Why my interest?

- Quality assurance
- Systems review
- Communication
- Morbidity & mortality - 4Hs and 4Ts, Anaphylaxis

Aims of Presentation - Sept 2013

- Highlight issues related to CVAD at RPA
- Summarise NSW Health Policy Standard
- Review existing procedures in light of these guidelines

Consider implementing a central line booking form

Consider using the CVAD insertion form

Consider auditing central lines at RPA

Consider developing a working group with other departments

Policy Directive

Department of Health, NSW
73 Miller Street North Sydney NSW 2060
Locked Mail Bag 961 North Sydney NSW 2059
Telephone (02) 9391 9000 Fax (02) 9391 9101
http://www.health.nsw.gov.au/policies/

Central Venous Access Device Insertion and Post Insertion Care

Document Number PD2011_060

Publication date 22-Sep-2011

Functional Sub group Clinical/ Patient Services - Surgical
Clinical/ Patient Services - Medical Treatment
Clinical/ Patient Services - Nursing and Midwifery
Clinical/ Patient Services - Governance and Service Delivery
Population Health - Infection Control

Summary To minimise complications from the insertion, management and access of central venous access devices (CVADs) and to reduce central line associated bacteraemia blood stream infections in NSW Health facilities.

Author Branch Clinical Safety, Quality and Governance

Branch contact Clinical Safety, Quality & Governance 9391 9200

Applies to Local Health Districts, Speciality Network Governed Statutory Health Corporations, Board Governed Statutory Health Corporations, Chief Executive Governed Statutory Health Corporations, Government Medical Officers, Public Health Units, Public Hospitals

Audience Hospital administration, nursing, medical, surgical, clinical governance, clinical staff

Distributed to Public Health System, Divisions of General Practice, Government Medical Officers, NSW Department of Health, Private Hospitals and Day Procedure Centres, Tertiary Education Institutes

Review date 22-Sep-2016

Policy Manual Patient Matters

File No. 07/9113

Status Active

Director-General

This Policy Directive may be varied, withdrawn or replaced at any time. Compliance with this directive is **mandatory** for NSW Health and is a condition of subsidy for public health organisations.

NSW Dept Policy on CVADS

- Monitoring
- Ultrasound use (NB remember anatomy too)
- Chlorhexidine (?2 or 0.5%) in alcohol 70%
- Confirmation of venous access - ultrasound / manometer / blood gas
- Dilator insertion
- Guide wire removal and documentation
- Swabable capless valves
- Tip position (SVC, carina on CXR)
- Routine replacement of lines not supported
- CVAD insertion record (aids effective communication)

clabicu PROJECT

PREVENTING CENTRAL LINE INFECTIONS

TRAINING FRAMEWORK **for clinicians new to inserting** CENTRAL LINES **in** NSW

ICCMU Intensive Care Coordination & Monitoring Unit

NSW HEALTH

CLINICAL EXCELLENCE COMMISSION

What have we refined?

- Booking form
- Central line packs
- CVADs stocked (minimise, safer)
- CVAD insertion form
- Audit
- ?working group (interested colleagues)

NSW HEALTH

Facility:

CENTRAL VENOUS LINE INSERTION RECORD

SMR090200

FAMILY NAME | MRN

GIVEN NAME | ☐ MALE ☐ FEMALE

D.O.B. ____ / ____ / ____ | M.O.

ADDRESS

LOCATION / Ward

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Date / / **Time** : Elective ☐ Emergency ☐ Rewiring ☐

Patient:

Consent ☐ Time Out ☐ Coags ☐ Pacemaker ☐

ICU/HDU ☐ OT ☐ ED ☐ Radiology ☐ Other:

Local ☐ Sedation ☐ GA ☐ Monitoring: ECG ☐ SpO_2 ☐ BP ☐ CO_2 ☐

Neonate: Weight:

Gestational age:

Asepsis:

Hat, mask, protective eyewear ☐ Hands washed 2 min ☐ Sterile gloves and gown ☐

Prep: alcoholic chlorhex / ☐ Full sterile draping ☐ Asepsis maintained throughout ☐

INSERTION SHOULD STOP IF ASEPSIS IS BREACHED

Catheter:

Right ☐ Left ☐ Subclavian ☐ IJ ☐ EJ ☐ Femoral ☐ Basilic ☐ Cephalic ☐ Umbilical ☐ Long Saph ☐

Lumens: CVC ☐ PICC ☐ Vascath ☐ Other type / site:

Brand: Coating: Antibiotic ☐ Antiseptic ☐ Gauge: Catheter Length: cm

No. of passes: Image Int ☐ Ultrasound ☐ Depth inserted from skin: cm

Venous placement confirmed: Manometry ☐ Ultrasound ☐ Transducer ☐ Other Before Dilation ☐

Guidewire removed intact ☐ **Independently Confirmed** ☐

Complications: Nil ☐ Art Puncture ☐ Haematoma ☐ Pneumothorax ☐ Re-position ☐

Notes:

PICCs only: Stiffener removed intact ☐ Independently Confirmed: ☐ Mid-upper limb circumference cm

Final Tip position:

Confirmed by: CXR ☐ Image Int ☐ Name Pager

Proceduralist:
(name)

Sign: | Pager:

