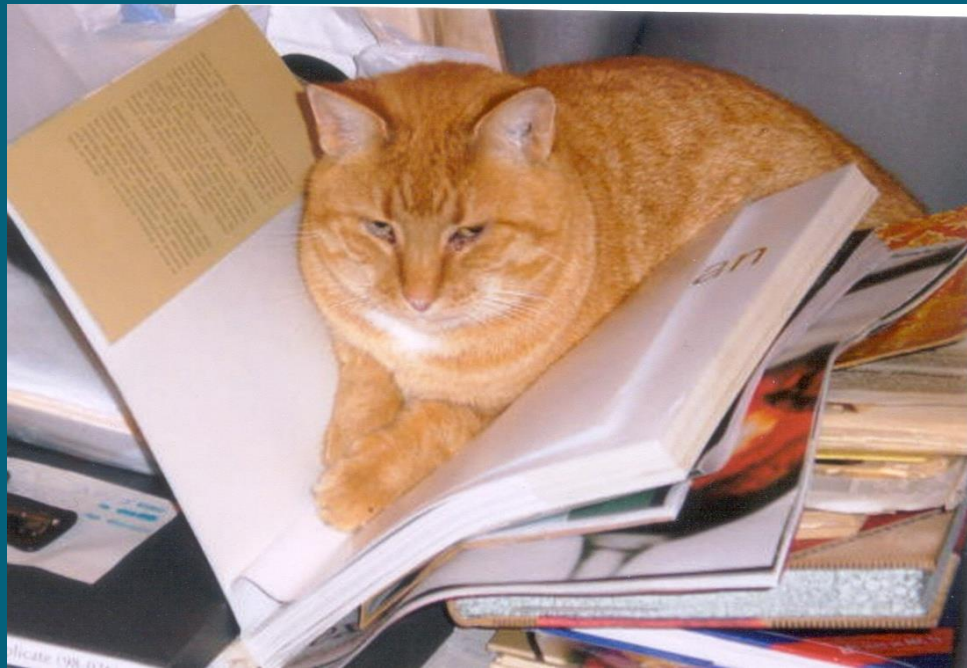
BM Bourke  
CB Beiles



December 6, 2013

# Conflict of interest statement

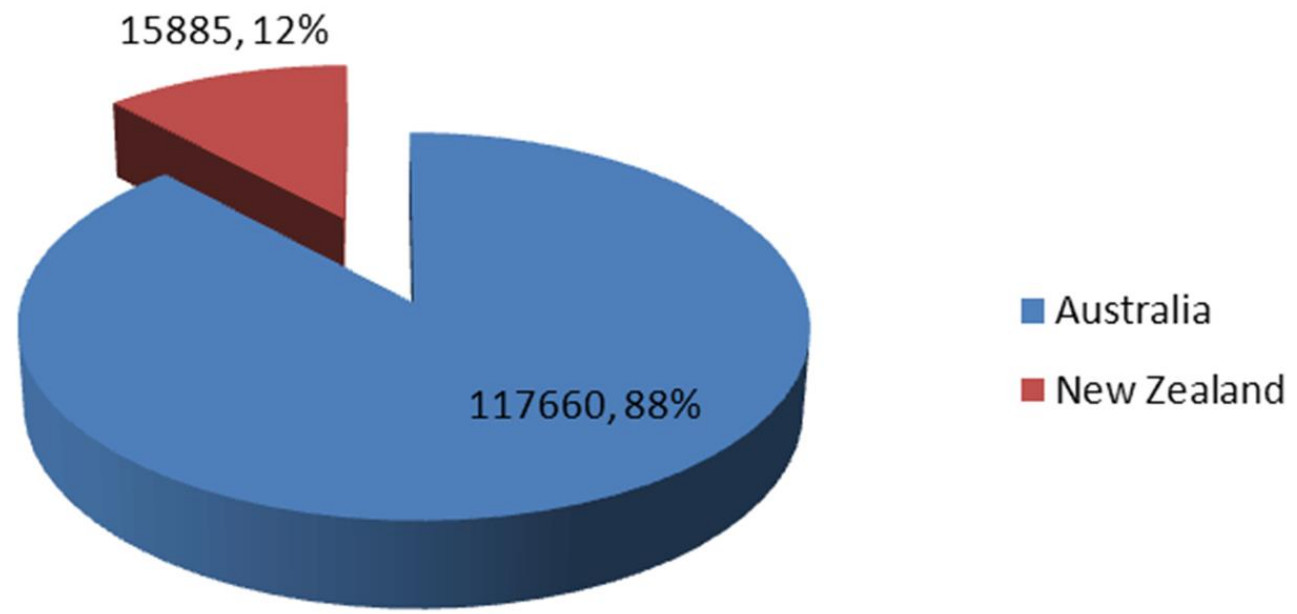
## There are no conflicts of interest





# The Australasian Vascular Audit 3 year Data ( 2010-2012)

**N = 133,545**





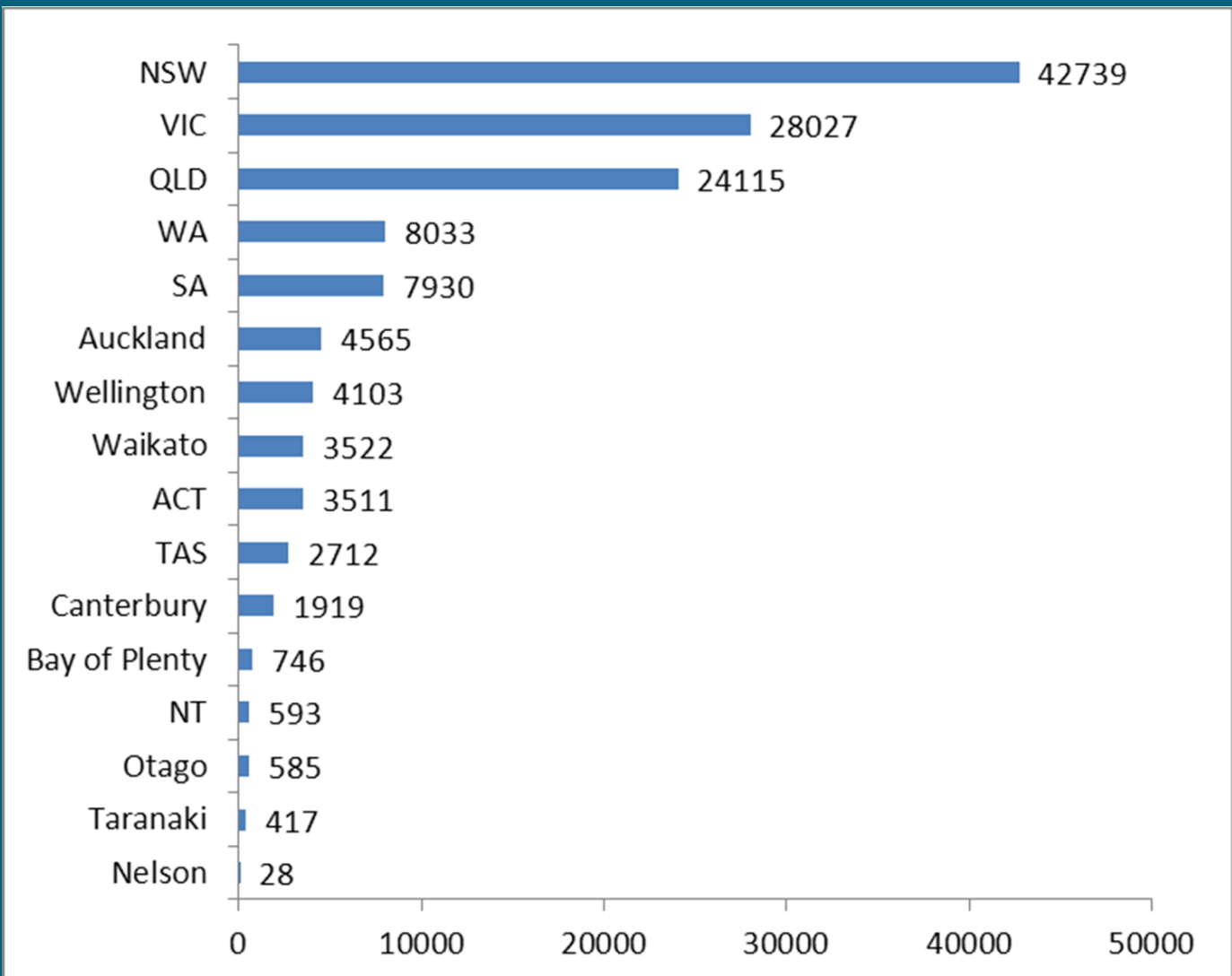
# The Australasian Vascular Audit 3 year Data ( 2010-2012)

Rank ↕	State/Territory ↕	Population ↕	% ↕	Comparable country ↕
1	New South Wales	7,348,900	32.08%	 Serbia
2	Victoria	5,679,600	24.79%	 Denmark
3	Queensland	4,610,900	20.13%	 Costa Rica
4	Western Australia	2,472,700	10.79%	 Namibia
5	South Australia	1,662,200	7.26%	 Gabon
6	Tasmania	512,400	2.24%	 Suriname
7	Australian Capital Territory	379,600	1.66%	 Brunei
8	Northern Territory	236,900	1.03%	 French Guiana
9	Norfolk Island	2,114	0.01%	 Falkland Islands
10	Christmas Island	1,493	0.01%	 Niue
11	Australian Antarctic Territory	1,000	0.0%	 Vatican City
12	Cocos (Keeling) Islands	628	0.0%	-
13	Jervis Bay Territory	611	0.0%	-
14	Coral Sea Islands	4	0.0%	-
15	Ashmore and Cartier Islands	-	0.0%	-
15	Heard Island and McDonald Islands	-	0.0%	-
Total	Australia	22,906,400	100%	 Taiwan

