Peri-operative Stroke – Incident and Risk Factors

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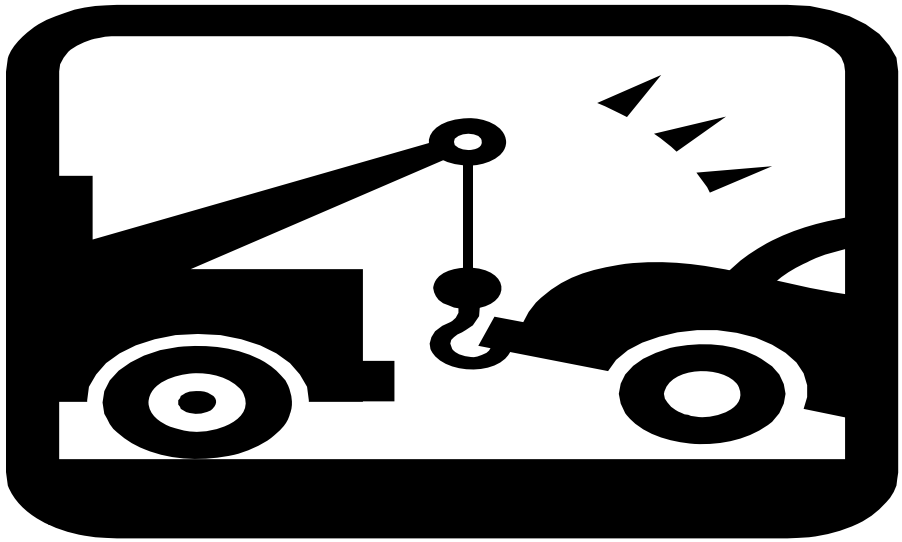
Peri-operative stroke – incident and risk factors

Although modern anaesthesia is relatively safe, severe complications still occur



Peri-operative stroke – incident and risk factors

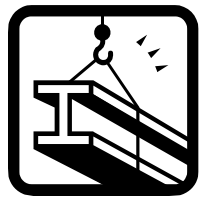
Last year, our Anaesthesia Related Mortality Audit revealed a mortality rate of 0.614 per 10,000 operations

Peri-operative stroke – incident and risk factors

Regarding morbidities:

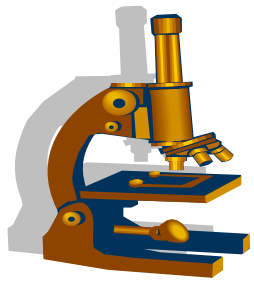
- **AMI, Stroke, Renal Failure, Chest Infection are considered significant if they occur in the peri-operative period**

- **Stroke is the most severe peri-operative morbidities**



Peri-operative stroke – incident and risk factors

COC (Anaesthesiology) decided to conduct an audit on peri-operative stroke in year 2003 to 2005 looking at the true incident and the associated risk factors



Peri-operative stroke – incident and risk factors

Hospitals (n = 20) participated in the audit

Hong Kong East Cluster	***Kowloon West Cluster***
Pamela Youde Nethersole Eastern Hospital*	Caritas Medical Centre
Ruttonjee Hospital	Kwong Wah Hospital
Tung Wah East Hospital	Our Lady of Maryknoll Hospital
Hong Kong West Cluster	Princess Margaret Hospital*
Grantham Hospital	Yan Chai Hospital
Queen Mary Hospital*	
The Duchess of Kent Children's Hospital	***New Territories East Cluster***
Tung Wah Hospital	Alice Ho Mui Ling Nethersole Hospital
Kowloon Central Cluster	Prince of Wales Hospital*
Hong Kong Eye Hospital	North District Hospital
Queen Elizabeth Hospital	
Kowloon East Cluster	***New Territories West Cluster***
United Christian Hospital*	Tuen Mun Hospital*
Tseung Kwan O Hospital	

Peri-operative stroke – incident and risk factors

- **Searched through the data base of the Clinical Data Analysis and Reporting System (CDARS) using operation, stroke, cerebrovascular accident, cerebral infarction, cerebral haemorrhage, anaesthesia codes of 1 to 7 as key words**

- **Retrieved various types of stroke after operation before hospital discharge - 500 cases in total**

Peri-operative stroke – incident and risk factors

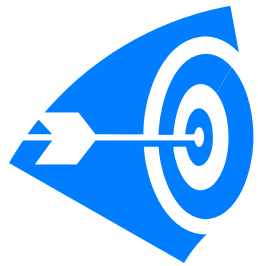
- **The audit co-ordinators then went through patients' notes carefully and screened the accuracy of the diagnosis of peri-operative stroke against a set of pre-determined criteria**

