Improving Care for Cardiovascular Disease in China:

A collaborative project of AHA and CSC

Progress Report

2016-2-29

1. Data Collection of Participating Hospitals

Participating hospitals from phase 1 and 2 began to report eligible ACS cases from November 1st 2014 and May 1st 2015. As of December 2015, 29647 ACS cases from 145 hospitals were reported (5 hospitals are in progress of IRB approval). Hospitals began to report eligible AF cases from February 1st 2015 and August 1st 2015. As of December 2015, 11458 AF cases from 135 hospitals were reported. All analysis is performed based on data collected as of December 2015.

As of February 2016, 32175 ACS and 11458 AF cases have been reported.

2. Quality Report

Data for quality reports is exported for analysis on 16th each month and quality reports are uploaded on the CCC website on 20th. By end of January 2016, quality reports for ACS of 2014 Nov to 2015 Dec and AF of 2015 Feb to 2015 Dec have been uploaded on the website.

As of January 2016, a total of 1075 copies of ACS quality reports were created for 135 hospitals (71 hospitals from phase 1 and 64 from phase 2). 78.5% of the hospitals downloaded their ACS quality reports. A total of 515 copies of AF quality reports were created. 51.0% of the hospitals downloaded their AF quality reports.

3. Onsite Monitoring and Quality Control

As of January 2016, a total of 417 times of onsite audits have been conducted, including 145 first-round monitoring and 272 quarterly monitoring. The first-round monitoring covered all the hospitals that reported eligible cases. CRA re-trained the researchers from 15 hospitals that did not follow the case recruitment criteria. Moreover, CRA communicated with every hospital monthly, supervising the modification of queries and progress of data entry. Up to now, 1474 communications have been carried out. Forty-five training courses were carried out for hospitals that changed personal for data entry or with high incompleteness rate.

The onsite monitoring revealed the following questions. First, based on our protocol, AMI cases should be given priority; if AMI cases were less than 20 this month, UAP could be included; but some hospitals did not follow the rules. Second, some cases which should be reported were missed in some hospitals. Third, input error and incompleteness were also found. According to these problems, CRA re-trained the researchers from 15 hospitals that did not follow the rules of case enrollment.

Moreover, the project team began to send monthly progress reports for each participating hospitals via emails since September 2015, including information on number of cases reported monthly, summary of queries, quality report generation and downloads, funds allocated till now. The monthly progress reports for hospitals facilitated the hospital leaders to know the problems in a timely manner and improve the completeness rate of the data reported. With these efforts, the completeness rate of key variables increased from 93.9% in November 2014 to 97.6% in November 2015 for ACS and from 95.7% in February 2015 to 98.7% in November 2015 for AF.

4 Performance measures

4.1 ACS

The composite score of the ACS primary performance measures for all participating hospitals is 76.5% with a wide range of 51.6-90.6%. For STEMI, NSTEMI and UAP patients, the composite scores of the primary performance measures are 75.3%, 80.8% and 76.6%

respectively.

The temporal trend of composite scores of the ACS and STEMI primary performance measures is as follows (Figure 1). Significant increasing trends were found for composite scores of the ACS and STEMI primary performance measures (*P* for trend < 0.05). We also analyzed whether monthly quality reports can help hospitals to improve their performance measures. We found that composite scores of ACS primary performance measures improved significantly in hospitals which downloaded reports, but not in hospitals which did not download the reports.
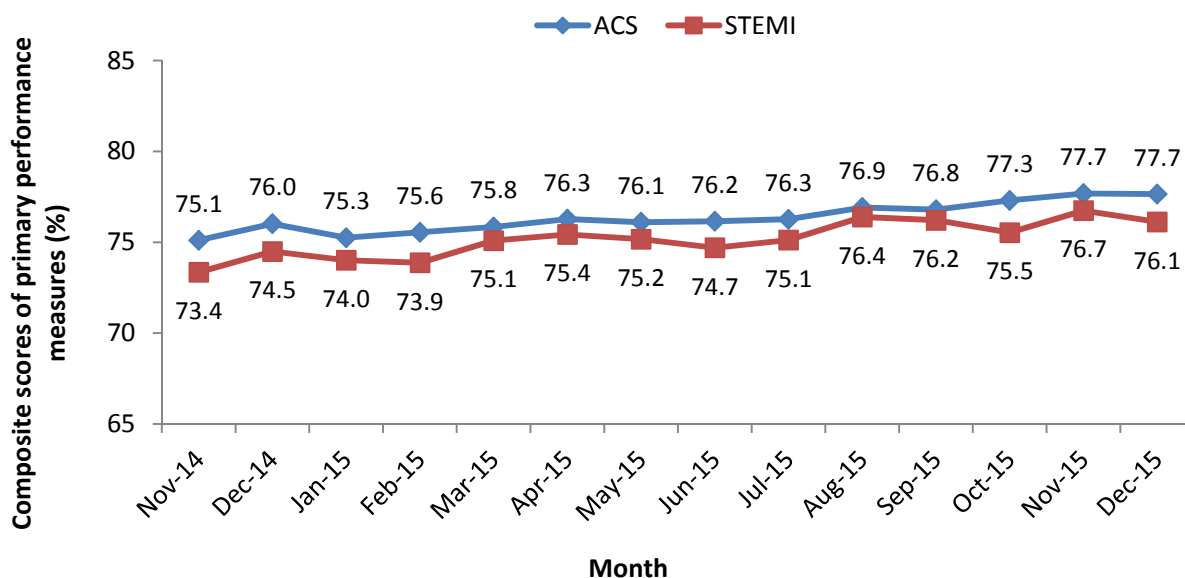
Figure 3.4 Time trends of composite scores of ACS and STEMI primary performance measures