**NZ 4.4 mill**



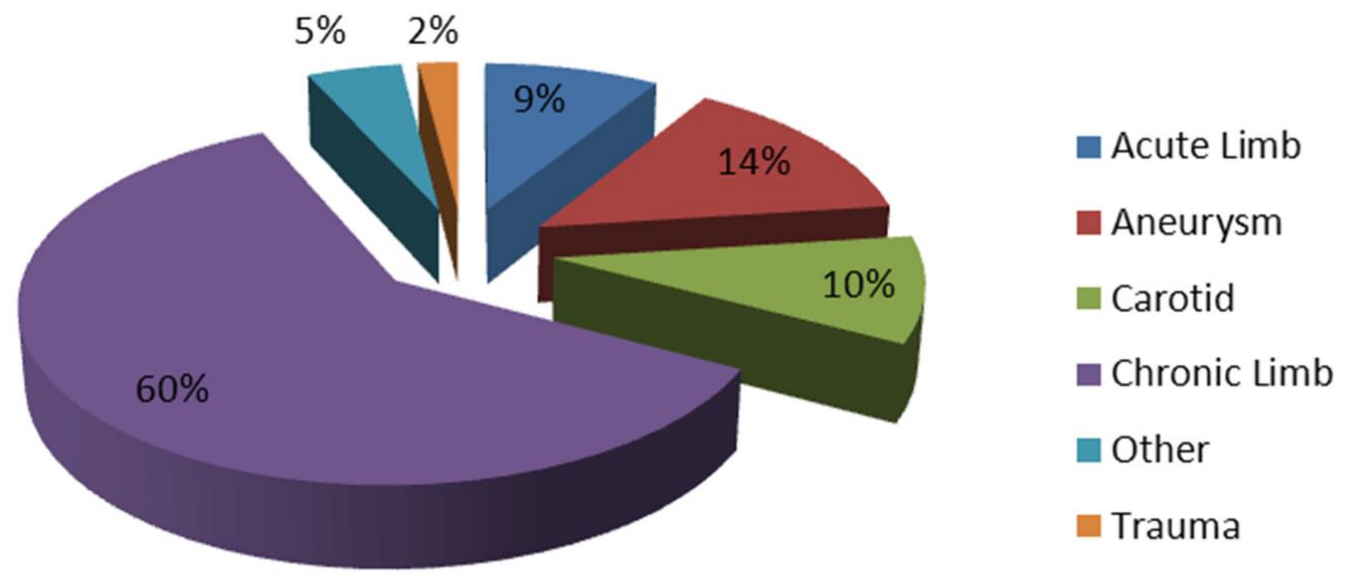
# The Australasian Vascular Audit 3 year Data ( 2010-2012)



**NSW = 32%**




# The Australasian Vascular Audit 3 year Data ( 2010-2012)






# The Australasian Vascular Audit

ANZSVS AVA - Data Extract Search - Windows Internet Explorer  
https://www.ava.net.au/DataExtract/DataExtractSearch.aspx



Last Login: Tuesday, 26 Nov 2013 7:48 AM



### Data Extract Search

Consultant:  Hospital:

Date Range:   Data Extract:

Country:  Trainee:

Remove Consultant

https://www.ava.net.au/DataExtract/DataExtractSearch.aspx

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# The Australasian Vascular Audit

CAS2010-2 deidentified.xlsx - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

From Access From Web From Text From Other Sources Existing Connections Refresh All Connections Sort Filter Clear Reapply Advanced Text to Columns Remove Duplicates Data Validation Consolidate What-If Analysis Group Ungroup Subtotal Show Detail Hide Detail Outline

AE1 Stenosis

	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
1	Patient	Anaesthet	ASA	Indication	Operation	Side	Patch/Co	Operative	Surgery	Unplanned	Comment	Arterial	Contralateral	Stenosis	Stroke	Death	SD	Blocked
2	Arterial	Local +/-	4-severe	TIA	Stent +/-	Left	Stent	Carotid	Elective	False		Sort A to Z			0	0	0	
3	Arterial	Local +/-	3-severe	TIA	Stent +/-	Right	Stent	Carotid	Elective	False	OP S	Sort Z to A			0	0	0	
4	Arterial	Local +/-	4-severe	Asympto	Stent +/-	Right	Stent	Carotid	Elective	False		Sort by Color			0	0	0	
5	Arterial	Local +/-	3-severe	TIA	Stent +/-	Right	Stent	Carotid	Semi-	False		Clear Filter From "Stenosis"			0	0	0	
6	Arterial	Local +/-	3-severe	Amaurosi	Stent +/-	Right	Stent	Carotid	Semi-	False		Filter by Color			0	0	0	
7	Arterial	Local +/-	3-severe	Asympto	Stent +/-	Right	Stent	Carotid	Elective	False		Text Filters			0	0	0	
8	Arterial	Local +/-	3-severe	Amaurosi	Stent +/-	Right	Stent	Carotid	Semi-	False		(Select All)			0	0	0	
9	Arterial	Local +/-	2-mild	Asympto	Stent +/-	Right	Stent	Carotid	Elective	False	Recu	<input type="checkbox"/> 0-15			0	0	0	
10	Arterial	Local +/-	2-mild	Amaurosi	Stent +/-	Left	Stent	Carotid	Elective	False		<input type="checkbox"/> 16-49			0	0	0	
11	Arterial	Local +/-	2-mild	Asympto	Stent +/-	Right	Stent	Carotid	Elective	False		<input checked="" type="checkbox"/> 50-59			0	0	0	
12	Arterial	Local +/-	3-severe	Asympto	Stent +/-	Right	Stent	Carotid	Elective	False		<input type="checkbox"/> 60-69			0	0	0	
13	Arterial	Local +/-	2-mild	TIA	Stent +/-	Left	Stent	Carotid	Elective	False		<input checked="" type="checkbox"/> 70-79			0	0	0	
14	Arterial	Local +/-	2-mild	TIA	Stent +/-	Right	Stent	Carotid	Elective	False		<input type="checkbox"/> 80-99			0	0	0	
15	Arterial	Local +/-	3-severe	Trauma(i	Stent +/-	Left	Stent	Carotid	Elective	False		<input type="checkbox"/> String sign			0	0	0	
16	Arterial	Local +/-	2-mild	TIA	Stent +/-	Right	Stent	Carotid	Elective	True		<input type="checkbox"/> Thrombosed post op			0	0	0	
17	Arterial	Local +/-	2-mild	TIA	Stent +/-	Right	Stent	Carotid	Elective	False		OK			1	0	1	Re
18	Arterial	Local +/-	2-mild	Trauma(i	Stent +/-	Left	Stent	Carotid	Elective	False		Cancel			0	0	0	
19	Arterial	Local +/-	3-severe	Asympto	Stent +/-	Left	Stent	Carotid	Elective	False		Trauma	1	80-99	0	0	0	
20	Arterial	Local +/-	3-severe	Asympto	Stent +/-	Right	Stent	Carotid	Elective	False		Carotid	0	80-99	0	0	0	
21	Arterial	Local +/-	3-severe	Asympto	Stent +/-	Right	Stent	Carotid	Elective	False		Carotid	0	80-99	0	0	0	
22	Arterial	Local +/-	3-severe	TIA	Stent +/-	Left	Stent	Carotid	Emergen	False		Carotid	0	80-99	0	0	0	
23	Arterial	Local +/-	3-severe	Amaurosi	Stent +/-	Right	Stent	Carotid	Semi-	False		Carotid	0	70-79	0	0	0	
	Arterial	Local +/-	2-mild	Amaurosi	Stent +/-	Right	Stent	Carotid	Semi-	False	Re: Mrs	Carotid	0	80-99	0	0	0	

Sheet1 Sheet2 Sheet3

Ready Count: 598 100%

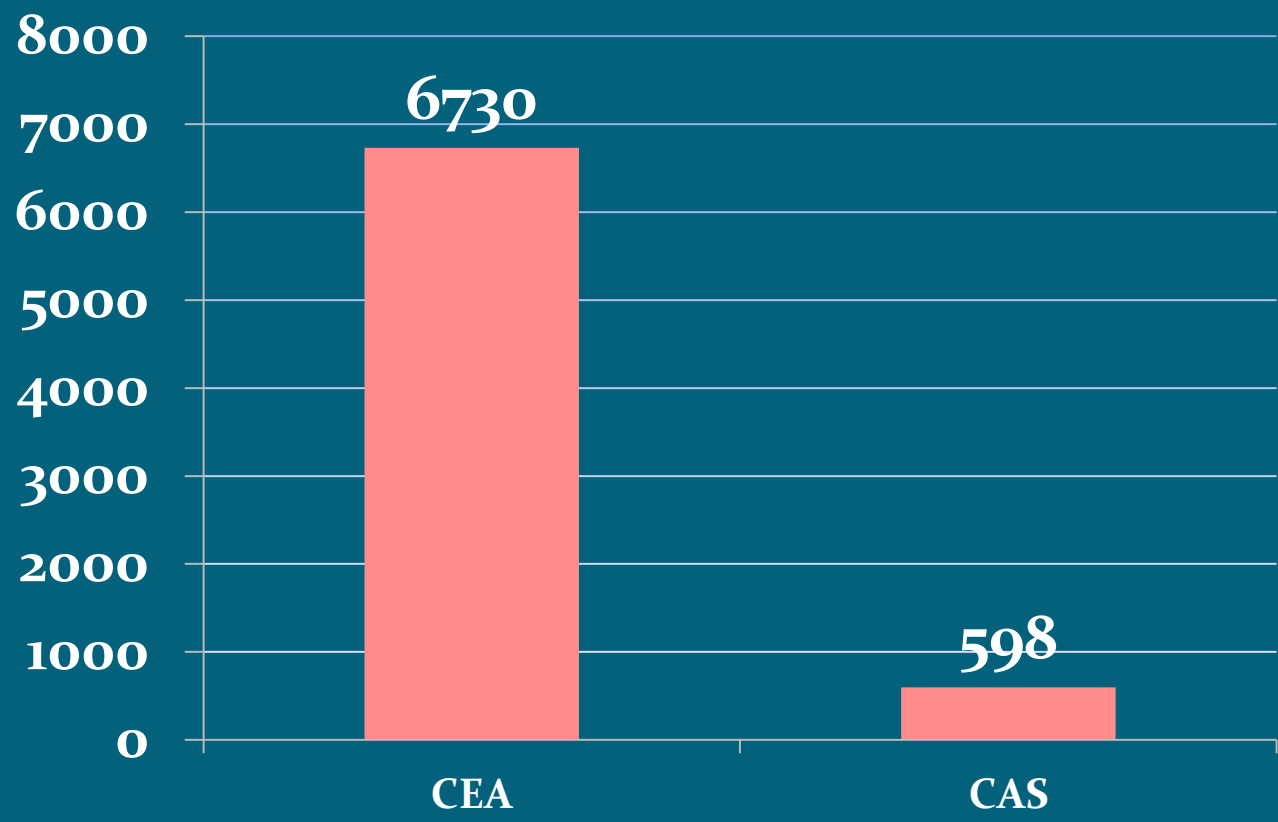
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# The Australasian Vascular Audit 3 year Data ( 2010-2012)