- **All likely risk factors were also recorded**

Peri-operative stroke – incident and risk factors

- **155 cases of peri-operative stroke during the 3 years were confirmed**

- **4 peri-operative stroke per 10,000 operations**

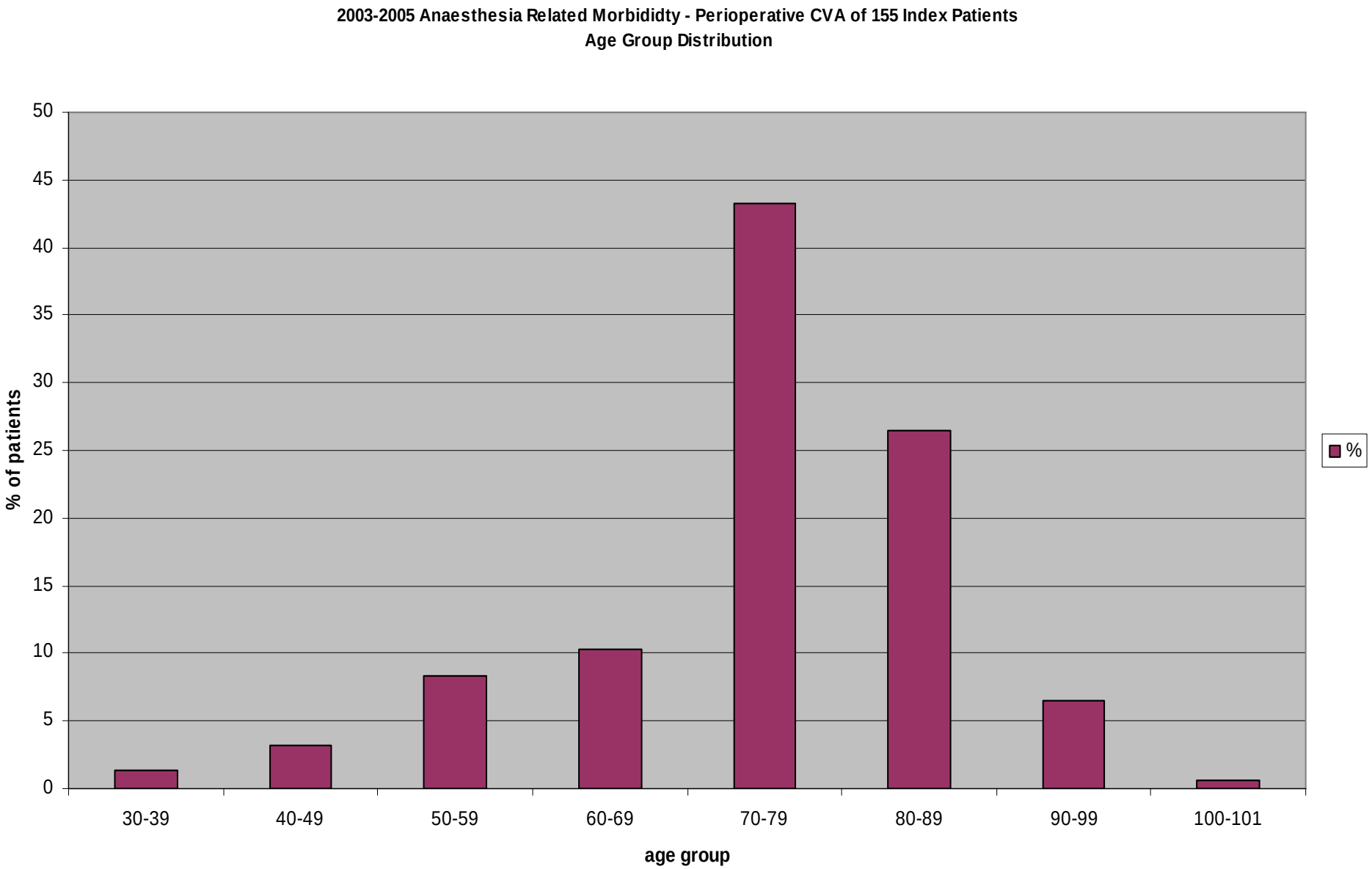


Peri-operative stroke – incident and risk factors

- **The risk factors were then analysed to rate the significance**

- **Demographics**
- **Preoperative**
- **Intra-operative**
- **Post-operative**

Peri-operative stroke – incident and risk factors



Peri-operative stroke – incident and risk factors

- **Data suggested that increasing age was associated with higher risk in developing peri-operative stroke**

