

Special paper

Percutaneous interventions in cardiology in Poland in the year 2014. Summary report of the Association of Cardiovascular Interventions of the Polish Cardiac Society AISN PTK

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Abstract

Introduction: The Board of the Association of Cardiovascular Interventions of the Polish Cardiac Society (AISN PTK) publishes annual data from the National PCI Registry (ORPKI) operated by the Jagiellonian University Medical College in Krakow.

Aim: For the first time the AISN PTK report is based on the new electronic database implemented in Poland on January 1st, 2014.

Material and methods: In 2014, there were 155 invasive cardiology centers registered in the ORPKI database (an increase by 1 center in comparison to 2013) and 92% of them had 24/7 percutaneous (PCI) duty. For the first time the number of catheterization laboratories (cath labs) in Poland remained stable, and even though there was an increase by 1 in absolute numbers, 2 cath labs ceased to admit patients in 2014. This means that the number of active cath labs per 1 million inhabitants is similar to last year and equals 4.

Results: In comparison to 2013, there was a significant increase in the total number of coronary angiographies. There were 226 713 angiographies in 2014. The total number of PCI procedures was 126 241, which is 5.1% more than in 2013.

Conclusions: There was a significant increase in the overall number of coronary angiographies and PCIs in Poland in 2014. The use of attributes of modern interventional cardiology such as drug-eluting stents and bioabsorbable vascular stents is growing as well as more frequent choice of a radial access site by PCI operators even in ST-elevation myocardial infarction patients. One should also note a significant rise in the use of additional imaging or diagnostic tools such as fractional flow reserve, intravascular ultrasound and optical coherent tomography.

Key words: registry, acute coronary syndromes, coronary angiography.

The Board of the Association of Cardiovascular Interventions of the Polish Cardiac Society (AISN PTK) publishes annual data from the National PCI Registry (ORPKI) operated by the Jagiellonian University Medical College in Krakow. For the first time the AISN PTK report is based on the new electronic database implemented in Poland on January 1st, 2014 and verified independently by data submitted to AISN PTK by individual centers.

In 2014, there were 155 invasive cardiology centers registered in the ORPKI database (an increase by 1 center in comparison to 2013) and 92% of them had 24/7 percutaneous coronary intervention (PCI) duty. For the first time the number of catheterization laboratories (cath labs) in Poland remained stable, and even though there was an increase by 1 in absolute numbers, 2 cath labs ceased to admit patients in 2014. This means that

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the number of active cath labs per 1 million inhabitants is similar to last year and equals 4. There are 571 certified independent PCI operators in Poland in 2015 with 100% of them having any board certification and 74% in cardiology. Center accreditation issued by AISN PTK was awarded to 104 cath labs.

In comparison to 2013, there was a significant increase in the total number of coronary angiographies. There were 226 713 angiographies in 2014 (an increase by 4.8%) – Figure 1. Patients’ baseline characteristics and prevalence of risk factors are presented in Table I.

The reason for performing coronary angiography in Polish patients in 2014 is presented in Table II. In more than half of the cases it was the diagnosis of an acute coronary syndrome.

A radial approach is used in as many as 66% of all cases of coronary angiography, which represents a 13% rise since 2013. The right radial artery is predominant

when radial access is chosen (87%). Radial access site choice according to baseline diagnosis is presented in Figure 2.

Common complications of coronary angiography were rare in 2014 and occurred predominantly in myocardial infarction cases. Detailed description and odds of occurrence are presented in Table III.

The total number of PCI procedures was 126 241, which is 5.1% more than in 2013. The change in overall number of PCIs in the last 10 years is presented in Figure 3.

Percutaneous coronary interventions performed in acute coronary syndromes accounted for 62% of all PCI cases in 2014 – details are presented in Table IV. There were 26 678 primary PCIs in a ST-elevation myocardial infarction (STEMI) setting, which is similar to 2013 and translates into 692 primary PCIs per 1 million inhabitants in STEMI in Poland in 2014, which puts us in 4th place in Europe according to the recent paper from the Europe-