## CEA and CAS ( 2010-2012 inc)

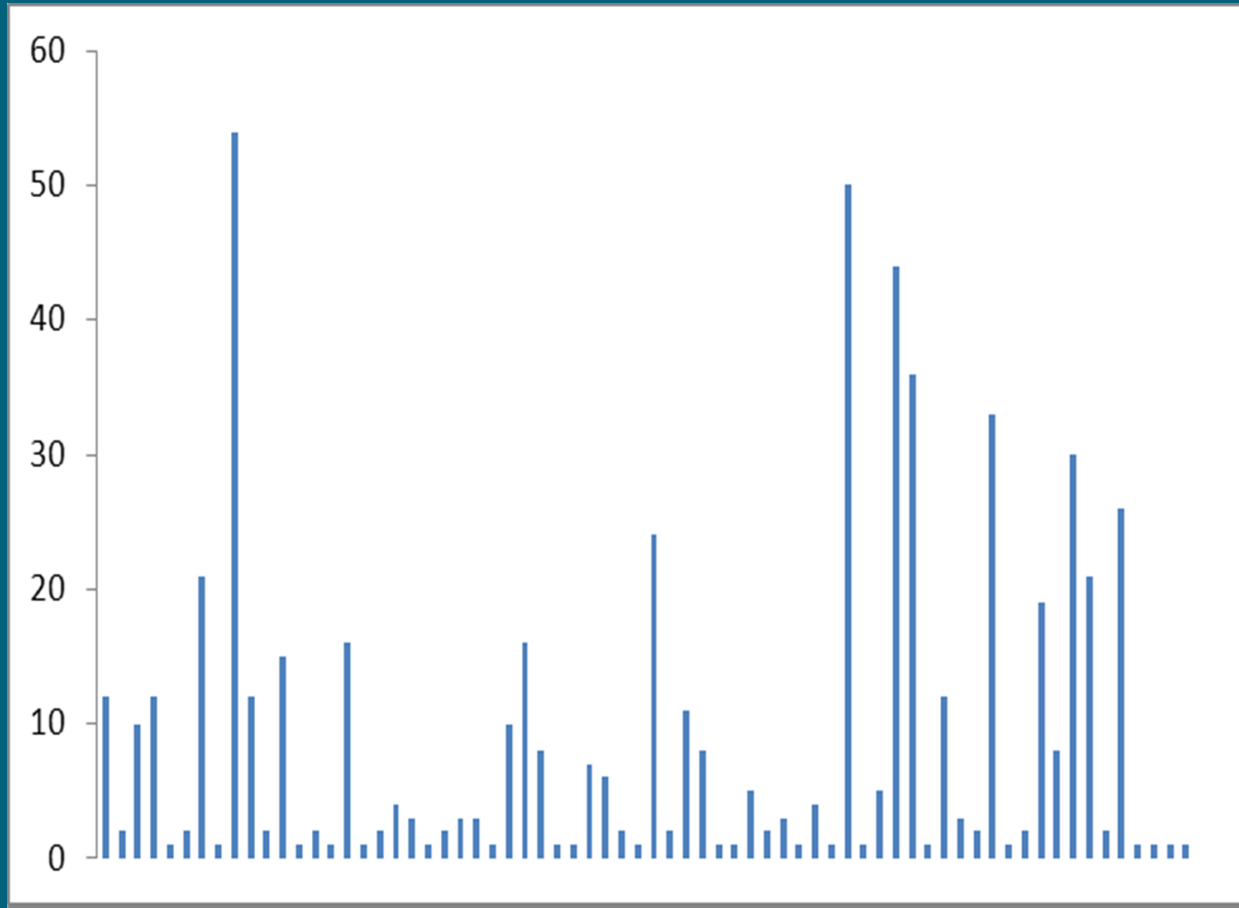




# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

**CAS by surgeon : N = 68; Range = 1-54; Mean = 8**

By Surgeon

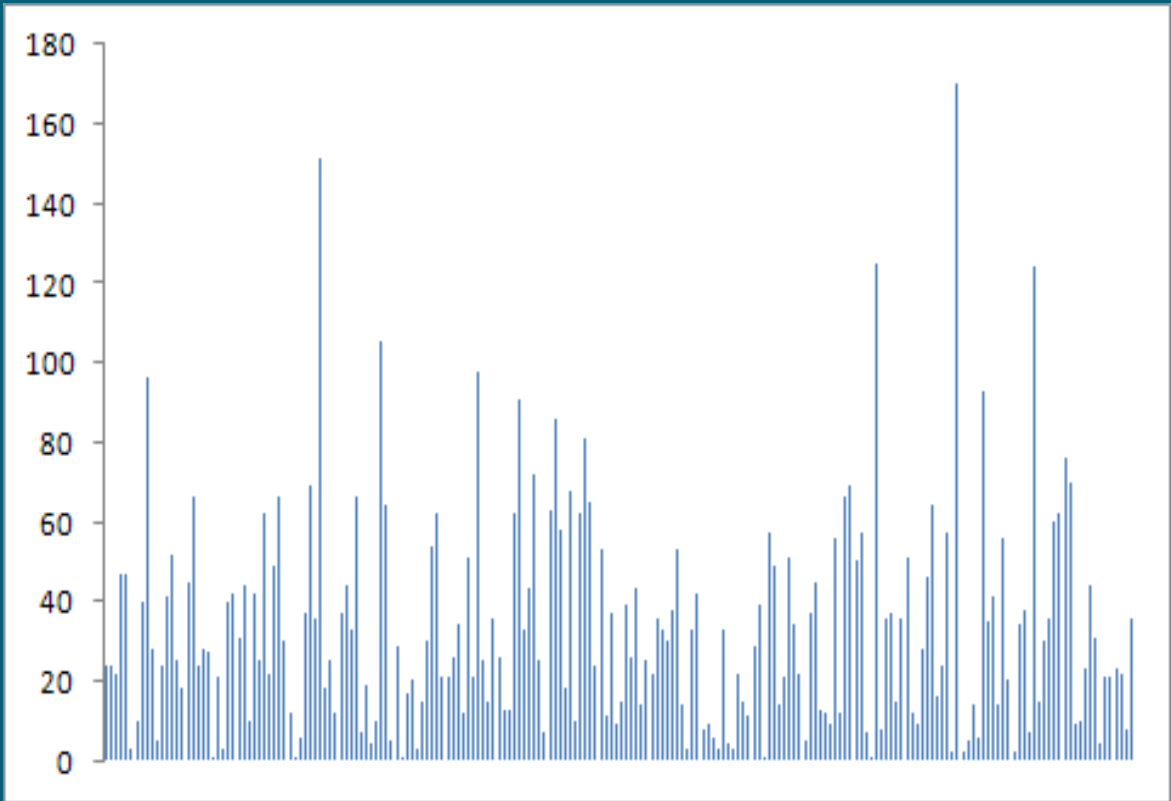




# The Australasian Vascular Audit 3 year Carotid Endarterectomy Data ( 2010-2012)

**CEA by surgeon : N = 202; Range = 1-170; Mean = 33**

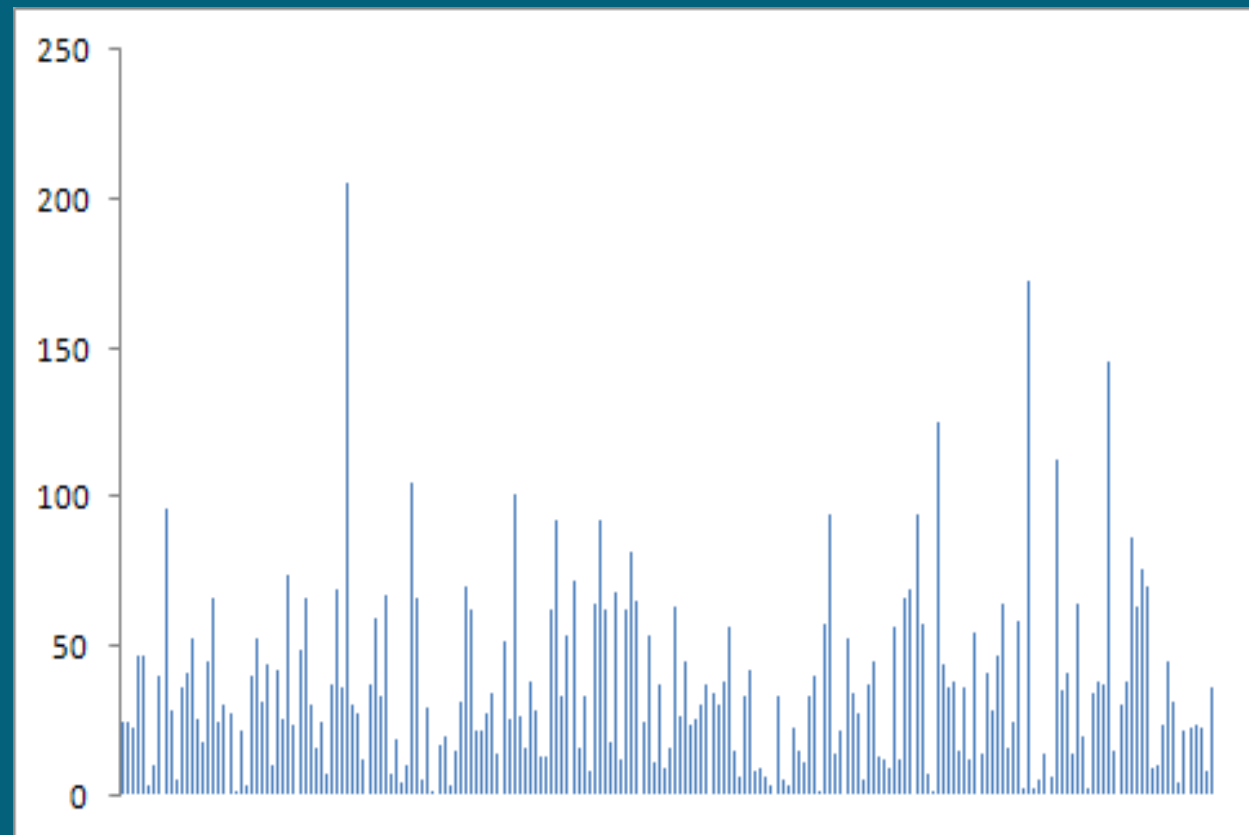
By Surgeon