Specialist / Fell / Reg / RMO / NP / RN | Date:

Assistant:
(name)

Sign: | Date:

Specialist / Fell / Reg / RMO / NP / RN / EN / Technician

Supervisor:
(name)

Sign: | Pager:

Specialist / Fell / Reg / RMO / NP / RN | Date:

Removal: Date: / / 20

Authorised by:

Reason:

Local sepsis? Yes ☐ No ☐ Tip Cultured: Yes ☐ No ☐

Removed By:
(name)

Sign: | Pager:

Specialist / Fell / Reg / RMO / NP / RN | Date:

CLAB Detected: Yes ☐ No ☐

If Yes, date of positive blood culture: / / 20

Isolate

For audit Purposes (at removal)

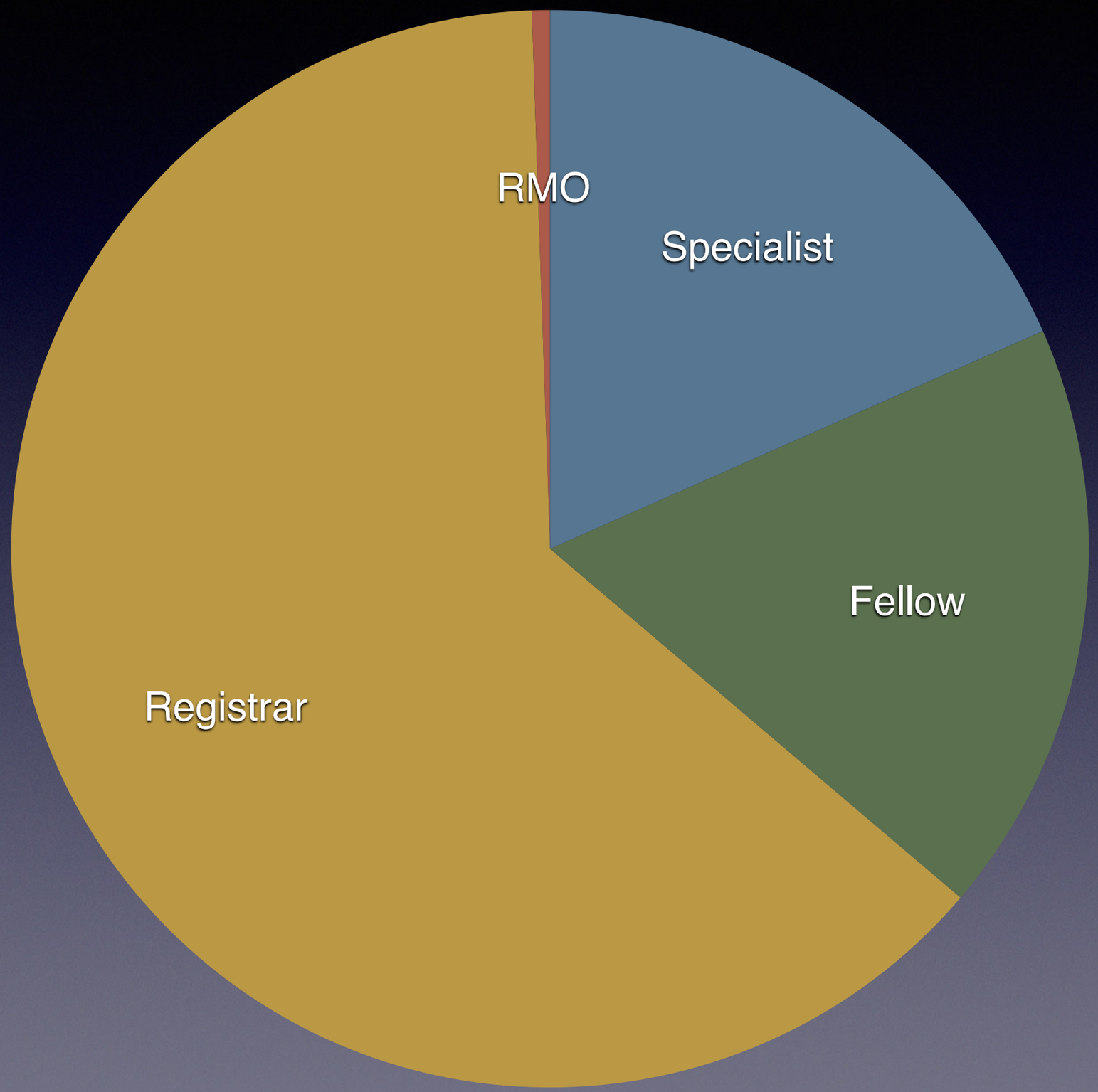
NH606515 070910

SMR090.200

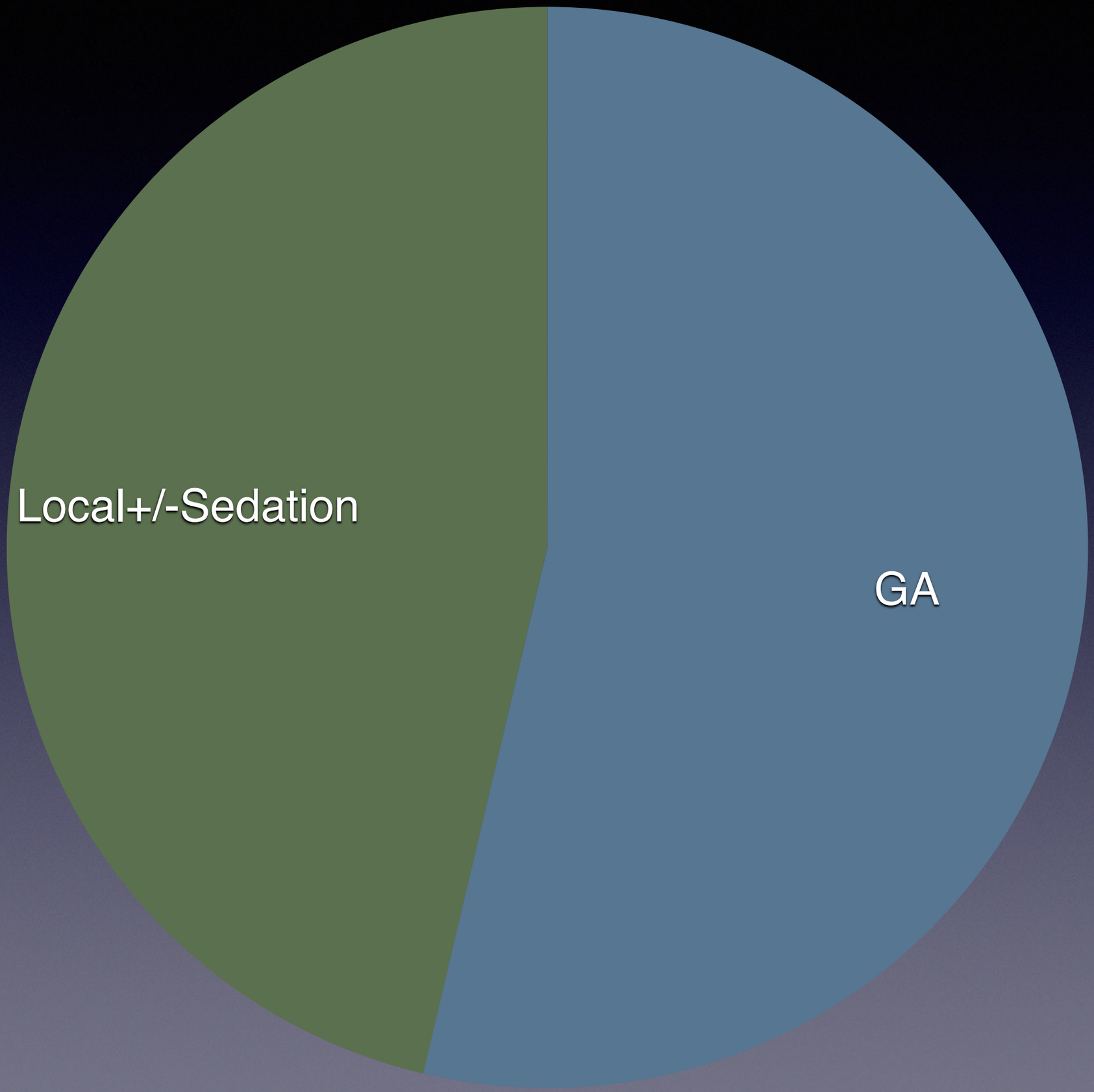
Audit

- Massive Thank You
- 2014 - 200 forms; last 3 months 2013 - 40 forms
- Presented data biased towards those most likely to complete CVAD insertion forms

