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CABG: Current View from China

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Conflict of Interests:

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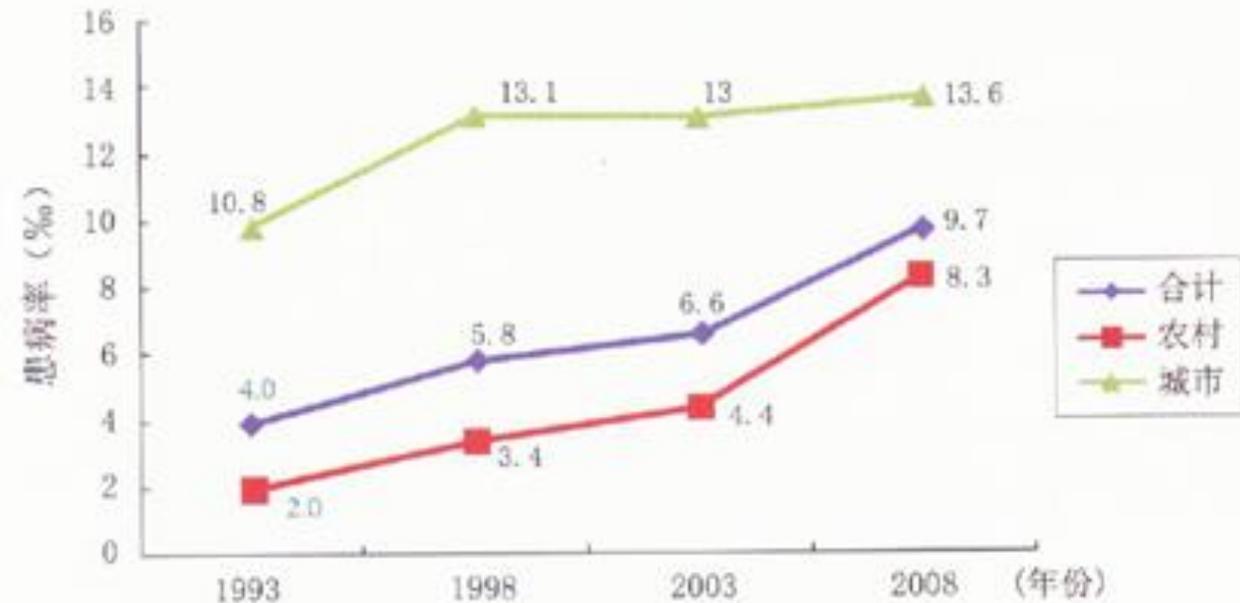
Data Sources

- China Cardiovascular Disease Statistics 2014
- Institute of Clinical Excellence for Cardiovascular Disease (Coronary Intervention), Ministry of Health Statistics 2014
- Chinese Society of Extracorporeal Circulation Statistics 2014
- National Center for Cardiovascular Disease
- Chinese Cardiac Surgery Registry(CCSR)

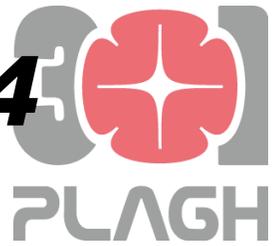
Current coronary artery disease in China



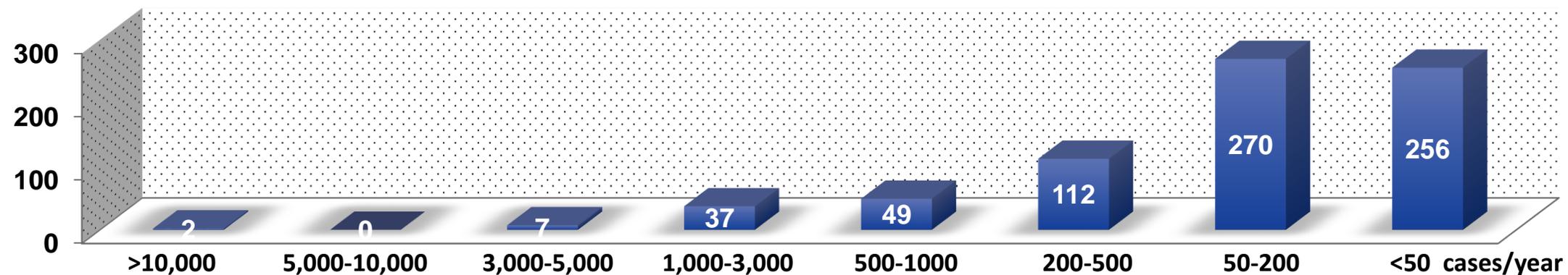
- Mortality: ranks 2nd after stroke, ↑150% over 15-year
 - “China Health Statistics Annuals in 2009” indicated that CAD mortality of urban residents in 2008 was about 91.41 out of 100,000 examined, with 51.89 out of 100,000 surveyed in the rural residents
 - “China Health Statistics Annuals in 2014” indicated that CAD mortality of urban residents in 2013 was about 100.86 out of 100,000 examined, with 98.68 out of 100,000 surveyed in the rural residents
- Prevalence
 - MI=250 million
 - CHF=450 million
- Incidence
 - MI ↑15% p.a. in Beijing