# The Australasian Vascular Audit 3 year Carotid Endarterectomy plus Carotid Stent Data ( 2010-2012)

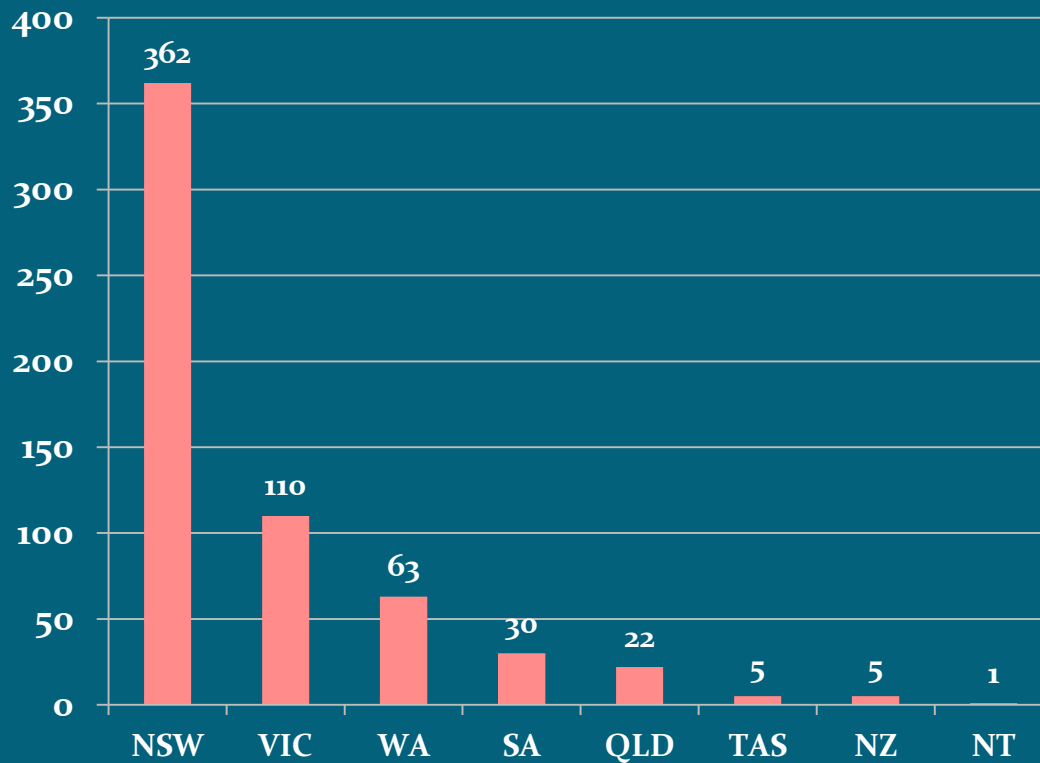
By Surgeon





# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

## STATE by STATE :



TOTAL : 598

NSW = 61%

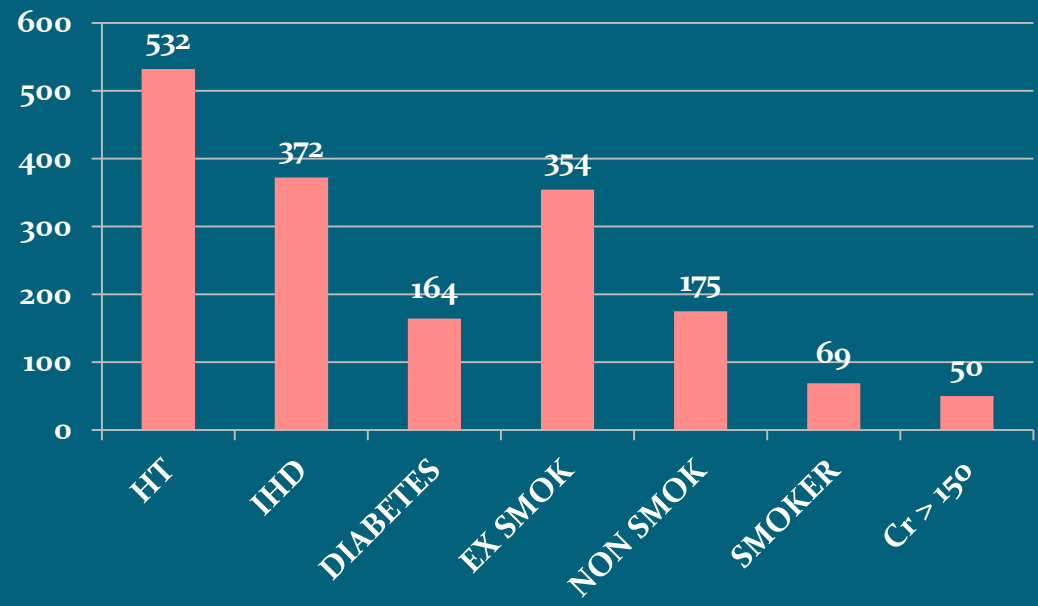


# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

TOTAL = 598

M : F = 402 : 196

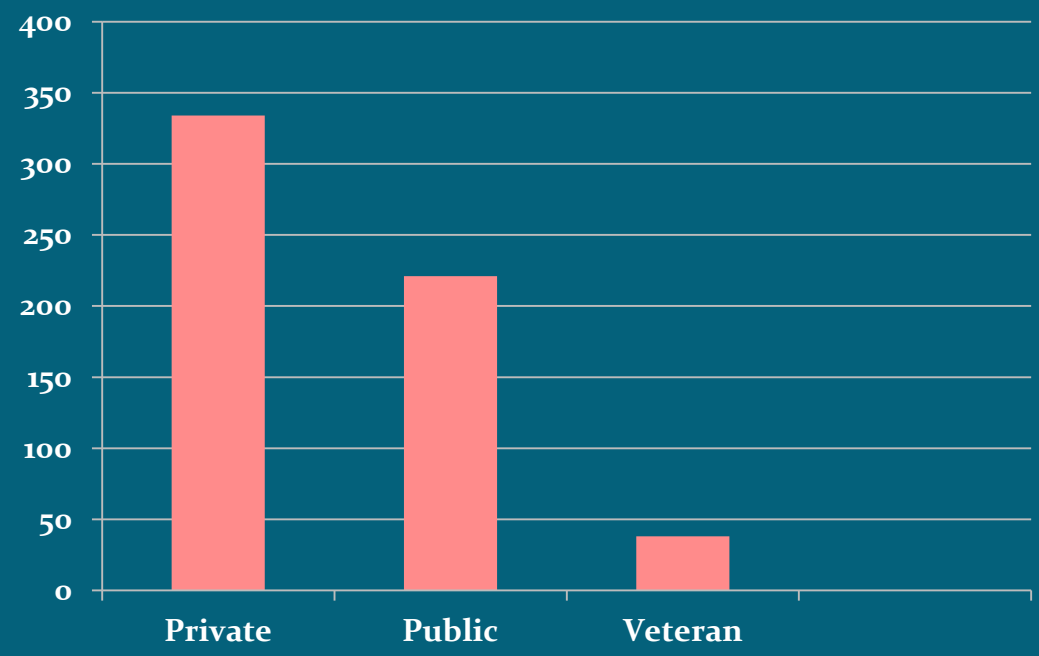
Ave age : 72.3 yrs





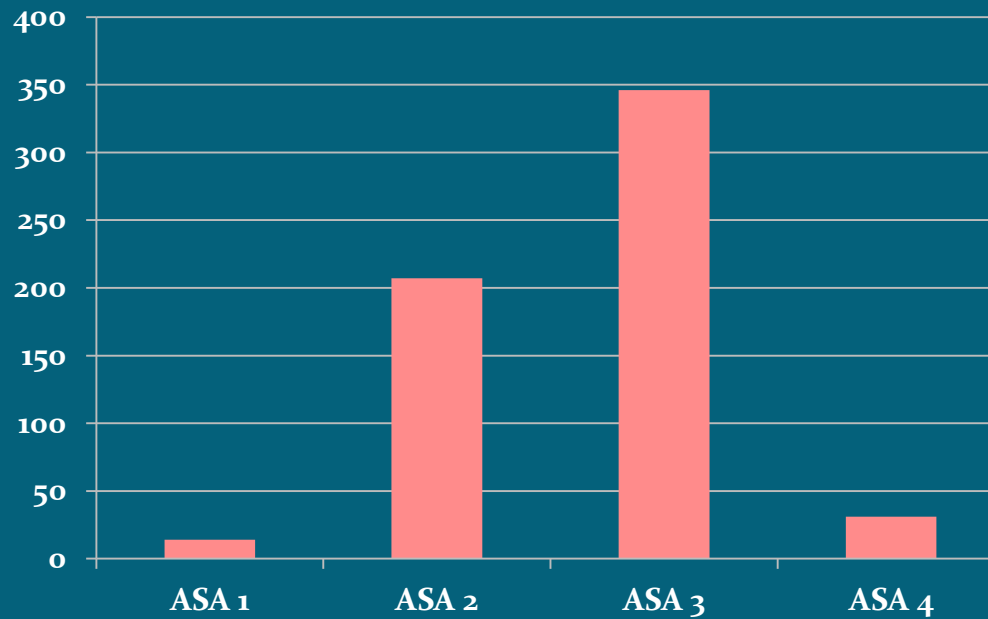
# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