Proceduralist



Anaesthetic



Ultrasound

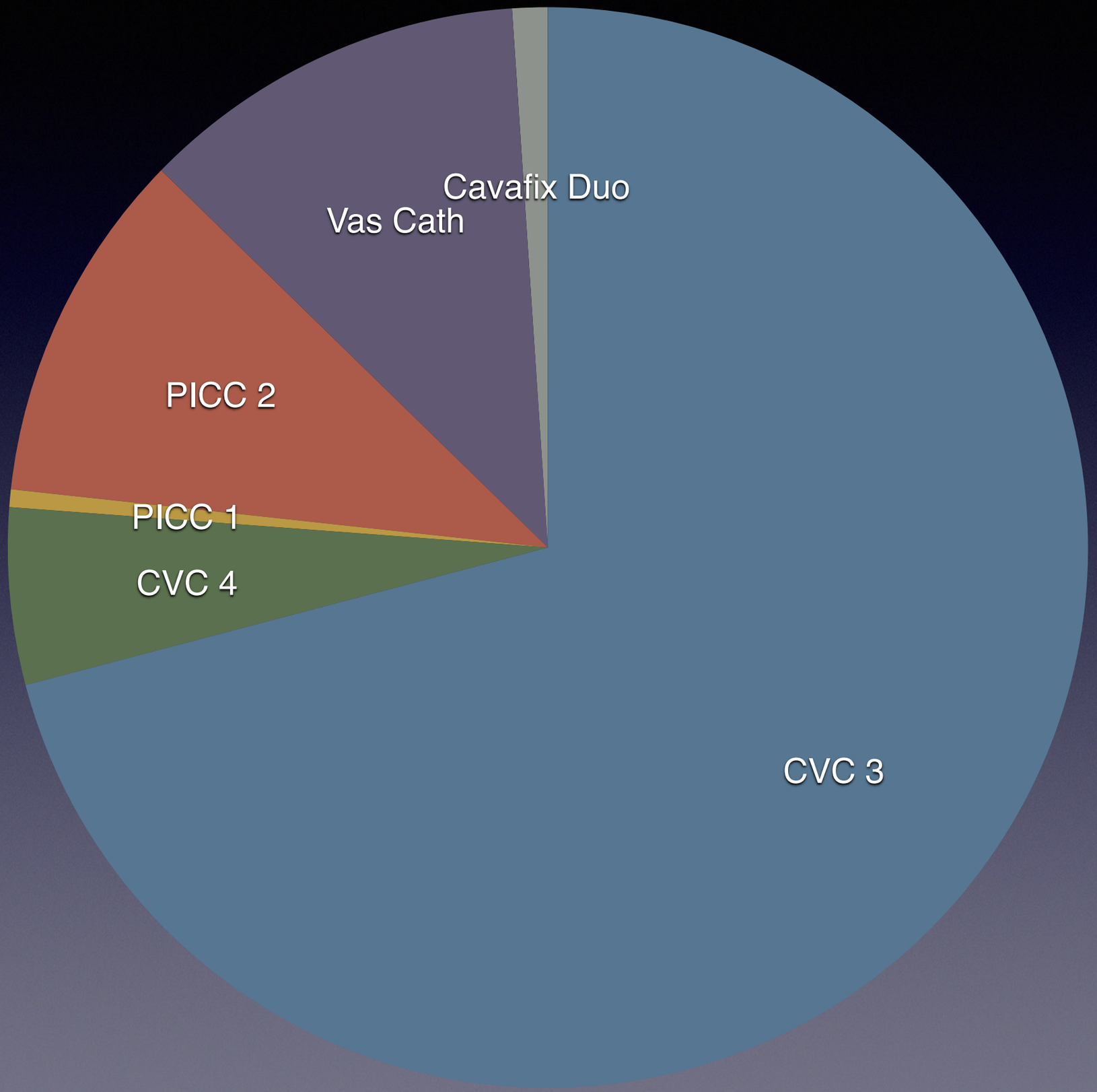
- Venous access confirmed prior to dilation in 100%