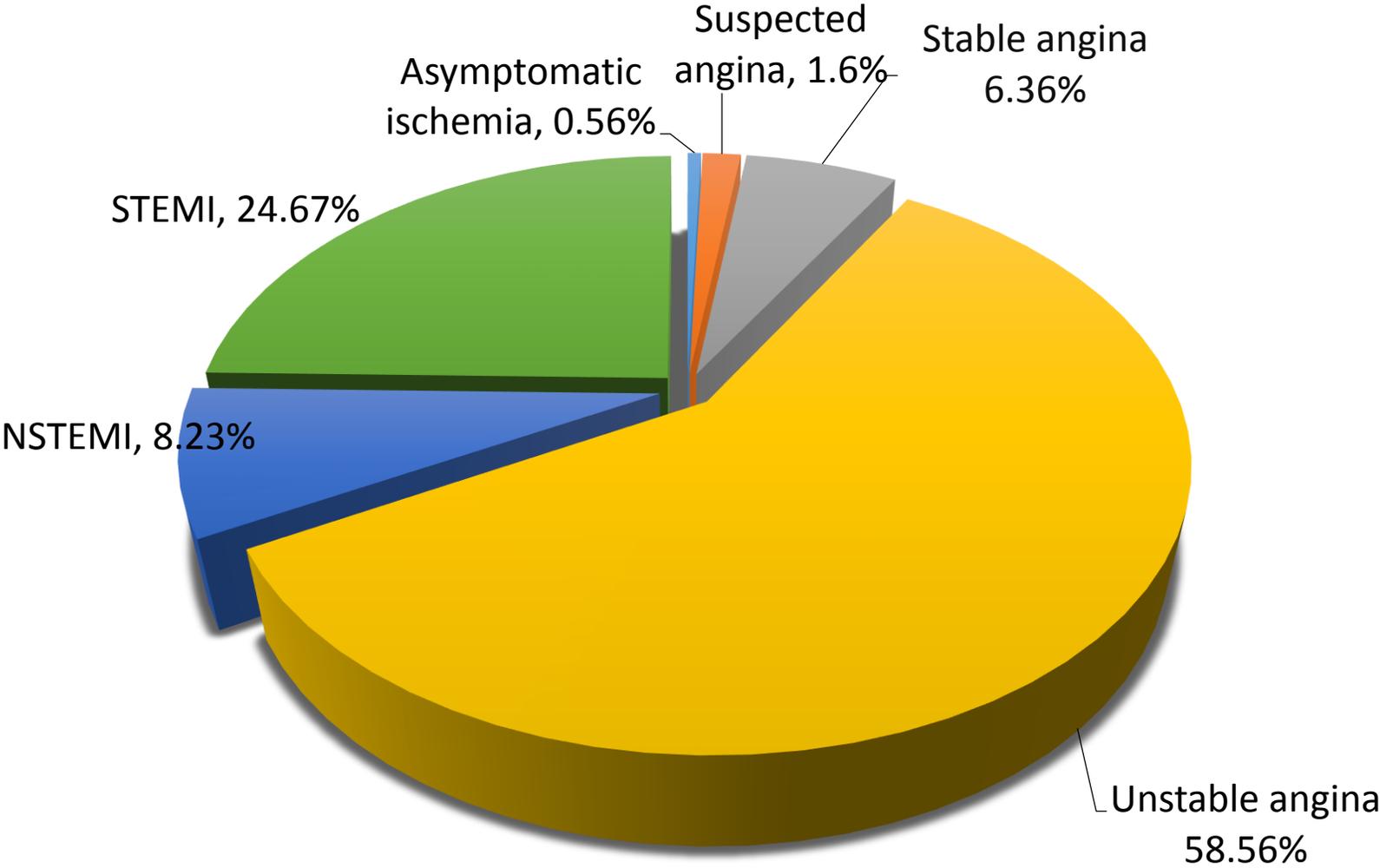
Overview of CV surgery in China in 2014



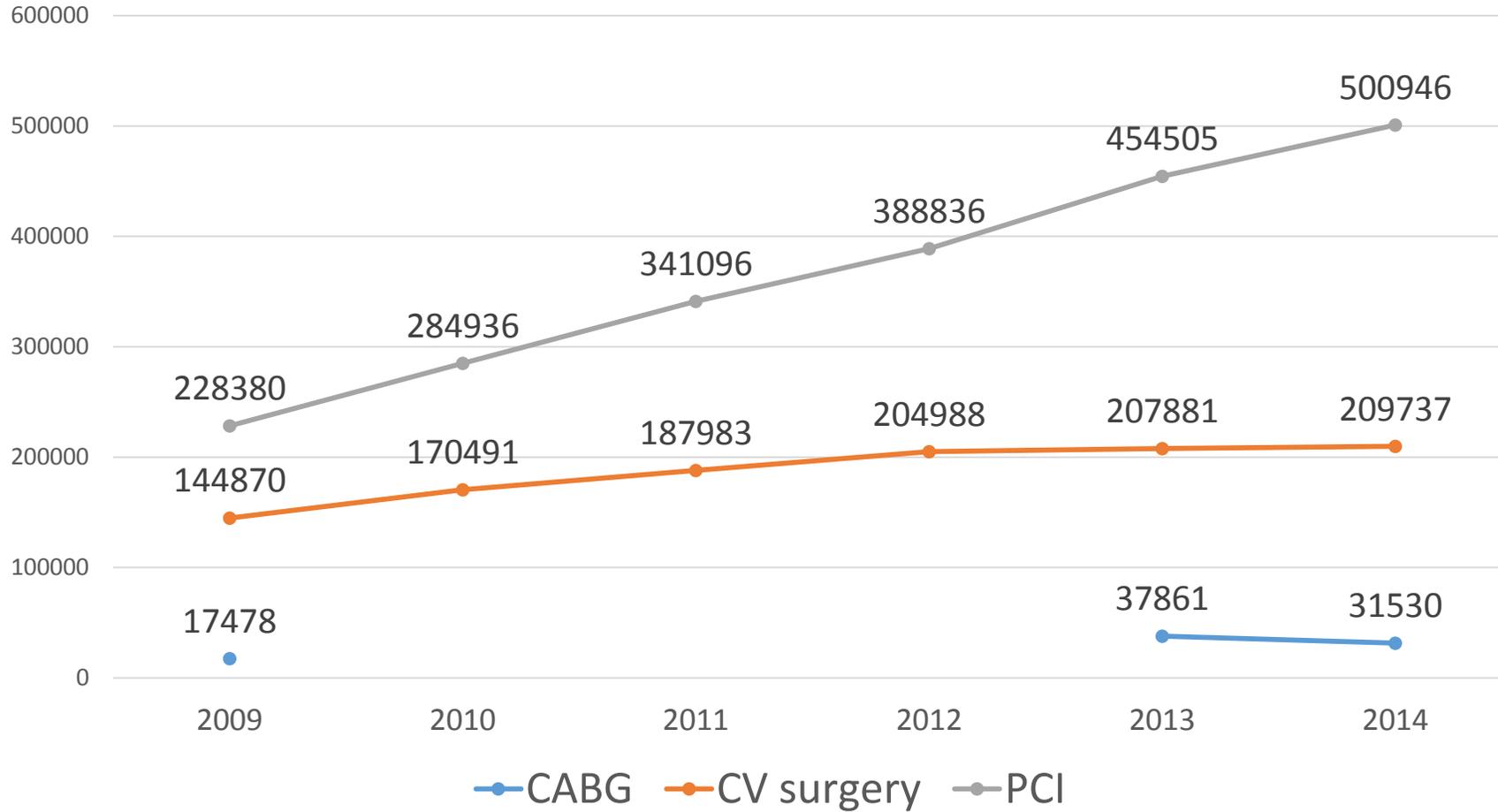
- 733 CV surgical centers (excl. Taiwan)
- Total of 207,881 cases nation-wide
 - 31,530 CABG (15.2%)
 - Off-pump: 60-65%
- The largest 10 centers performed 66% of total cases
- 15% of total cases were completed in Beijing
- 526 centers (72%) had less than 200 cases in 2014