## Insurance Status



# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

## ASA Status







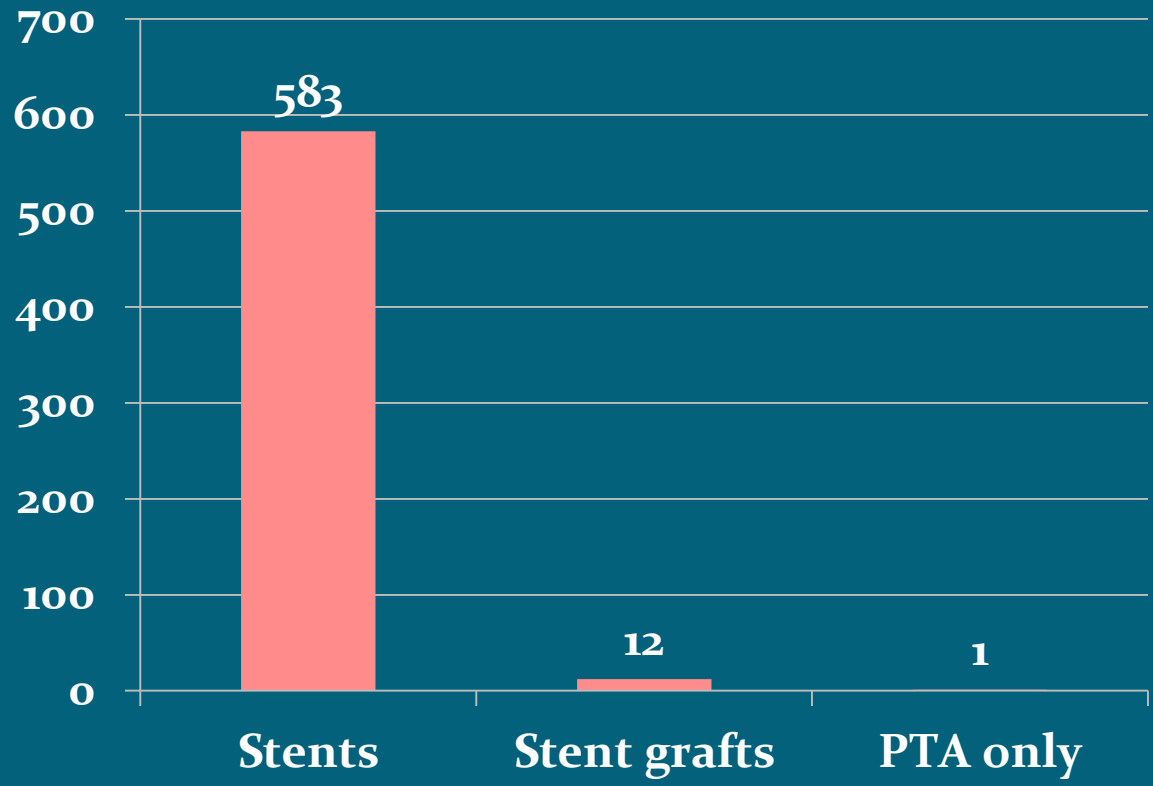
# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

Indications n= 598





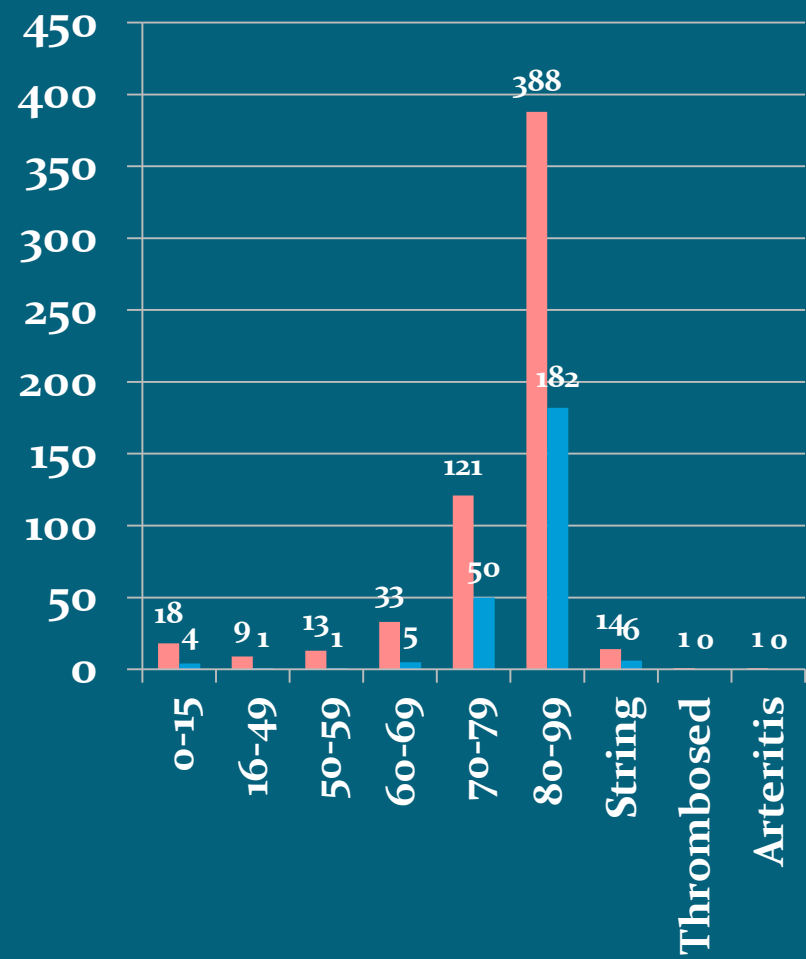
# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)





# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

Degree of ICA  
Stenosis



■ numbers  
■ Asymptomatic



# The Australasian Vascular Audit

## 3 year Carotid Stent Data ( 2010-2012)

<u>Stent</u>	<u>Total</u>
Acculink	27
ADAPT(Boston)	3
Angioplasty only	1
Medtronic Cristallo	21
Precise	180
ProtegeRX	6
Smart	10
Tapered	7
Wallstent	64
Xact	255



# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

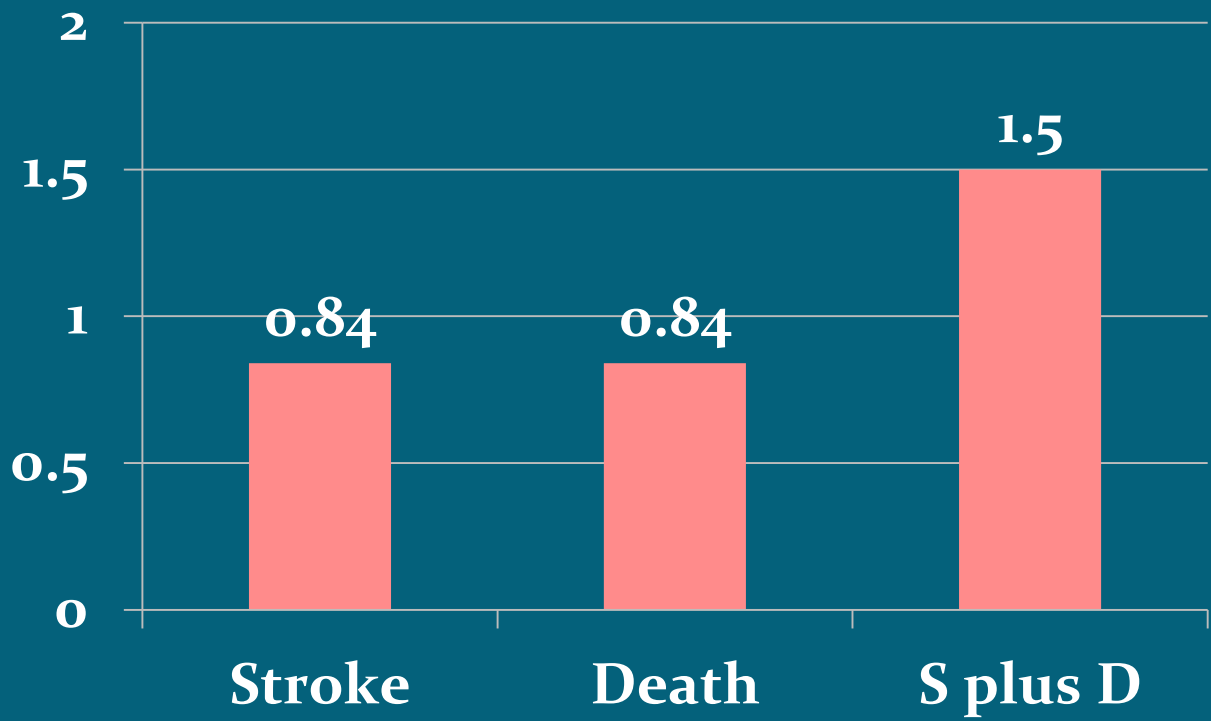
## Cerebral Protection Devices





# The Australasian Vascular Audit 3 year Carotid Stent Data ( 2010-2012)

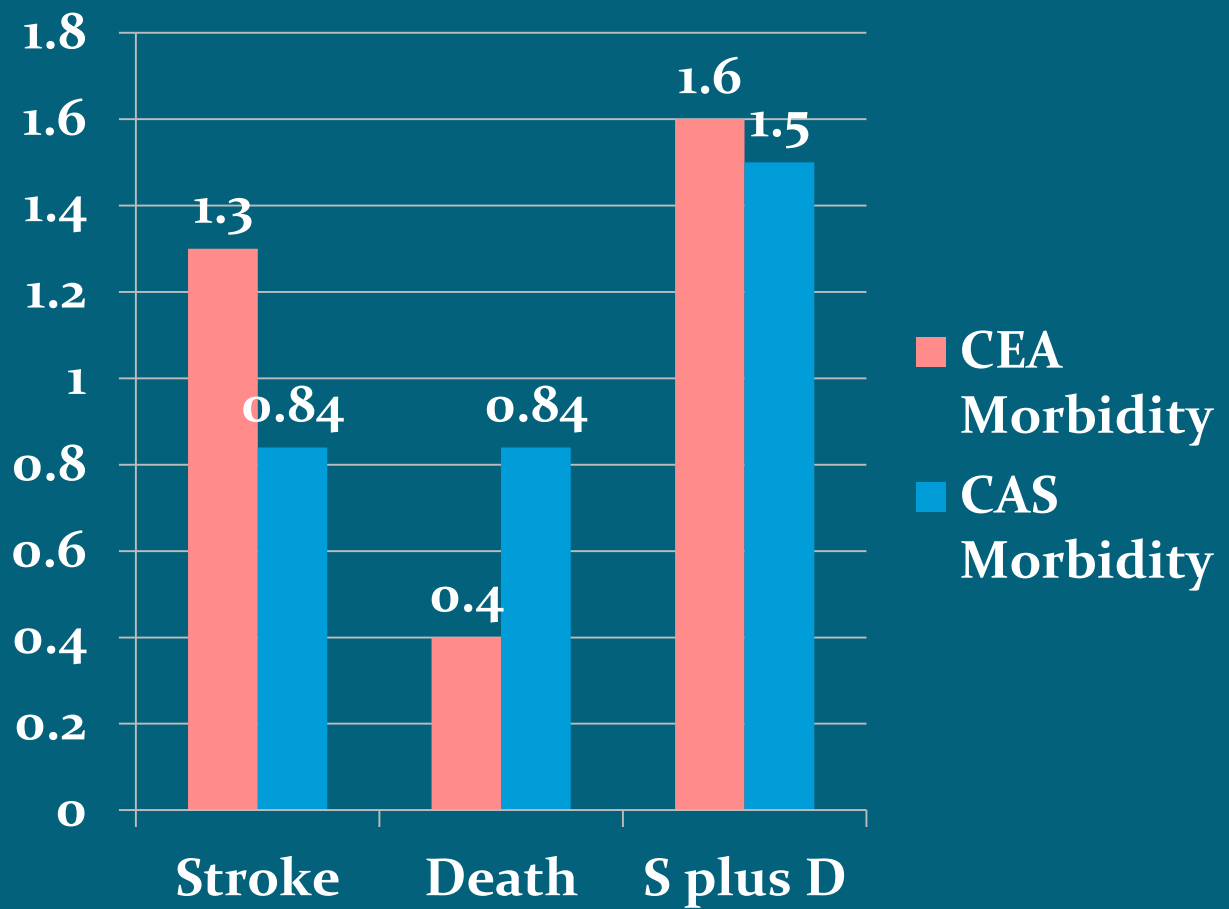
Stroke/Death %





# The Australasian Vascular Audit 3 year Data ( 2010-2012)

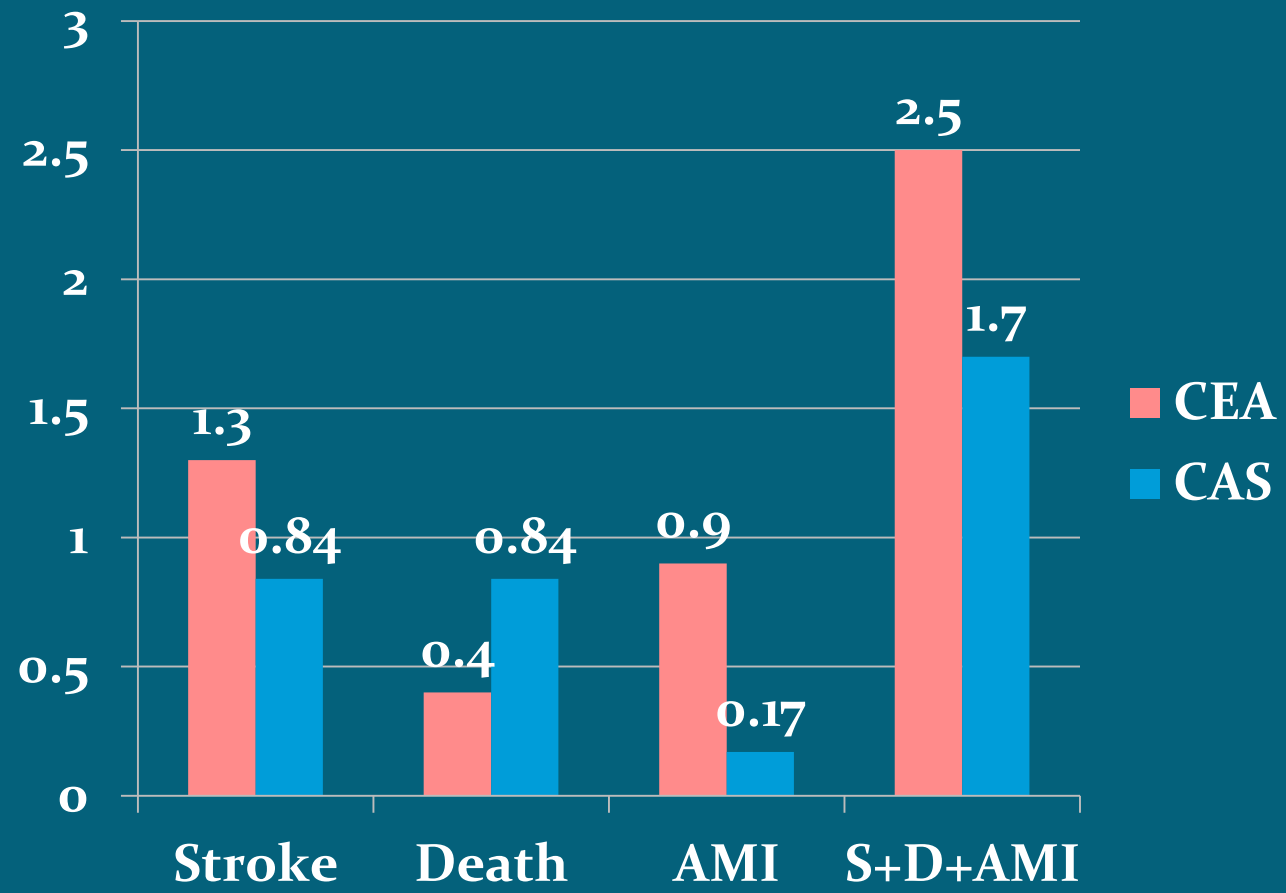
## CEA and CAS : stroke /death (%)