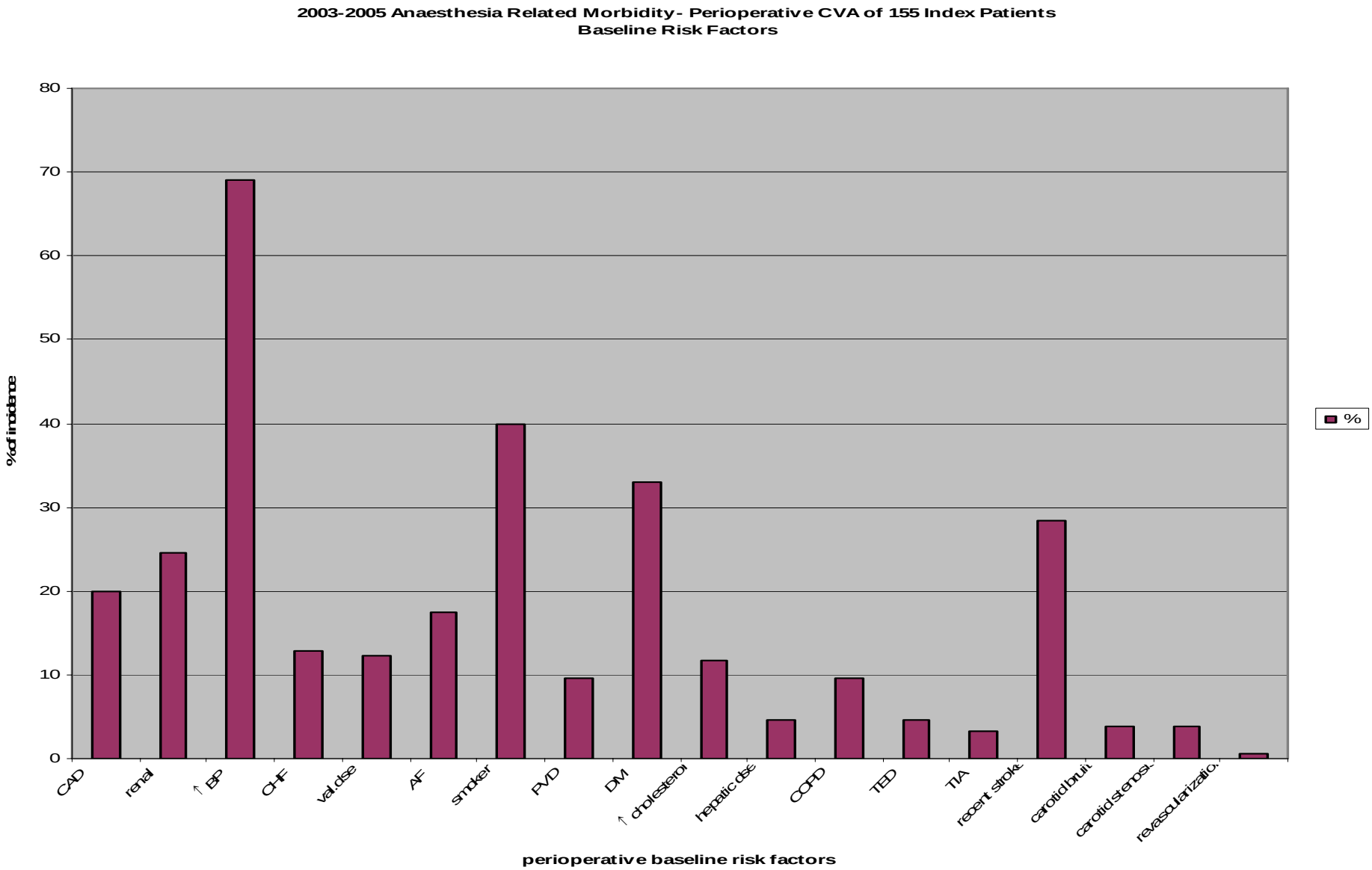
- **Patients over the age of 70 years accounted for 78% of all patients who had stroke after operations in the year 2003 to 2005**