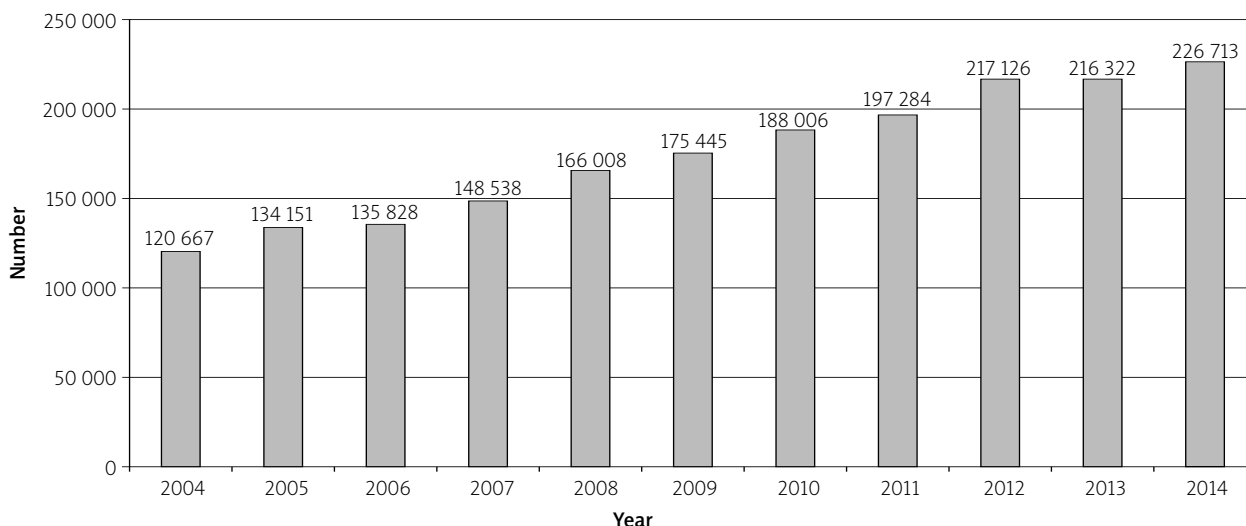


Figure 1. The number of coronary angiography procedures in Poland in the years 2004–2014

Table I. Demographics and prevalence of risk factors in patients who underwent coronary angiography in 2014

Name	Percent or mean
Age	66.2 ±10.9
Gender, female	38
Prior stroke	3.2
Prior myocardial infarction	22.7
Prior PCI	25
Prior CABG	5.8
Smoking	17.5
Arterial hypertension	71.5
Chronic kidney disease	5.2

PCI – Percutaneous coronary intervention, CABG – coronary artery bypass graft.

Table II. Baseline diagnosis in patients who underwent coronary angiography

Diagnosis	Percent
STEMI	12.2
NSTEMI	13.4
Unstable angina	29.8
Stable CAD	39.9
Other	4.7

STEMI – ST-elevation myocardial infarction, NSTEMI – non-ST-elevation myocardial infarction, CAD – coronary artery disease.

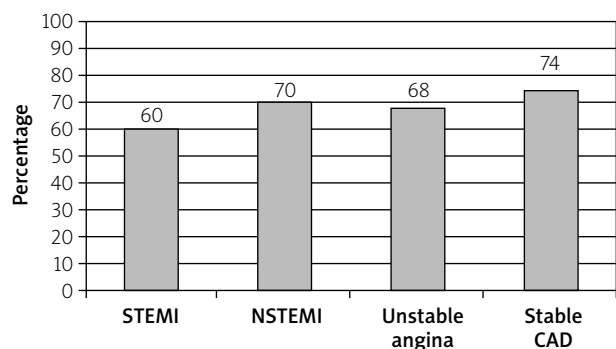


Figure 2. Radial approach according to diagnosis

Table III. Periprocedural complications – coronary angiography

Name	Percent	Occurrence
Death:	0.047	1/2130
In STEMI/NSTEMI	0.12	1/850
In stable CAD	0.04	1/2378
Stroke	0.015	1/6528
Major bleeding from access site	0.051	1/1965
Cardiac arrest	0.232	1/431
Anaphylaxis	0.045	1/2224

STEMI – ST-elevation myocardial infarction, NSTEMI – non-ST-elevation myocardial infarction, CAD – coronary artery disease.