# The Australasian Vascular Audit 3 year Data ( 2010-2012)

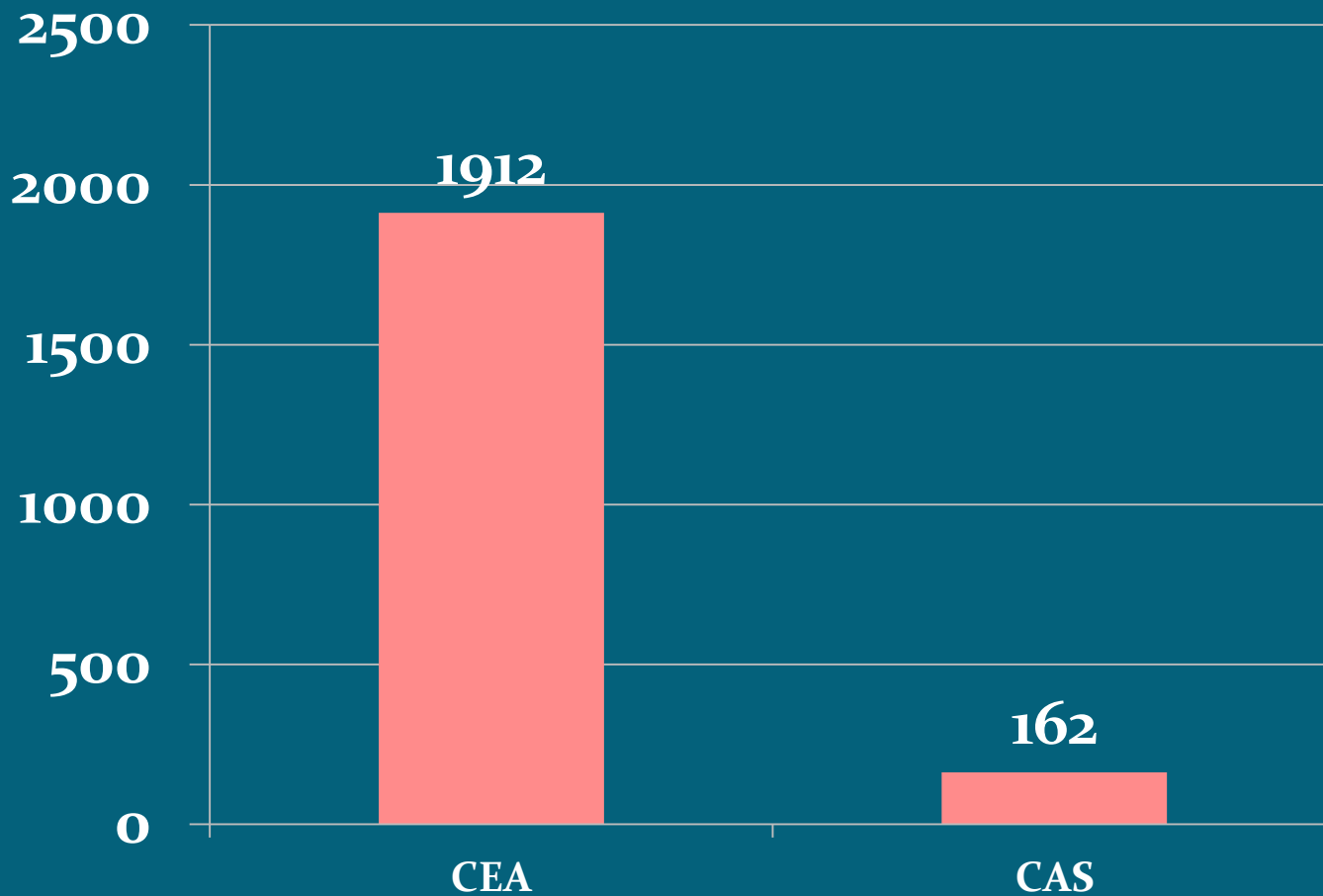
## CEA & CAS : Stroke , Death, AMI





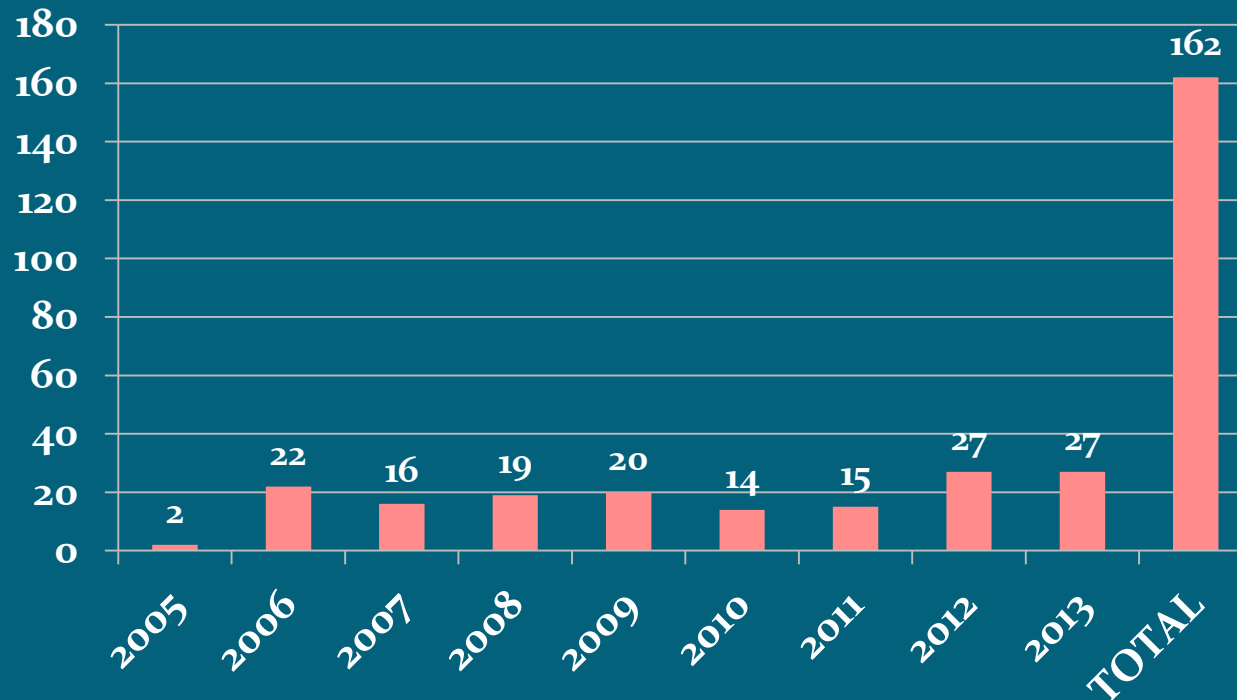


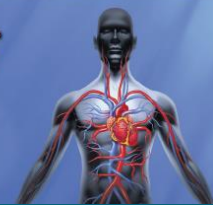
# Author's Experience





## Author's Carotid Stent Experience





# Bilateral Simultaneous Carotid Stenting

Case 1	M	54	>80%	Dxrt/neck surg	Pre angio	severe global ischaemia
Case 2	M	47	>80%	widespread	no	pre CABG
Case 3	M	81	>80%	>c2	no	expressive aphasia
Case 4	M	65	>80%	Dxrt	no	right eye , left limb sympoms
Case 5	M	70	>80%	>c2	no	bilateral eye; definite rt am fugax
Case 6	F	69	>80%	>c2 / anxiety	no	asymptomatic/ severe anxiety
Case 7	M	74	>80%	>c2 / dementia	no	right cerebral infarct / dementia
Case 8	F	60	>80%	>c2 / unfit	no	right arm symptoms/ visual blurs
Case 9	M	84	50-59%	>c2 / unfit	no	bilateral limb symptoms



# Bilateral Simultaneous Carotid Stenting

- Fluoro time/ Dye dosage

Case 1	20	75	40	150
	20	75		
Case 2	?	?		
	?	?		
Case 3	15	61	26	76
	11	15		
Case 4	18	60	29	75
	11	15		
Case 5	35	100	50	160
	15	60		
Case 6	36	110	66	220
	30	110		
Case 7	54	52	108	104
	54	52		
Case 8	15	35	30	70
	15	35		
Case 9	19	25	28	50
	19	25		
	<b>Bilateral Cases</b>	<b>mean</b>	<b>47</b>	<b>113</b>
	<b>Overall Cases</b>	<b>mean</b>	<b>20</b>	<b>69</b>
			<b>Fluoro Time</b>	<b>Dye dose</b>

## Male aged 54

Radical neck dissection & DXRT 2001 ( sq cell cancer)

Recent ex-smoker ( mainly marijuana)

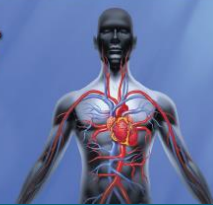
Manual worker

Severe unsteadiness , lightheadness falling over and light induced visual impairment / light intolerance

Symptoms incapacitating and could not hold down occupation, difficulty driving a car

HT<sup>n</sup> (atacand) , gout (progout), hypothyroidism (oroxine)

Rigid ,scarred, indurated neck from surgery and DXRT



## Duplex Carotid scan

Bilateral 90-99% ICA origin stenoses

Occluded left ECA

50-70% stenosis right ECA

Occluded right vertebral

? Patent left vertebral

## MRI brain

possible small cerebellar infarcts, nil else



# 3D ROTATIONAL ANGIOGRAM August 2009





“Bovine” origin left CCA with  
Innominate

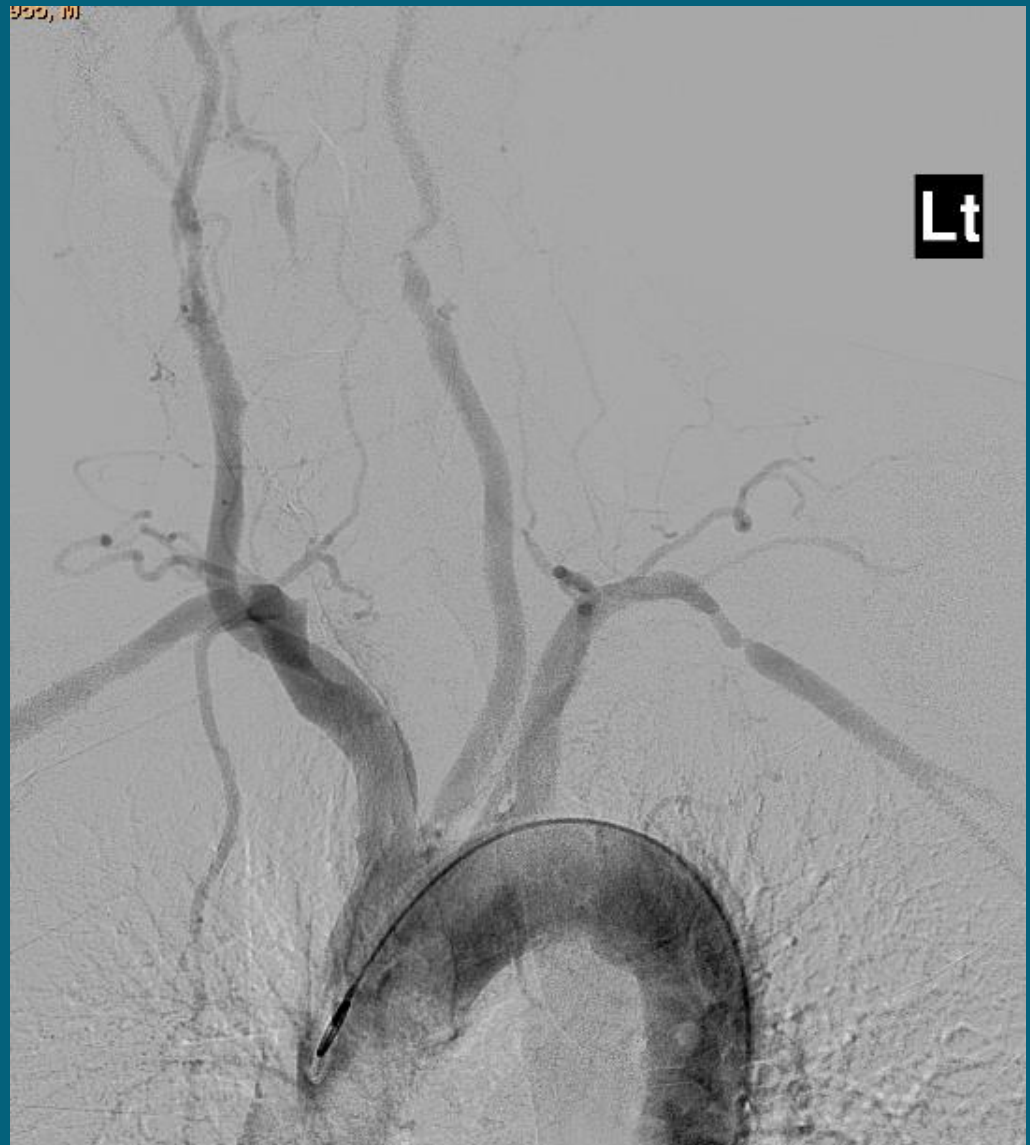
Bilateral Severe ICA stenoses

Occluded left ECA

Mod stenosis origin right ECA

Both vertebrals occluded

Severe stenosis left axillary  
artery





# Treatment : September 2009

Commenced plavix and aspirin

Bilateral simultaneous carotid stents

Bilateral emboshield cerebral protection

No pre-dilation required

Bilateral 6-8 mm x 4 cm tapered *Xact* carotid stents

Both post dilated to 5 mm

Procedure uneventful



# Subsequent Course

## Immediate cessation of symptoms

Back to manual labour and driving

Resumed smoking ( marijuana mainly)

Remained on plavix and aspirin

## Duplex scan follow up

Both ICA velocities normal :Nov 2009, March 2010, Sept 2010, April 2011,

Nov 2011 : left ICA 193 cm/s ; right ICA 171 cm/s : both distal stent (asymptomatic)

Jan 2012 : Lt ICA 604 cm/s; Rt ICA 579 cm/s associated with



**\*Recurrence of incapacitating symptoms Dec 2011**

# Treatment : February 2012

Recommenced on plavix (added to aspirin which had remained on since 2009)

Bilateral simultaneous Drug Eluting Balloons (DEB)

At angiography : bilateral symmetrical stent fractures 1-2 cm distal to proximal ends ; bilateral in-stent stenoses 1-2 cm proximal to distal ends

