

ORIGINAL ARTICLE

The workload of the Interventional Cardiology Centers from Romania: a 2019 overview and 2014-2019 trends

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Abstract: This article provides data of the workload of the interventional cardiology centers from Romania during 2019. Members from all interventional cardiology centers from Romania were requested to fill a standard form about the total number of various procedures performed during 2019. The report highlights the total number of coronary interventions, peripheral interventions, and interventions for structural heart diseases, that were performed in 2019 in Romania. A comparison of the workload of the interventional cardiology centers from Romania between 2014 to 2019 was done.

Keywords: interventional cardiology, percutaneous coronary interventions, stents.

Rezumat: Acest articol oferă date despre volumul de lucru al centrelor de cardiologie intervențională din România în cursul anului 2019. Membrii din toate centrele de cardiologie intervențională din România au fost rugați să completeze un formular standard despre numărul total de proceduri intervenționale efectuate în cursul anului 2019. Raportul evidențiază numărul total de intervenții coronariene, intervenții periferice și intervenții pentru boli structurale cardiace, care au fost efectuate în 2019 în România. S-a făcut o comparație între volumul de lucru al centrelor de cardiologie intervențională din România între anii 2014 și 2019.

Cuvinte cheie: cardiologie intervențională, intervenții coronariene percutane, stenturi.

This article provides data of the workload of the interventional cardiology centers from Romania during 2019 and it highlights the trends in coronary or peripheral interventions between 2014 and 2019¹⁻⁵. Members from all interventional cardiology centers from Romania were requested to fill a standard form about the total number of various procedures performed during 2019. Data was collected from 34 of 36 interventional cardiology centers from Romania at the initiative of the Interventional Cardiology Working Group of Romanian Society of Cardiology.

Table I summarizes the data from 2019 provided by 34 public and private interventional cardiology centers from Romania. Currently, there are 36 interventional cardiology centers in Romania, of which 12 are private centers and 24 public centers. In 2019, in Romania were 58 interventional cardiologists in training.

The annual number of PCIs in every interventional cardiology center from Romania is represented in Figure 1. A direct comparison of data from 2014 to 2018 was done, that highlights the continuous increase of workload of the interventional cardiology centers from Romania (Figure 2). However, we can see that the sharp increase in the total number of PCIs between 2014-2016 flattened between 2017-2019. In 2019, in Romania, 21783 PCIs were performed.

In 2019 the downward trend of the total number of primary PCIs performed in STEMI patients continues (Figure 3). This can reveal problems in funding the program or how these cases are reported.

From 2014 to 2019 the total number of implanted stents and the percentage of drug eluting stents increased yearly (Figure 4). In 2019 were implanted 30207 drug eluting stents.

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Although, from 2014 to 2018 the total number of peripheral angioplasties doubled, in 2019 there was a decreased in this regard by 13% (Figure 5).

Although the number of TAVI procedures doubled every year, the number of endovascular aortic repair procedures and interventions in structural heart diseases declined in 2019 compared to 2018 (Figure 6).

There is a continuous need of implementing a Mandatory Interventional Cardiology National Registry, capable of monitoring objectively these key health care services in a standard manner. This national registry can guide further development of the interventional cardiology in Romania¹⁻⁵.

Table I. Reported data from all Interventional Cardiology Centers from Romania in 2019

City	Bucuresti	Bucuresti	Bucuresti	Bucuresti	Bucuresti	Bucuresti	Bucuresti
Hospital	IUBCV CC Iliescu	SUUB	Floreasca	Sp. Agrippa Ionescu	Sp. Militar	Sp. Bagdasar Arseni	Sp. Elias
Nr. Of Cathlabs	2	2	1	1	2	1	2
Nr. Independent operators	7	6	5	3	4	2	6
Nr. of in training operators	12	8	3	0	3	2	4
Coronary Interventions							
Coronarography	4233	1070	2340	1290	2226	821	532
Total nr. of PCI	1725	1272	1305	256	883	411	761
PCI without stents	134	70	15	2	12	4	40
PCI with stents	1591	1202	1290	254	871	407	721
STEMI	687	1116	910	12	222	43	294
PCI left main	89	65	NR	NR	23	32	NR
Stents per patient	1.52	1.46	1.38	1.35	1.34	1.1	1.1
Total nr. of stents	2428	1863	1784	345	1190	442	853
Nr. of DES	2428	1805	1784	345	1093	438	846
DES/stents ratio (%)	100	97	100	100	92	99	99
BVS	0	0	0	0	3	0	0
Cutting, Scoring	9	6	3	3	16	1	0
Rotablation	9	0	10	0	0	0	0
FFR/IFR	11	10	20	18	0	0	0
IVUS	13	3	12	1	0	0	0
OCT	0	8	9	1	0	0	0
Peripheral interventions							
Peripheral PTA	265	NR	0	35	232	2	14
Renal PTA	6	25	0	1	13	1	0
Carotid PTA	17	67	0	25	25	0	0
Total nr. of stents in peripheral PTA	195	NR	0	37	191	3	4
Peripheral angiography	755	NR	0	321	510	84	100
Other interventions							
TAVI	133	31	0	16	11	0	0
MitraClip	0	0	0	0	0	0	0
Aortic endoprosthesis	12	1	0	4	3	0	0
Interventions in structural heart disease	22	8	0	0	0	0	0