The scores of individual ACS primary and secondary performance measures for all participating hospitals are as follows (Table 1 and 2).

Table 1 Score of individual ACS primary performance measure

No.	Primary performance measures	Individual score (%)
1	Proportion of patients receiving aspirin at arrival (within 24 hours)	95.4
2	Proportion of STEMI patients receiving fibrinolytic therapy within 30 minutes after arrival among those receiving this treatment	27.5
3	Proportion of STEMI patients receiving primary PCI within 90 minutes after arrival among those receiving this treatment	58.1
4	Proportion of STEMI patients receiving reperfusion therapy	53.0
5	Proportion of patients receiving aspirin at discharge	92.5
6	Proportion of patients with indications receiving $P2Y_{12}$ receptor inhibitor at discharge	96.6
7	Proportion of patients with indications receiving a beta-blocker at discharge	66.5
8	Proportion of patients receiving a statin at discharge	92.3
9	Proportion of patients with evaluation for LV systolic function by echocardiography	79.4
10	Proportion of ACS patients receiving an ACE-I or ARB at discharge	58.1
11	Proportion of smoking patients that receiving smoking cessation advice/ counseling	30.0

Table 2 Score of individual ACS secondary performance measure

No.	Secondary performance measures	Individual score (%)
1	Proportion of ACS patients receiving an ECG within 10 minute of hospital arrival	66.6
2	Proportion of ACS patients receiving anticoagulant agent at arrival (within 24 hours)	64.4
3	Proportion of ACS patients receiving heparin at arrival (within 24 hours)	62.5
4	Proportion of patients that had an LDL-Cholesterol assessment	89.4
5	Proportion of STEMI patients receiving $P2Y_{12}$ receptor inhibitor at arrival (within 24 hours)	97.8
6	Proportion of ACS revascularized patients receiving $P2Y_{12}$ receptor inhibitor at discharge	96.6
7	Proportion of ACS non-revascularized patients receiving $P2Y_{12}$ receptor inhibitor at discharge	92.2
8	Proportion of patients with indications receiving both aspirin and $P2Y_{12}$ receptor inhibitor at discharge	94.8
9	Proportion of patients with LVSD receiving an aldosterone blocking agent at discharge	32.0

4.2 AF

The composite score of the AF primary performance measures for all participating hospitals is 46.8%, with a wide range of 7.4-83.5%. The composite score of the AF secondary performance measures for all hospitals is 45.7%, with a wide range of 1.8-85.7%.

The temporal trend of composite scores of the AF primary and secondary performance measures is as follows (Figure 2 and 3). Significant improvements were found for both primary and secondary performance measures (*P* for trend < 0.05). The scores of individual AF primary and secondary performance measures for all participating hospitals are as follows (Table 3 and 4).
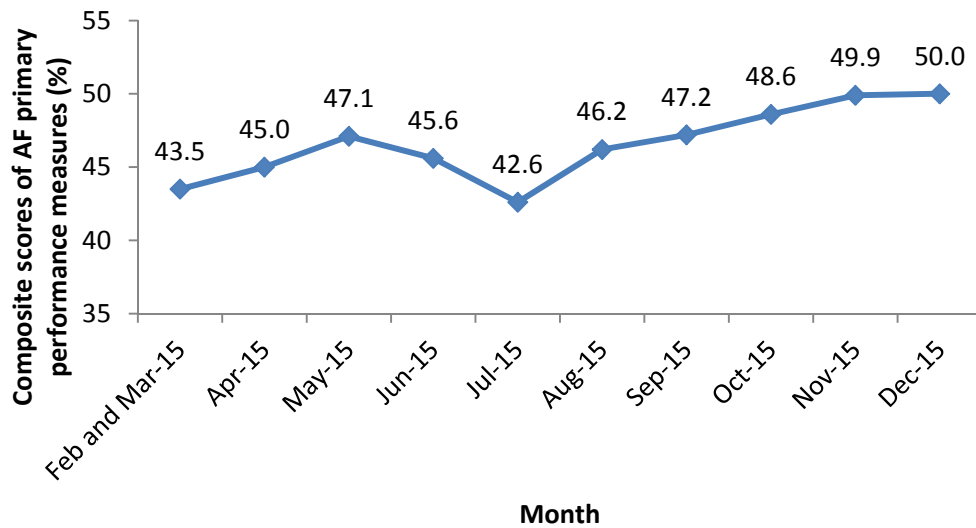