Peri-operative stroke – incident and risk factors

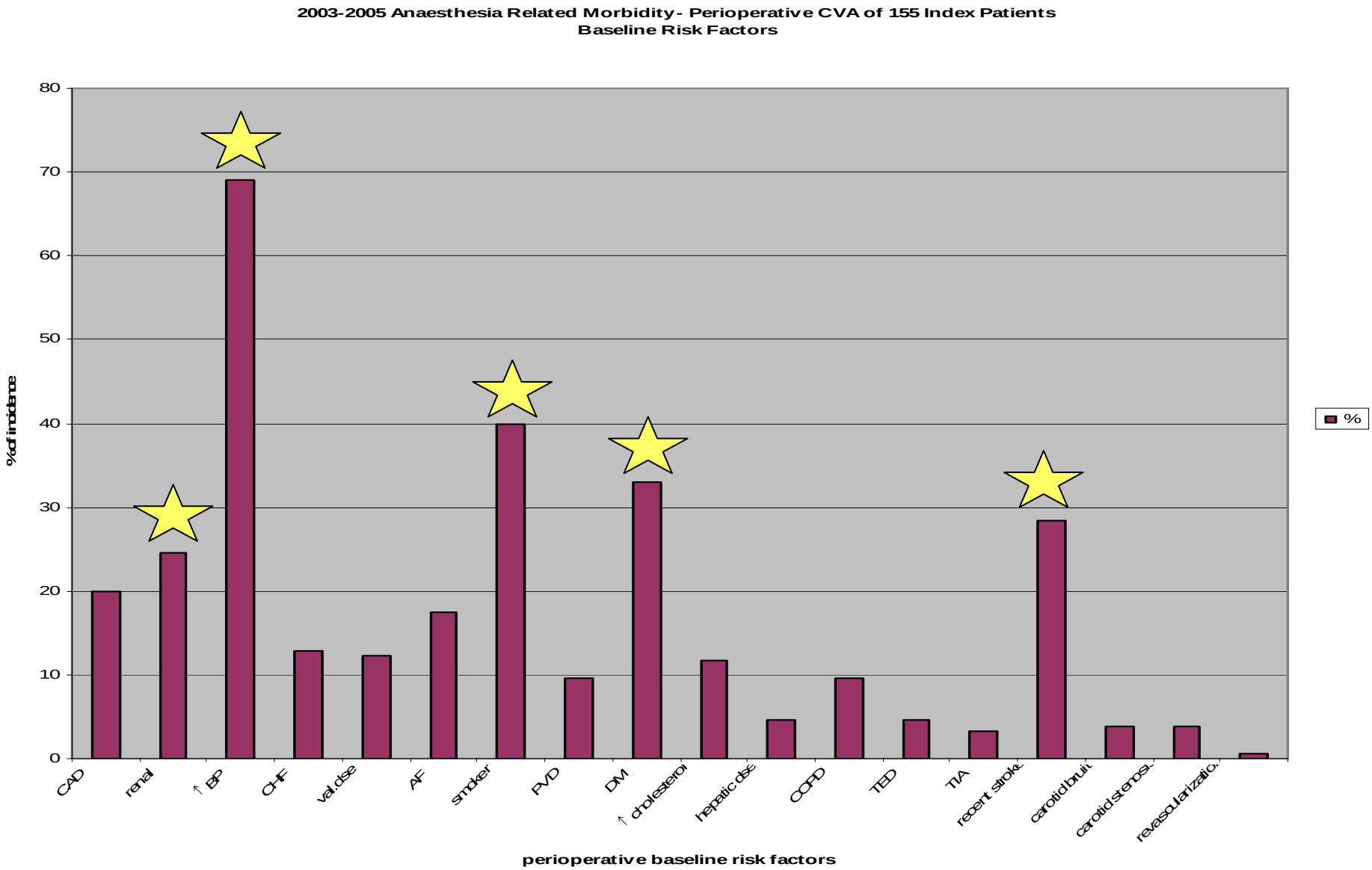
- **Data suggested the male gender was associated with slightly higher risk to develop peri-operative stroke**