* Number of peripheral angioplasty (lower and upper limbs artery, not including carotid arteries)

** Interventions in cardiac structural diseases: percutaneous closures of DSA, DSV, PFO, arterial duct, balloon valvulotomies, left atrial appendage closure

(PCI - percutaneous coronary intervention, STEMI - ST segment elevation myocardial infarction, DES - drug eluting stent, BVS - bioresorbable vascular scaffold, FFR - fractional flow reserve, IFR - instantaneous wave-free ratio, IVUS - intravascular ultrasound, OCT - optical coherence tomography, PTA - percutaneous transluminal angioplasty, TAVI - transcatheter aortic valve implantation).

City	Bucuresti	Bucuresti	Bucuresti	Bucuresti	Bucuresti	Bucuresti	Cluj Napoca
Hospital	Sp. Sf. Ioan	Sanador	Ares - Monza Bucuresti	Colentina	Medlife	CDT Victor Babes	Institutul Inimii Cluj
Nr. Of Cathlabs	1	2	4	1	1	1	2
Nr. Independent operators	1	10	7	1	3	2	10
Nr. of in training operators	0	0	1	1	0	0	1
Coronary Interventions							
Coronarography	403	1117	1358	318	517	67	2035
Total nr. of PCI	104	132	423	100	161	32	1713
PCI without stents	7	3	15	0	5	2	273
PCI with stents	97	129	408	100	156	30	1440
STEMI	7	9	10	1	4	0	418
PCI left main	2	3	70	6	10	0	57
Stents per patient	1.28	1	2.5	1.6	1.4	2.36	1.47
Total nr. of stents	134	129	1060	159	221	71	2529
Nr. of DES	125	129	1060	159	221	71	2500
DES/stents ratio (%)	93	100	100	100	100	100	98
BVS	0	0	0	0	0	0	0
Cutting, Scoring	0	0	21	2	5	1	20
Rotablation	0	3	9	0	0	0	3
FFR/IFR	0	0	0	0	0	0	102
IVUS	0	0	2	0	0	0	68
OCT	0	0	0	0	0	0	8
Peripheral interventions							
Peripheral PTA	21	60	68	8	37	4	94
Renal PTA	7	2	2	0	1	0	11
Carotid PTA	0	1	15	0	12	0	32
Total nr. of stents in peripheral PTA	27	15	36	4	77	4	121
Peripheral angiography	134	446	315	21	174	13	287
Other interventions							
TAVI	0	20	37	0	0	0	90
MitraClip	0	0	3	0	0	0	0
Aortic endoprosthesis	0	8	1	0	0	0	21
Interventions in structural heart disease	0	1	27	0	5	0	5

City	Cluj Napoca	Cluj Napoca	Cluj Napoca	Iasi	Iasi	Târgu Mureș	Târgu Mureș
Hospital	SCJU Cluj	Monza-Ares Cluj	Sp. Recuperare Cluj	IBCV Iași	Arcadia Iasi	IBCV Tg Mureș	CardioMed Tg. Mures
Nr. Of Cathlabs	1	2	1	2	1	2	2
Nr. Independent operators	3	4	2	6	2	5	5
Nr. of in training operators	3	1	1	2	0	1	0
Coronary Interventions							
Coronarography	1329	342	751	3500	971	1924	236
Total nr. of PCI	741	166	305	1456	156	1278	251
PCI without stents	28	8	35	84	4	135	30
PCI with stents	713	158	270	956	152	1143	221
STEMI	192	0	10	756	0	359	0
PCI left main	52	NR	7	50	NR	195	NR
Stents per patient	2.12	1.6	1.4	1.4	1.24	1.29	1.21
Total nr. of stents	1482	251	322	2582	194	1649	290
Nr. of DES	1482	251	310	2292	194	1649	286
DES/stents ratio (%)	1	100	96	88	100	100	98
BVS	0	0	0	0	0	0	0
Cutting, Scoring	0	7	0	12	0	20	0
Rotablation	0	1	0	0	0	7	0
FFR/IFR	0	5	0	0	0	40	36
IVUS	0	0	0	0	0	0	36
OCT	14	0	0	0	0	26	37
Peripheral interventions							
Peripheral PTA	155	64	75	40	28	85	66
Renal PTA	4	1	2	5	0	1	0
Carotid PTA	3	22	0	14	11	33	0
Total nr. of stents in peripheral PTA	154	81	0	50	NR	59	1
Peripheral angiography	339	57	152	142	109	250	20
Other interventions							
TAVI	0	0	0	13	0	29	0
MitraClip	0	0	0	0	0	0	0
Aortic endoprosthesis	0	1	0	7	0	21	0
Interventions in structural heart disease	0	9	0	7	3	41	0