99% with ultrasound

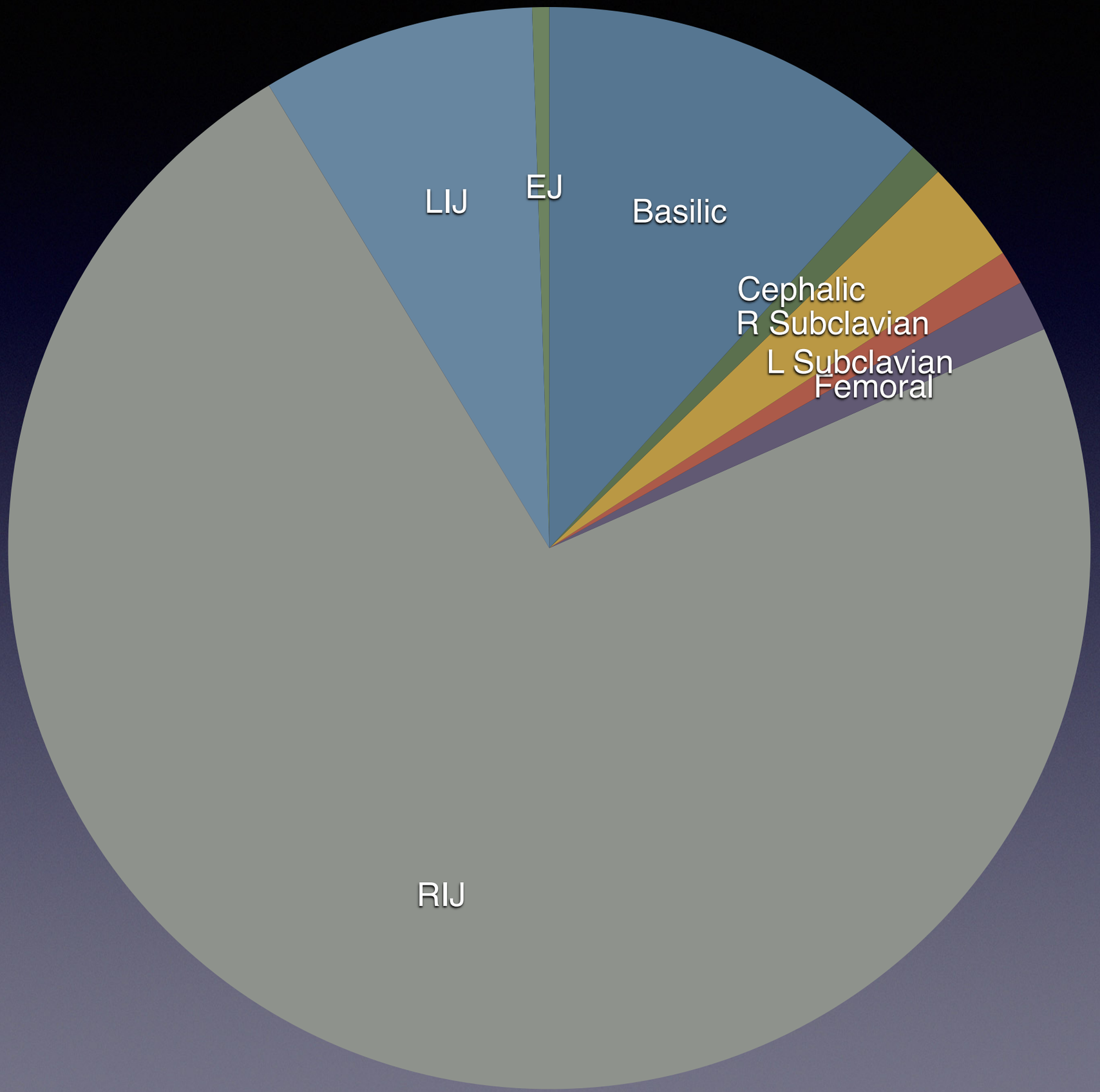
1% with transducer

- Ultrasound reported used in 99.5% of insertions.

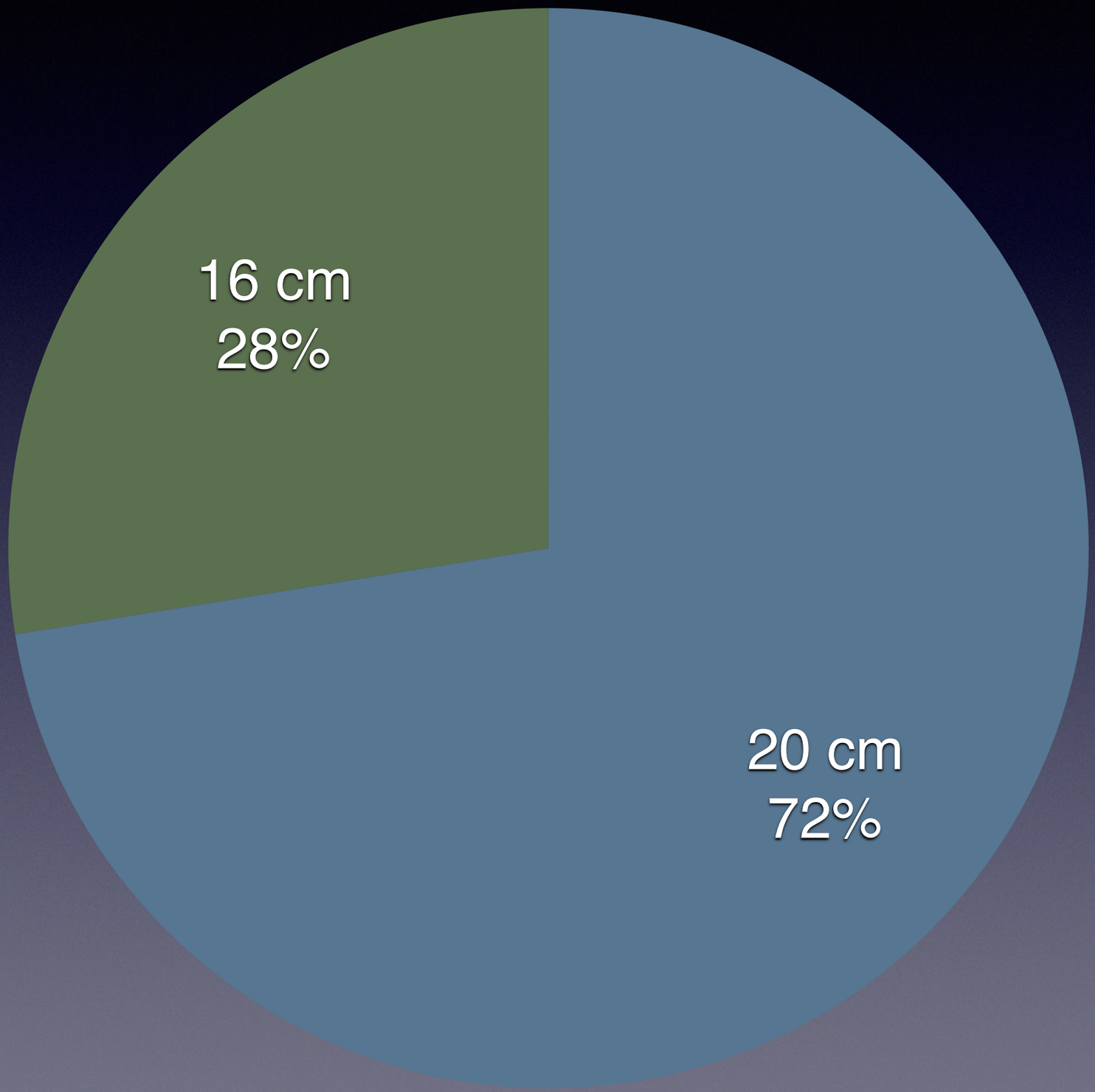
CVAD type



CVAD insertion site



CVC Catheter Length



Potential benefits of 16cm vs 20cm CVC

- Shorter wire (45cm vs 60cm)