Both sides “NAV 6” cerebral protection devices

Bilateral pre dilate with 3 mm coronary balloon

Bilateral 5 mm x 4cm DEB

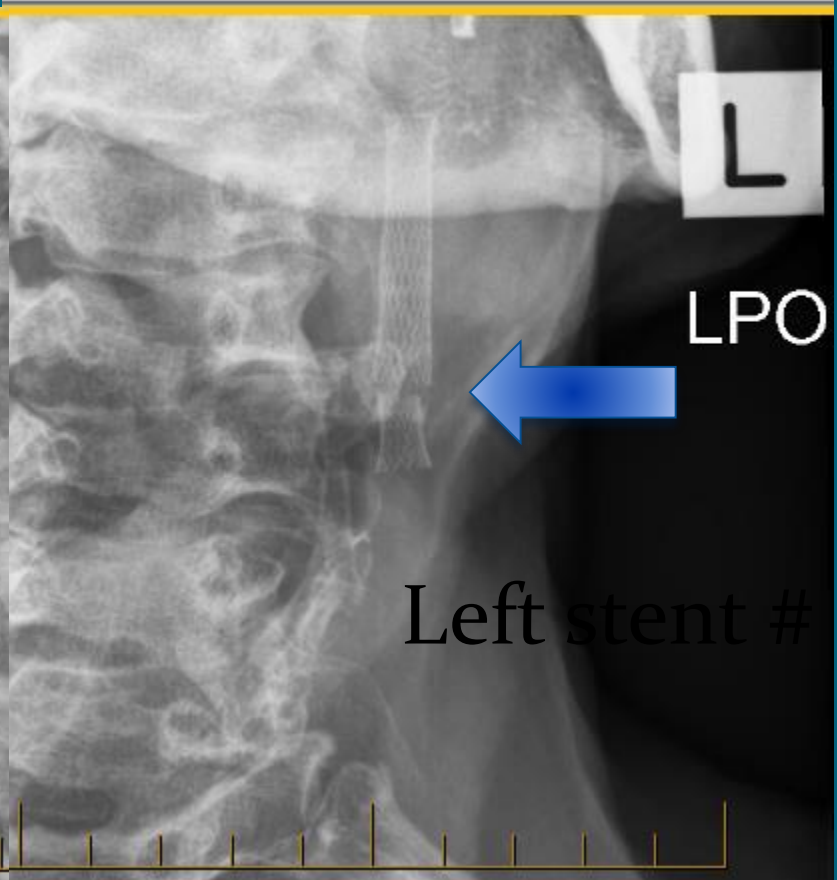
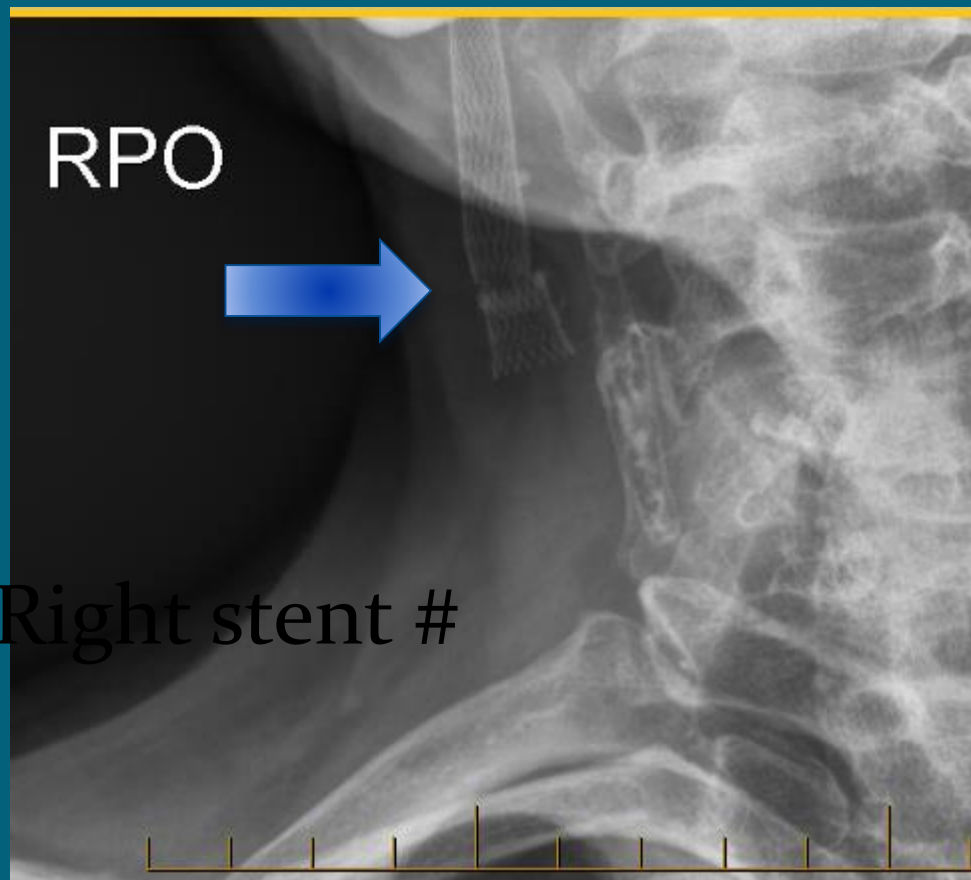
[( Medtronic In-Pact /ADMIRAL ( paclitaxel)]

Procedure uneventful



## BILATERAL symmetrical carotid stent fractures







RIGHT

LEFT



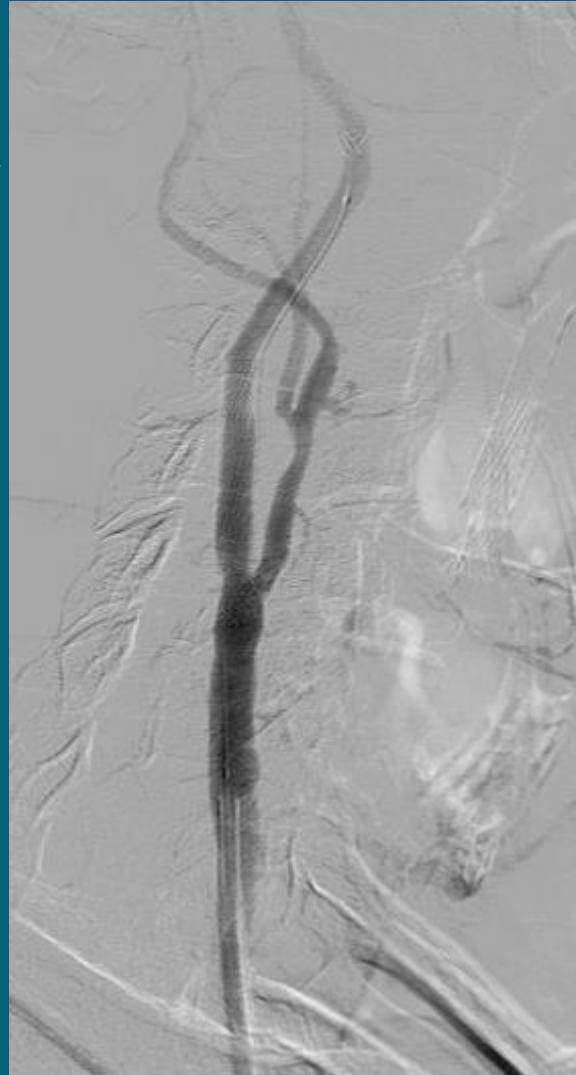
# Bilateral Carotid In-stent Stenoses



**RIGHT**

**LEFT**

Post Drug Eluting  
Balloon Angioplasty  
of Bilateral Carotid  
In-stent Stenoses



# Subsequent Course post DEB

## Immediate cessation of symptoms

Back to manual labour and driving

Remained on plavix and aspirin

## Duplex scan follow up

March 2012 :

left ICA 155cm/s ( ICA / CCA PS ratio= 1.3)

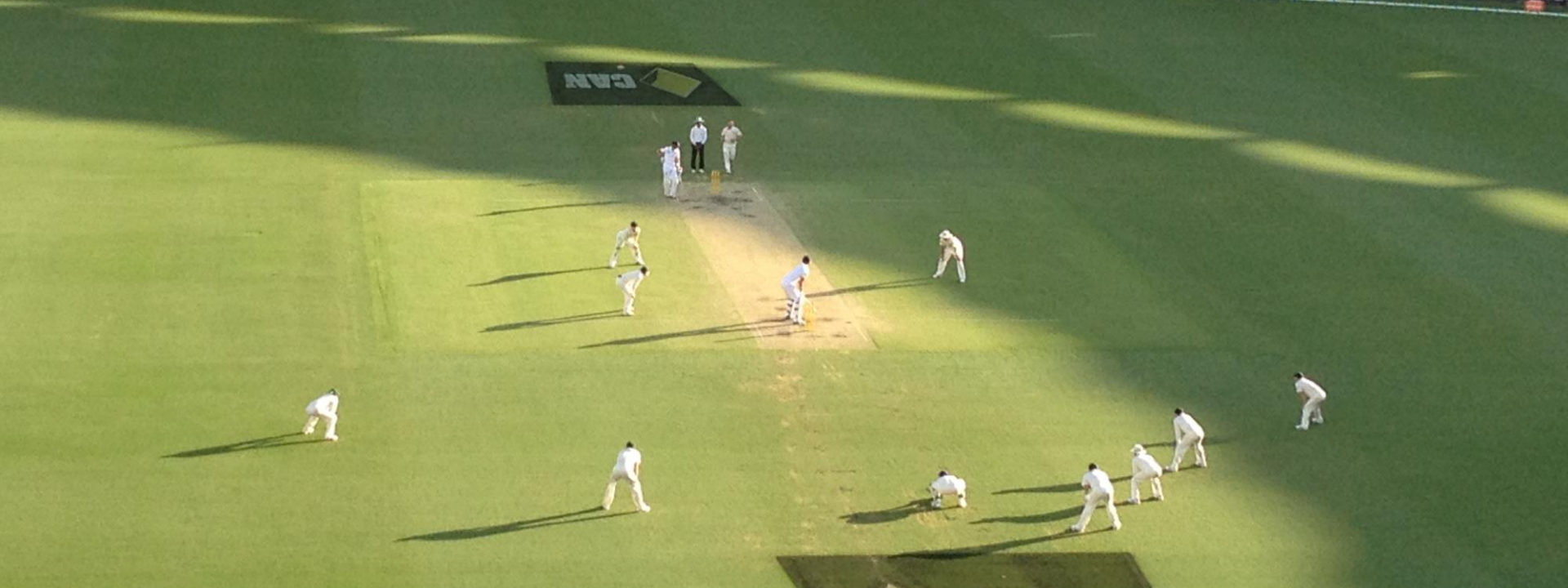
right ICA 188 cm/s ( ICA / CCA PS ratio= 1.6)

October 2013

left ICA 124cm/s ( ICA / CCA PS ratio= 1.5)

right ICA 167 cm/s ( ICA / CCA PS ratio= 1.9)





**The End is Nigh**

# — Conclusions —

- **The Australasian Vascular Audit has generated an enormous amount of very useful data and continues to do so in all aspects of vascular and endovascular surgery.**
- **Carotid Stent results reported to the Australian Vascular Audit are of extremely high standard ( but participation in the Audit needs to improve to substantiate these results)**
- **Bilateral Simultaneous Carotid Stenting appears safe in carefully selected cases.**