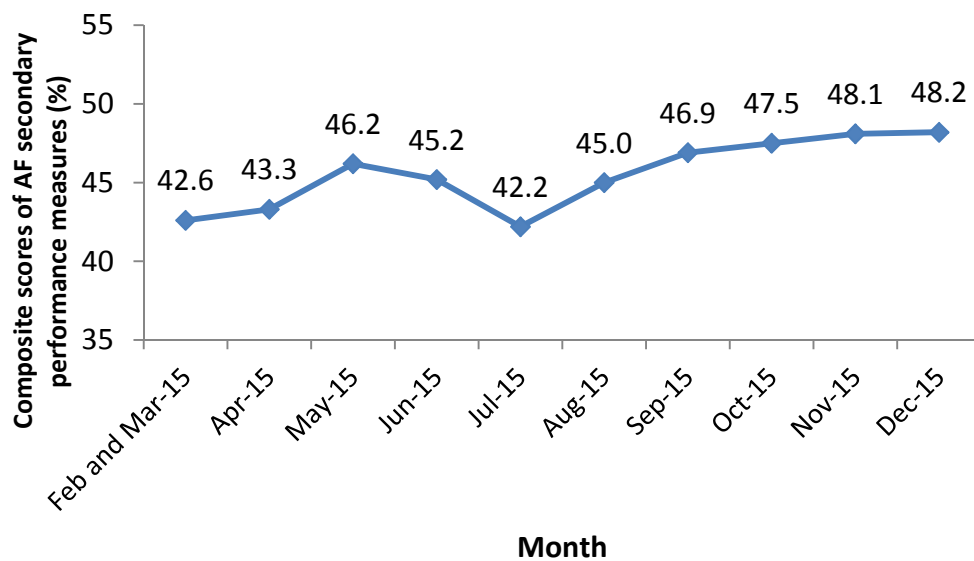**Figure 2 Temporal trends of composite scores of AF primary performance measures**

Figure 3 Temporal trends of composite scores of AF secondary performance measures

Table 3 Score of individual AF primary performance measure

No.	Primary performance measures	Individual score (%)
1	Proportion of patients with nonvalvular atrial fibrillation in whom assessment of thromboembolic risk	19.0
2	Proportion of AF patients with indication prescribed an anticoagulant drug at discharge	45.9
3	Proportion of patients discharged on warfarin who have PT/INR follow-up planned prior to hospital discharge	89.7
4	Proportion of AF patients with indications receiving ACEI/ARB at discharge	54.0
5	Proportion of AF patients with indication prescribed a beta blocker at discharge	55.6
6	Proportion of AF patients with indication prescribed a statin at hospital discharge	60.4

Table 4 Scores of individual AF secondary performance measure

No.	Secondary performance measure	Individual score (%)
1	Proportion of nonvalvular AF patients who had a $CHADS_2$ score reported	12.5
2	Proportion of nonvalvular AF patients who had a CHA_2DS_2-VASc score reported	14.4
3	Proportion of AF patients who have a documented resting heart rate of <80 bpm closest to hospital discharge	64.6
4	Proportion of providing anticoagulation therapy education	89.5
5	Proportion of AF patients that receiving conventional medical education	87.1
6	Proportion of AF patients with indication prescribed aldosterone antagonist at discharge	70.9
7	Proportion of valvular AF patients prescribed warfarin at discharge	30.7
8	Proportion of AF patients who are given smoking cessation advice or counseling	19.0

4.3 Summary

1. Preliminary analysis identified major problems in quality of care for ACS and AF inpatients and key points for quality improvement in tertiary hospitals of China;

2. Timely feedback of the quality of care by monthly quality reports is helpful for hospitals to identify problems in performance and to improve the quality of care;

3. During the first year of CCC project, many hospitals have made significant improvement in the quality care for ACS and AF. With everyone's efforts, this project will continuously contribute to the improvement in quality of care for cardiovascular disease in China.

5. Webinar

The second CCC webinar was held on January 19th, focusing on "**Importance of risk assessment for thromboembolic events for patients with non-valvular atrial fibrillation**". The third webinar will be presented on March on use of Beta Blockers.

6. Regional workshops

Regional workshop for atrial fibrillation was held on 12th December 2015 in Beijing, focusing on thromboembolism risk assessment and anticoagulation in patients with atrial fibrillation. Representatives of 33 hospitals from 9 providences near Beijing participated in the workshop. At the beginning of the workshop, current status of atrial fibrillation management in China was reviewed. Pilot results for CCC project implied that the proportion of thromboembolism risk assessment (<20%) and anticoagulation (<45%) were very low. Presentations were given on importance of risk assessment for thromboembolic events for patients with non-valvular atrial fibrillation. Finally, representatives from participating hospitals shared their experiences in clinical practices for atrial fibrillation management.