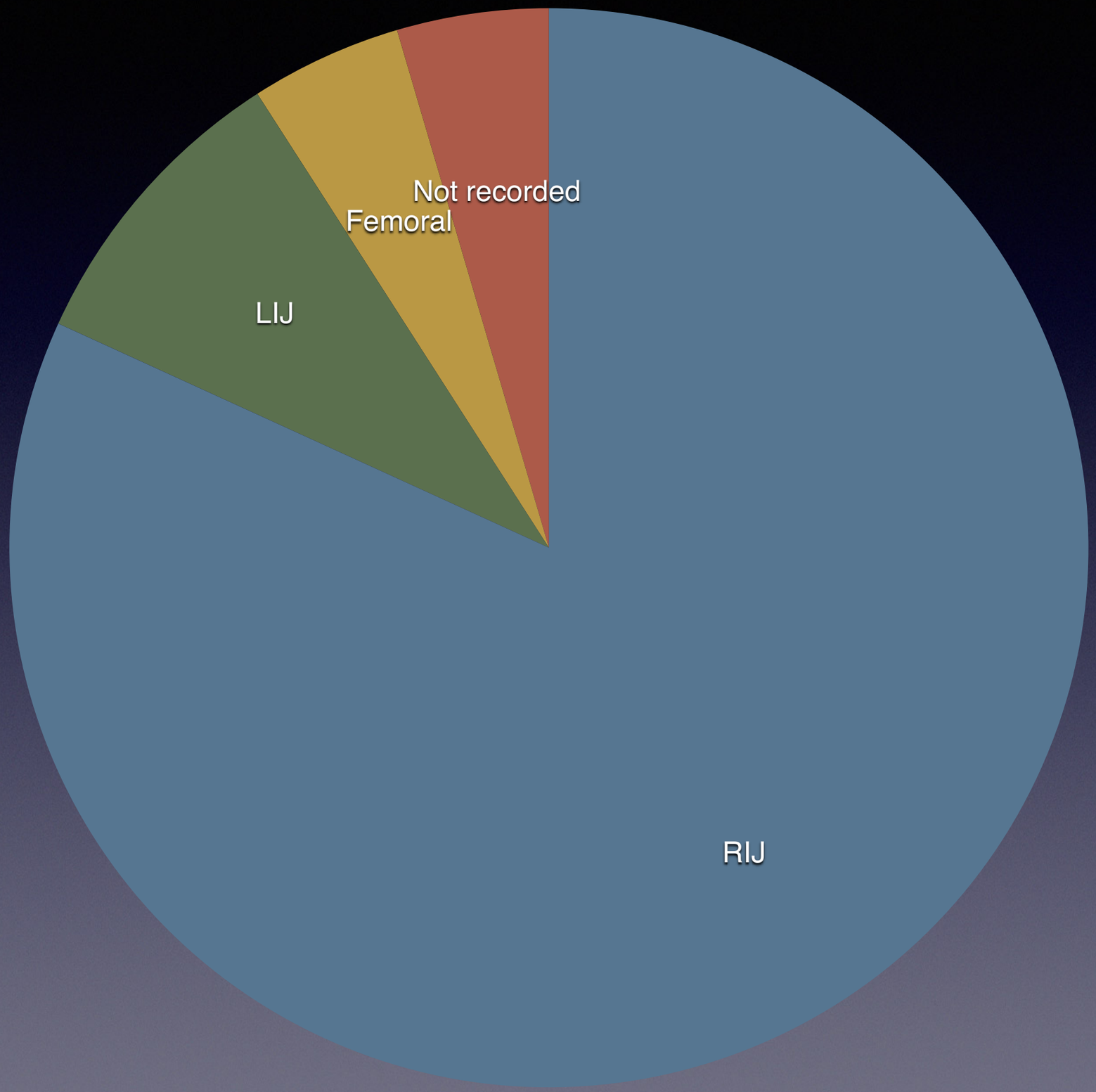
Less ectopics with lower risk of cardiac arrest

Decreased risk of damage to vessel and myocardium (tamponade)