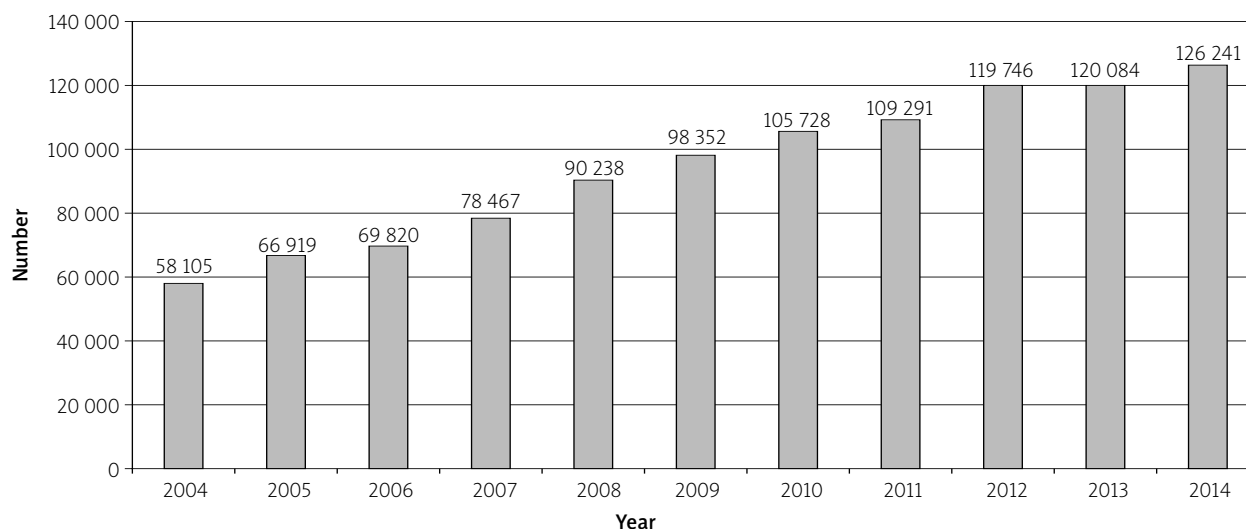


Figure 3. The number of coronary angioplasty procedures in Poland in the years 2004–2014

Table IV. Percutaneous coronary intervention in acute coronary syndrome

Diagnosis	Percent
STEMI	33
NSTEMI	28
UA	39
All	100

STEMI – ST-elevation myocardial infarction, NSTEMI – non-ST-elevation myocardial infarction, UA – unstable angina.

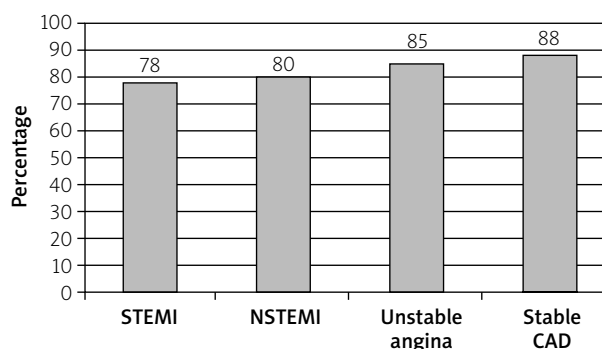


Figure 4. Drug-eluting stents by diagnosis in 2014

an Heart Journal on implementation of the Stent For Life program and is lower than in 2013.

Drug-eluting stents (DES) during PCI were used in 83.5% of cases which is 16.5% more than in 2013 and is steadily rising since 2008. Bioabsorbable vascular stents (BVS) were implanted in 1.5% of patients (both in acute

coronary syndrome (ACS) and in stable angina). In patients with stable angina the prevalence of DES stents was as high as 88% – see details in Figure 4. On the other hand, there was a 34% decrease in the use of GP IIb/IIIa blockers in the overall population. In patients with STEMI GP IIb/IIIa were used (elective and bail-out) in only 1/3