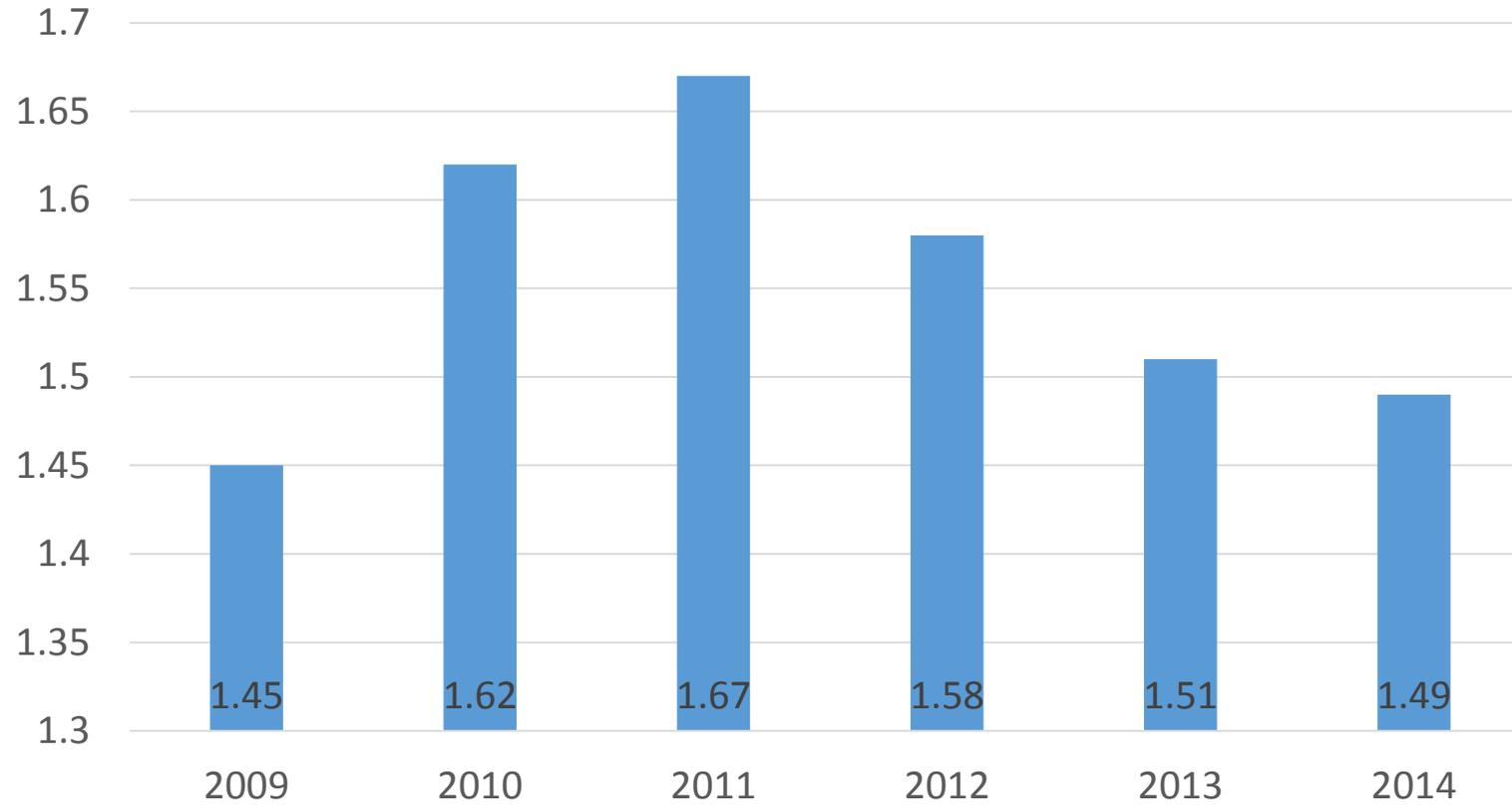
Revascularization indications



Surgical vs PCI cases: 2009-2014



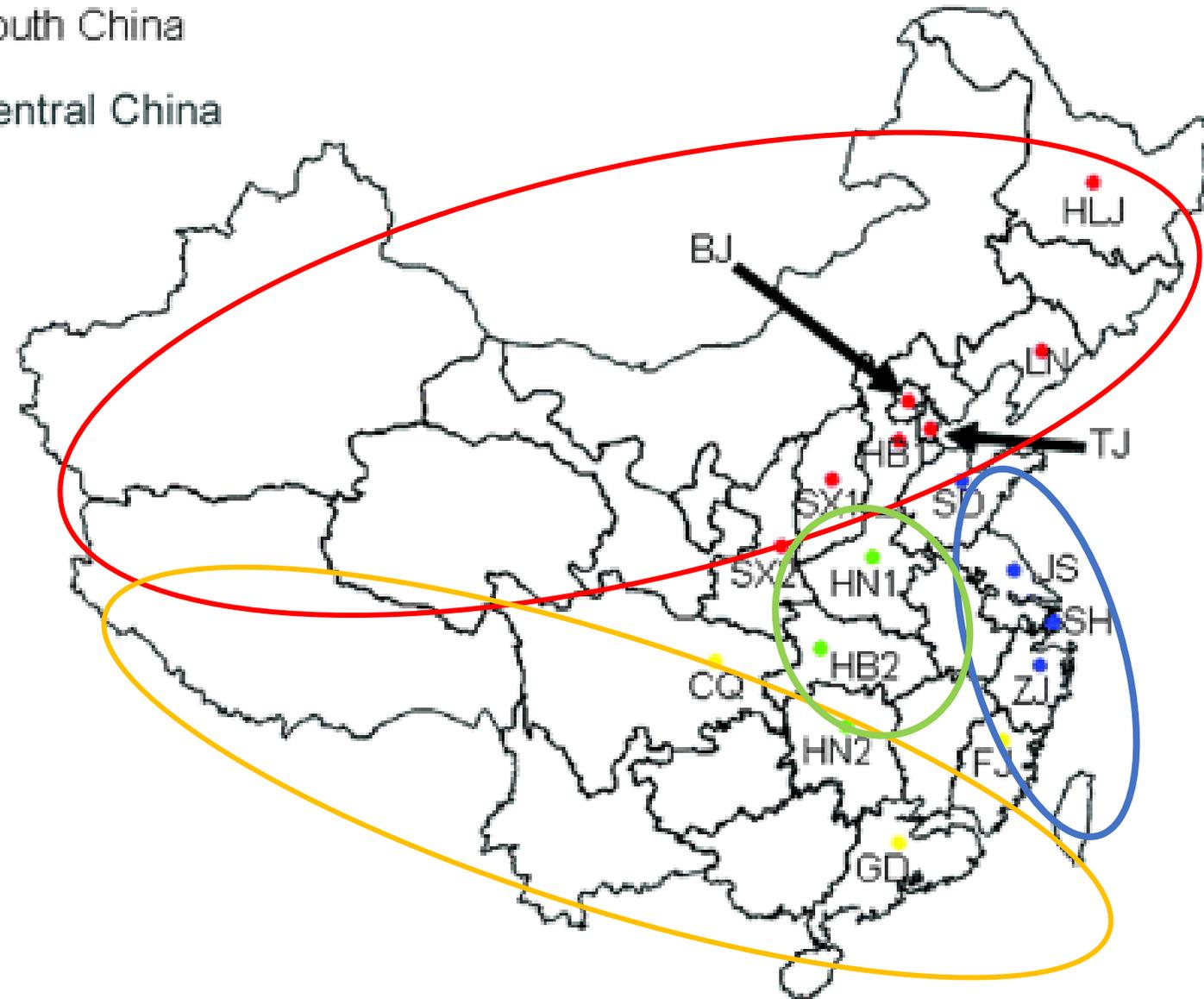
Average stent placements



Operative Mortality

- East China
- North China
- South China
- Central China

- PCI: decreased from 0.33% in 2009 to 0.21% in 2014
- CABG: decreased from 3.9% in 1990 to 1.9% in 2009 (0.7% ~ 5.8%)
 - Area-dependent
 - East: 1.6%
 - South: 1.7%
 - North: 2.0%
 - Central: 2.5%



Procedure types

- Off pump: 60-65%, still on the rise
- On pump
- MIDCAB
- TECAB: 120 cases since 2007
- Hybrid revascularization: single station and separate stages

Summary

1. Incidence, prevalence and mortality of IHD in China continued to rise
2. The main method of revascularization was PCI with growth rate of 10.2% and average of 1.5 stent placements per patient
3. CABG accounted for 15-20% of CV surgical cases in China
4. Mortality rate of CABG was about 1.1% nation wide
5. CABG case number remained stable but ratio dropped 3.2% p.a.
6. Off pump was predominant type of CABG and continued to rise in ratio
7. Minimally invasive CABG and hybrid approach started to emerge

Current challenges and trend

- Heart team should be introduced for optimization of revascularization
- More centers are required for CABG dedication
- Quality of CABG needs to be controlled while variation reduced
 - Revascularization strategy: on vs. off-pump, arterial vs venous conduit, minimally invasive vs conventional approach
 - Surgical outcome should be investigated in long-term
- Main centers have potential to excel in advanced techniques
 - Robotic arterial off-pump CABG had 100% survival and IMA graft patency of 96.5%-100% ~ 7 years