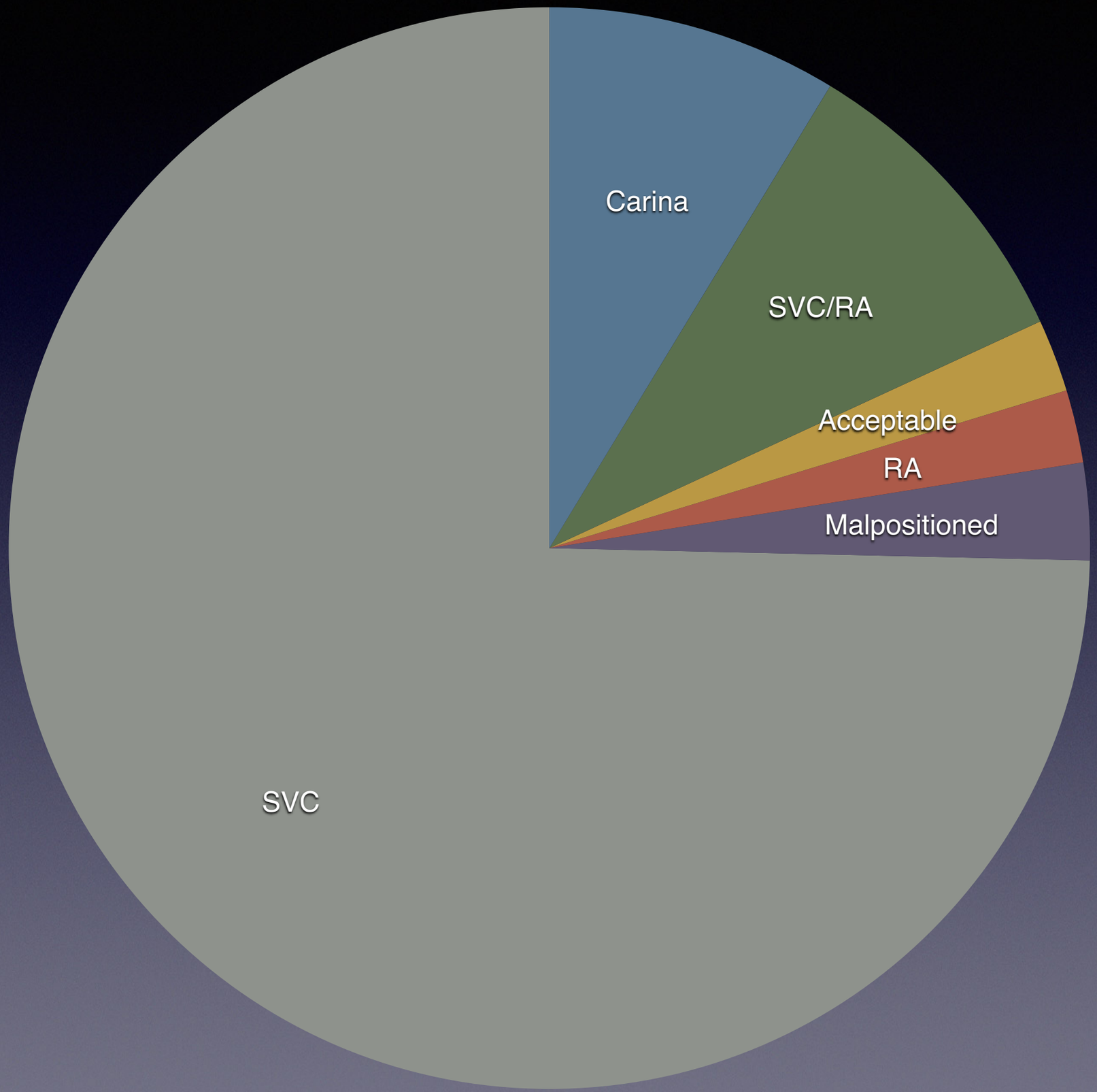
Potential decreased contamination risk

- Potential for 2 point fixation if sutured to hilt at 16cm.
- Less line from clip fixation point - potentially less likely to be pulled out
- Cheaper ($40 vs $41)
- Less environmental wastage

Vas Cath Insertion Position



Tip position



Tip position

- BJA Aug 2000. Editorial: Increased tamponade if too distal or perpendicular to vessel wall vs increased thrombosis, phlebitis, embolism, CRBSI, extravasation if too proximal.

- Lack of reliable surface landmarks.
- CXR - carina 3.5cm higher than SVC/RA junction. Does not exclude extra vascular site or if in small vessel.

- Right atrial electrocardiography - can only tell when tip in RA

- Image intensifier - very useful, but not available routinely

Tip position

- Zone A - (low SVC/upper RA), suitable tip location for lines accessed from upper body
- Zone B - (upper SVC), suitable for tips from RIJ lines
- Zone C - (mid point left innominate vein) suitable for tips from LIJ or L subclavian