City	Târgu Mureș	Târgu Mureș	Timișoara	Brașov	Brașov	Oradea	Arad
Hospital	SCJU Tg Mureș	Nova Vita Tg. Mures	IBCV Timișoara	Clinicco Brasov	Sp. Jud. Brasov	Sp. Jud. Oradea	Cardiolife Arad
Nr. Of Cathlabs	2	1	2	1	2	2	NR
Nr. Independent operators	5	6	7	3	3	4	NR
Nr. of in training operators	7	0	2	0	1	0	NR
Coronary Interventions							
Coronarography	381	1306	3774	1657	1743	1703	NR
Total nr. of PCI	682	97	1907	432	997	895	NR
PCI without stents	66	0	87	10	54	3	NR
PCI with stents	616	97	1820	422	943	892	NR
STEMI	453	0	870	8	465	502	NR
PCI left main	NR	2	65	NR	50	115	NR
Stents per patient	1.39	1.25	1.74	1.36	1.3	2	NR
Total nr. of stents	861	122	3330	590	1250	1794	NR
Nr. of DES	403	122	2631	585	1250	1675	NR
DES/stents ratio (%)	46	100	79	99	100	93	NR
BVS	0	0	0	0	0	0	NR
Cutting, Scoring	0	0	2	2	25	0	NR
Rotablation	0	0	0	8	0	4	NR
FFR/IFR	2	0	16	0	49	8	NR
IVUS	0	0	0	0	0	0	NR
OCT	13	0	2	0	20	0	NR
Peripheral interventions							
Peripheral PTA	14	18	59	16	2	0	NR
Renal PTA	0	0	10	0	0	0	NR
Carotid PTA	0	4	75	3	20	0	NR
Total nr. of stents in peripheral PTA	1	8	146	18	2	0	NR
Peripheral angiography	80	80	1253	3	3	98	NR
Other interventions							
TAVI	2	0	19	1	0	0	NR
MitraClip	0	0	0	0	0	0	NR
Aortic endoprosthesis	0	0	4	3	0	0	NR
Interventions in structural heart disease	0	0	4	2	0	0	NR

City	Suceava	Baia Mare	Sibiu	Sibiu	Constanta	Ploiesti	Pitesti	Craiova
Hospital	Sp. Jud. Suceava	Sp. Jud. Baia Mare	Polisano-Medlife	Sp. Jud. Sibiu	Monza - Ares Constanta	Sp. Jud. Ploiesti	Sp. Jud. Pitesti	Sp. Jud. Craiova
Nr. Of Cathlabs	NR	2	1	1	1	2	1	1
Nr. Independent operators	NR	2	1	2	1	2	1	1
Nr. of in training operators	NR	1	0	1	0	0	1	2
Coronary Interventions								
Coronagraphy	NR	252	995	586	1375	737	558	717
Total nr. of PCI	NR	679	423	396	690	374	427	153
PCI without stents	NR	64	17	10	36	26	26	1
PCI with stents	NR	615	406	340	654	348	401	152
STEMI	NR	243	40	32	332	184	78	24
PCI left main	NR	27	14	12	5	5	NR	5
Stents per patient	NR	1.46	1.6	1.72	1.3	1.1	1.1	1.61
Total nr. of stents	NR	895	678	586	850	416	459	246
Nr. of DES	NR	877	676	586	850	400	447	237
DES/stents ratio (%)	NR	98	99	100	100	96	97	96
BVS	NR	0	0	0	0	0	0	0
Cutting, Scoring	NR	10	20	0	0	0	11	0
Rotablation	NR	0	1	0	0	0	3	0
FFR/IFR	NR	22	10	0	0	0	11	0
IVUS	NR	0	0	0	0	0	10	0
OCT	NR	8	0	2	0	0	0	0
Peripheral interventions								
Peripheral PTA	NR	17	16	153	0	8	140	0
Renal PTA	NR	0	1	0	0	0	0	0
Carotid PTA	NR	0	0	0	2	0	1	0
Total nr. of stents in peripheral PTA	NR	5	11	80	0	1	73	0
Peripheral angiography	NR	119	28	205	0	158	222	37
Other interventions								
TAVI	NR	0	26	0	0	0	0	0
MitraClip	NR	0	0	0	0	0	0	0
Aortic endoprothesis	NR	3	24	0	0	0	0	0
Interventions in structural heart disease	NR	0	6	0	0	0	0	0