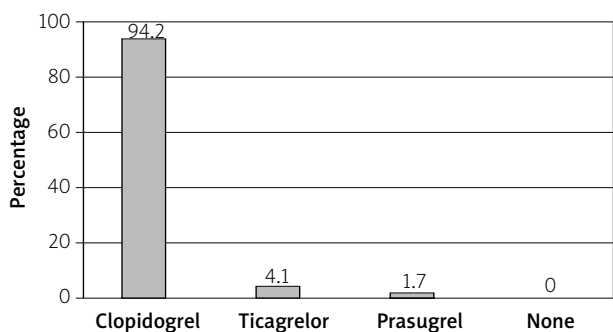


Figure 5. Antiplatelet agents in ST-elevation myocardial infarction

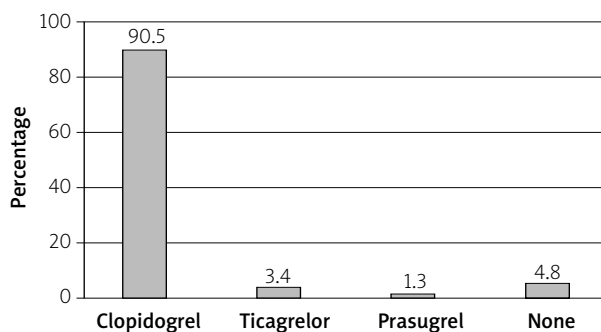


Figure 6. Antiplatelet agents in non-ST-elevation myocardial infarction

of cases. Aspiration thrombectomy was rare (17.8%) in STEMI cases.

The use of modern antiplatelet agents advised by the ESC guidelines such as ticagrelor and prasugrel was very low in 2014 in Poland and less than 6% in STEMI and non-ST-elevation myocardial infarction (NSTEMI) populations – for details see Figures 5 and 6.

Percutaneous coronary intervention complications during PCI were highest (death) in a STEMI setting and are presented in Table V.

A noticeable increase in the rate of modern diagnostic procedures other than coronary angiography (e.g. intravascular ultrasound – IVUS, fractional flow reserve – FFR, optical coherent tomography – OCT) was observed in 2014. There were 4019 FFR procedures (increase by 85%), 1884 IVUS examinations (increase by 30%) and 371 OCTs (increase by 89%).

Percutaneous extracardiac procedures were also gathered in the new ORPKI database. In 2014 transcatheter aortic valve implantation (TAVI) was performed in 451 patients, percutaneous left atrial appendage closure in 137 cases and therapeutic hypothermia after sudden

cardiac arrest in 115. The numbers of selected non-coronary procedures in 2014 are presented in Table VI.

In summary, there was a significant increase in the overall number of coronary angiographies and PCIs in Poland in 2014. The number of active cath labs in Poland remains stable for the 2nd consecutive year though, which might relate to the fact that the country is now well saturated with interventional cardiology centers. On

Table V. Periprocedural complications – percutaneous coronary intervention

Parameter	Percent	Occurrence
Death	0.49	1/204
STEMI	1.61	1/62
NSTEMI	0.52	1/192
Stable CAD	0.12	1/843
Myocardial infarction	0.12	1/812
Major bleeding from access site	0.13	1/783
Cardiac arrest	0.43	1/234
Anaphylaxis	0.13	1/812
Artery perforation	0.17	1/598
No reflow	0.61	1/181

STEMI – ST-elevation myocardial infarction, NSTEMI – non-ST-elevation myocardial infarction, CAD – coronary artery disease.

Table VI. The number of selected non-coronary procedures in 2014, performed in cardiac centers for adults in Poland

Selected procedures	Number, n
PTA below the knee	481
PTA above the knee	1599
Carotid artery stenting	662
Vertebral artery stenting	50
Renal artery stenting	66
Subclavian artery stenting	150
Mitral valvuloplasty	57
Pulmonary valvuloplasty	50
BAV	203
PFO closure	339
ASD closure	333
VSD closure	10
PDA closure	76
LAA closure – percutaneous	137
TAVI	451
Therapeutic hypothermia	115
Renal denervation	39
Myocardial biopsy	740

ASD – Atrial septal defect, BAV – balloon aortic valvuloplasty, LAA – left atrial appendage, PDA – patent ductus arteriosus, PFO – patent foramen ovale, PTA – percutaneous transluminal angioplasty, VSD – ventricular septal defect.

the other hand, the use of attributes of modern interventional cardiology such as DES and BVS stents is growing as well as more frequent choice of a radial access site by PCI operators even in STEMI patients. One should also note a significant rise in the use of additional imaging or diagnostic tools such as FFR, IVUS and OCTs in Poland in 2014.

Conflict of interest

The authors declare no conflict of interest.

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