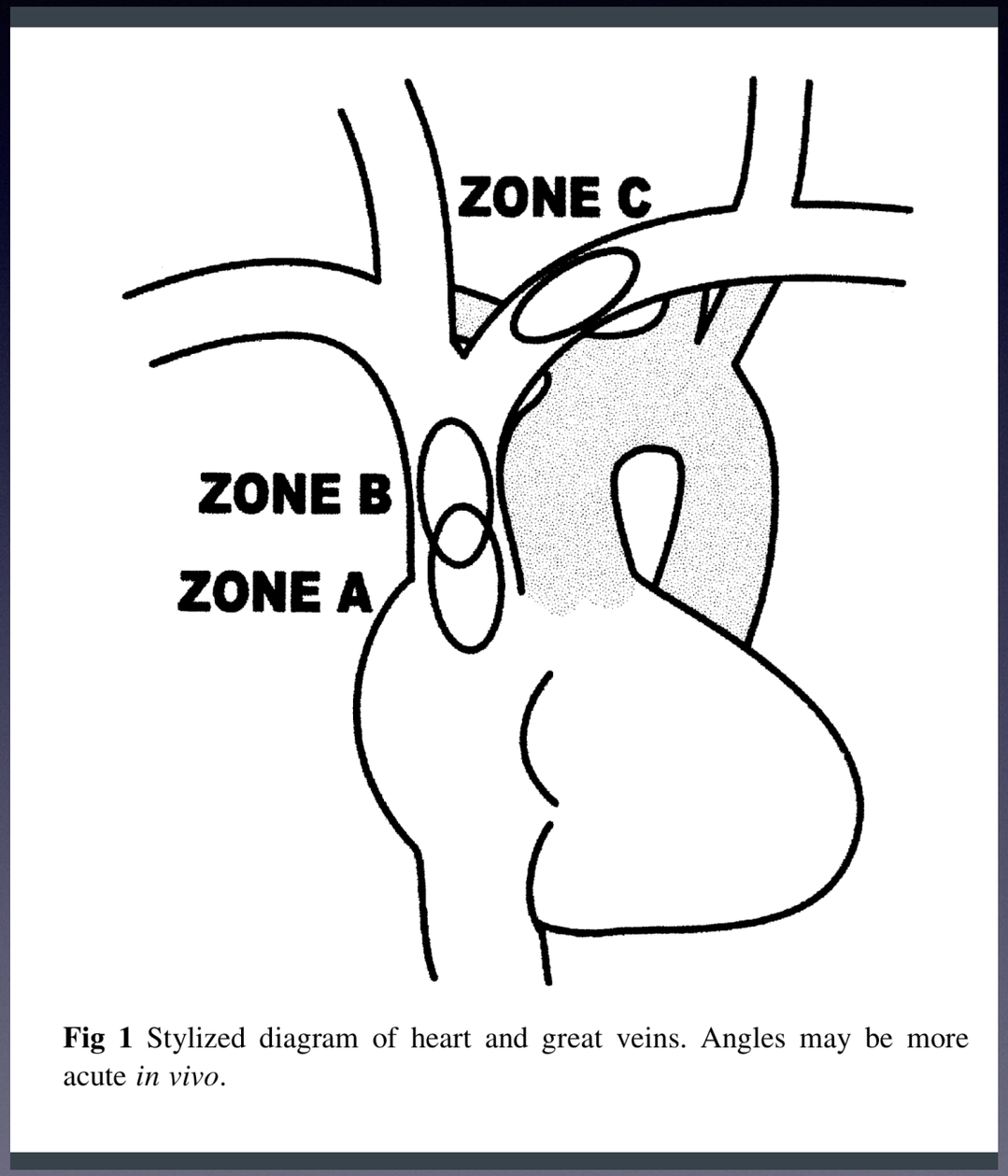


Fig 1 Stylized diagram of heart and great veins. Angles may be more acute *in vivo*.

Central line tip position

- NSW CVAD guidelines - It is reasonable to expect that a CVC tip should be:

1. in the superior vena cava

2. above the cephalic limit of the pericardial reflection

3. at a level corresponding to the carina on a chest radiograph

NSW HEALTH

Safety Notice 003/09

11 February 2009

Intravenous Amiodarone

Reducing the incidence of thrombophlebitis associated with intravenous administration.

Distributed to:

- Chief Executives
- Directors of Clinical Governance
- Directors of Clinical Operations

Action required by:

- Directors of Clinical Governance

We recommend you also inform:

- Directors of Emergency Medicine
- Directors of Medical Services
- Directors of Ambulance Services
- Directors of Intensive Care
- Cardiologists
- Directors of Nursing and Midwifery
- Medical staff
- Nurses
- Pharmacists

Background

Amiodarone is a medication used to treat cardiac tachyarrhythmias. Often in cases of severe cardiac arrhythmia, amiodarone is administered by the intravenous route, and care is required when administering amiodarone intravenously due to potential adverse effects.

Thrombophlebitis is a common reaction that may occur when intravenous amiodarone is administered peripherally at high concentrations or repeatedly or when continuous peripheral administration is required. Whilst this adverse effect is quite commonly observed, it can be avoided.

Harm to Patients

Systematic analysis of incidents involving amiodarone reported via the Incident Information Management System (IIMS) identified a significant number were attributed to the incorrect administration of intravenous amiodarone resulting in thrombophlebitis and considerable pain for the patient. The main contributing factors to the development of thrombophlebitis were administration of amiodarone peripherally at a concentration which was too high, repeated or continuously administered. A number of incidents also identified additional complications such as infection.

Steps to minimise harm associated with intravenous amiodarone

- For peripheral administration (single dose) of amiodarone, dilute amiodarone in glucose 5% (to a maximum of 2mg/mL except in emergencies) and infuse via a volumetric pump over a period of at least 20 minutes up to, but no more than, 2 hours. If giving higher concentrations, use a central/PICC line.
- A central venous catheter or a large bore peripheral catheter (18g or above), inserted via the cubital fossa should be used if repeated administration or continuous infusions of amiodarone are required.
- Amiodarone administered intravenously over 1-2 minutes, **should only be used in emergency situations**.
- Amiodarone should only be administered where cardiac monitoring and defibrillation are available.

Future CVAD review

- Indications for line insertion (e.g. Amiodarone)
- CVAD booking form - forms committee
- Allocating resources (e.g. haematology patients)
- Which department - which CVAD (e.g. left Vas Cath)
- Improve overall education (e.g. air emboli on removal)
- Working party review of significant CVAD issues
- Future audit - Time from booking to insertion. Fasting times. Post insertion complications especially CLABSI.