- **Male vs female = 53 vs 47%**

Peri-operative stroke – incident and risk factors



Peri-operative stroke – incident and risk factors

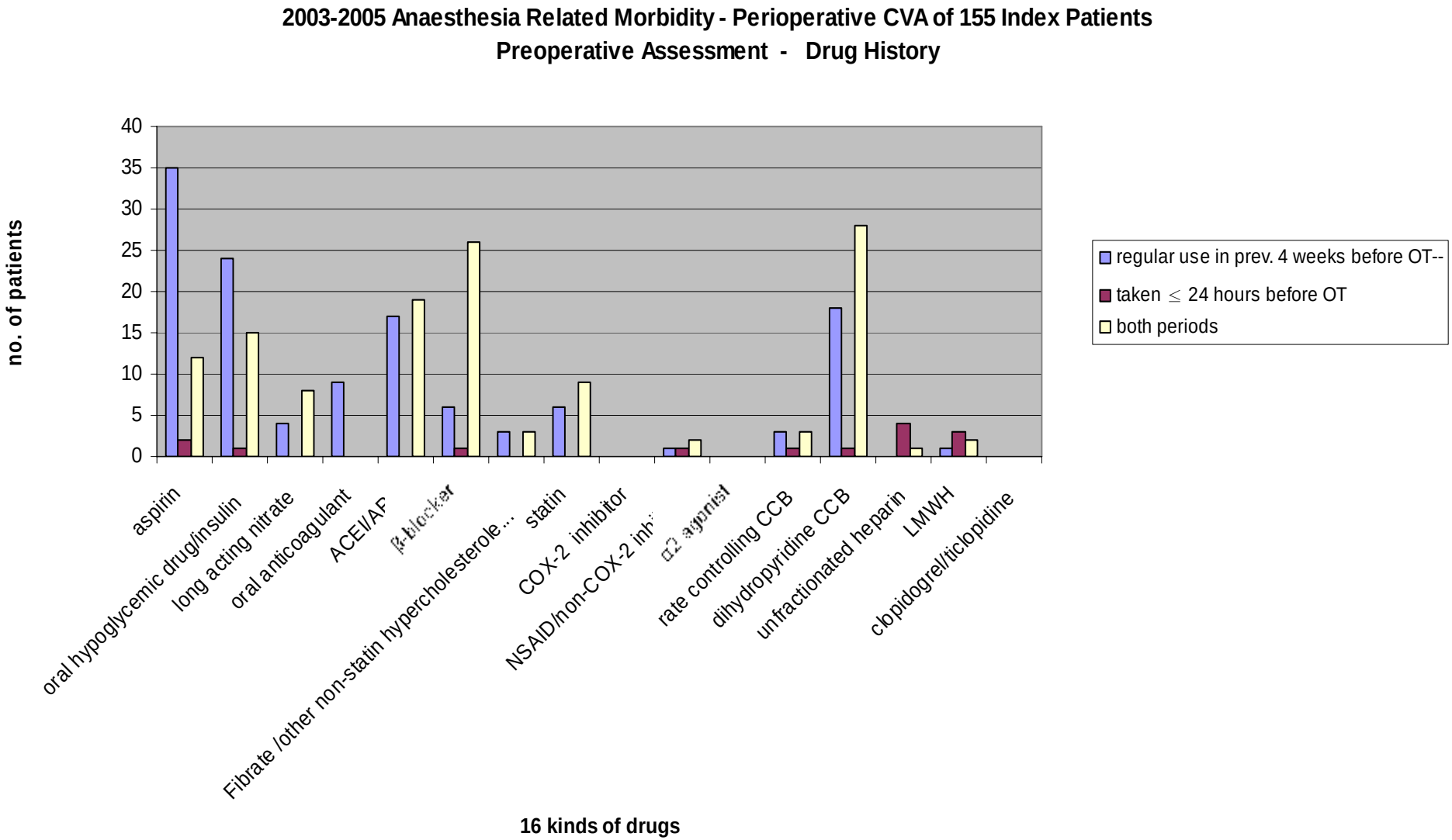


Peri-operative stroke – incident and risk factors

Data suggested the factors that were associated with peri-operative stroke in order of risk level are:

1. **Pre-operative hypertension**
2. **Smoking history**
3. **Diabetic history**
4. **Previous stroke**
5. **Renal impairment**

Peri-operative stroke – incident and risk factors



Peri-operative stroke – incident and risk factors

- **Developing risk predictors for peri-operative stroke**

- **Stroke = A x age**
  + B x gender
  + C x hypertension
  + D x others ..

Peri-operative stroke – incident and risk factors

To obtain the predictive factors:

1. **Match group without peri-operative stroke (1:4)**
2. **Use multivariate analysis technique to obtain a formula**
3. **Fit the new data to assess the predictive value of the formula**

Peri-operative stroke – incident and risk factors

We can make use of the information in:

1. Obtaining consent for operation - accept the risk
2. Before operation - eliminate or reduce the risk factors
3. Intra-operative - develop strategies to reduce the risk
4. Post-operative period – better support
5. Ongoing research / audit - test the formula with improved monitoring or technique

Peri-operative stroke – incident and risk factors

Conclusions:

1. **Multivariate analysis of all the risk factors helps to identify the more important factors that increase the incidence of peri-operative stroke**

2. **Meticulous pre-operative optimisation, intra-operative care and post-operative support of patient's condition may reduce this serious incident**

Peri-operative stroke – incident and risk factors

- **All Audit Co-ordinators**
- **Panel Members of the QA Subcommittee of the COC (Anaesthesiology) HA**
- **Thank you**