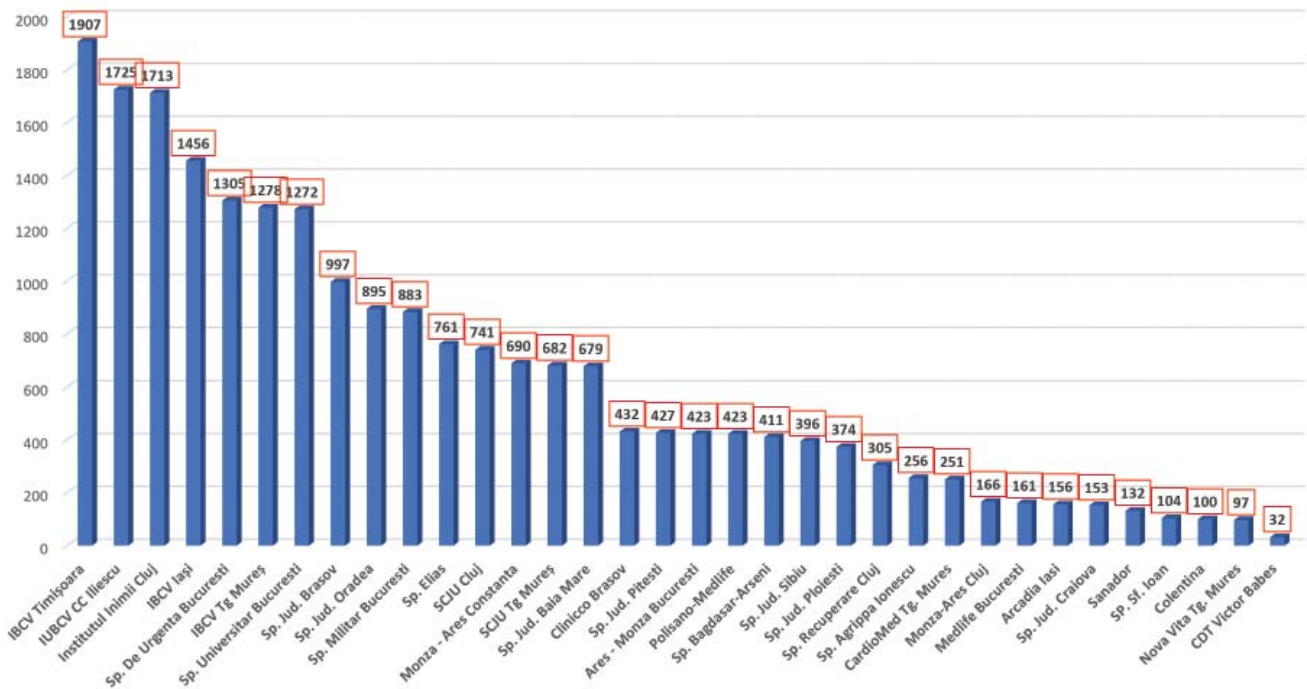


Figure 1. Total number of percutaneous coronary interventions in 2019 in interventional centers from Romania.

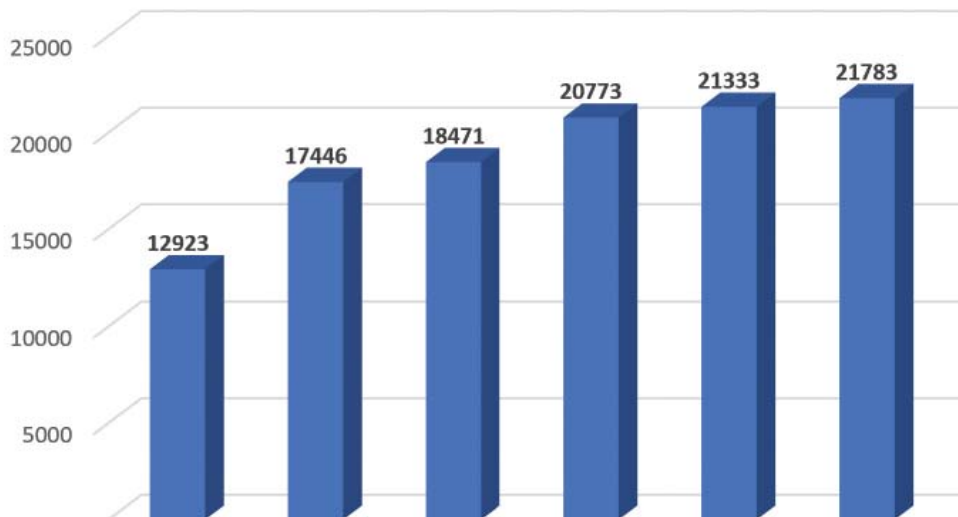


Figure 2. Total number of percutaneous coronary interventions from 2014 to 2019 in Romania.

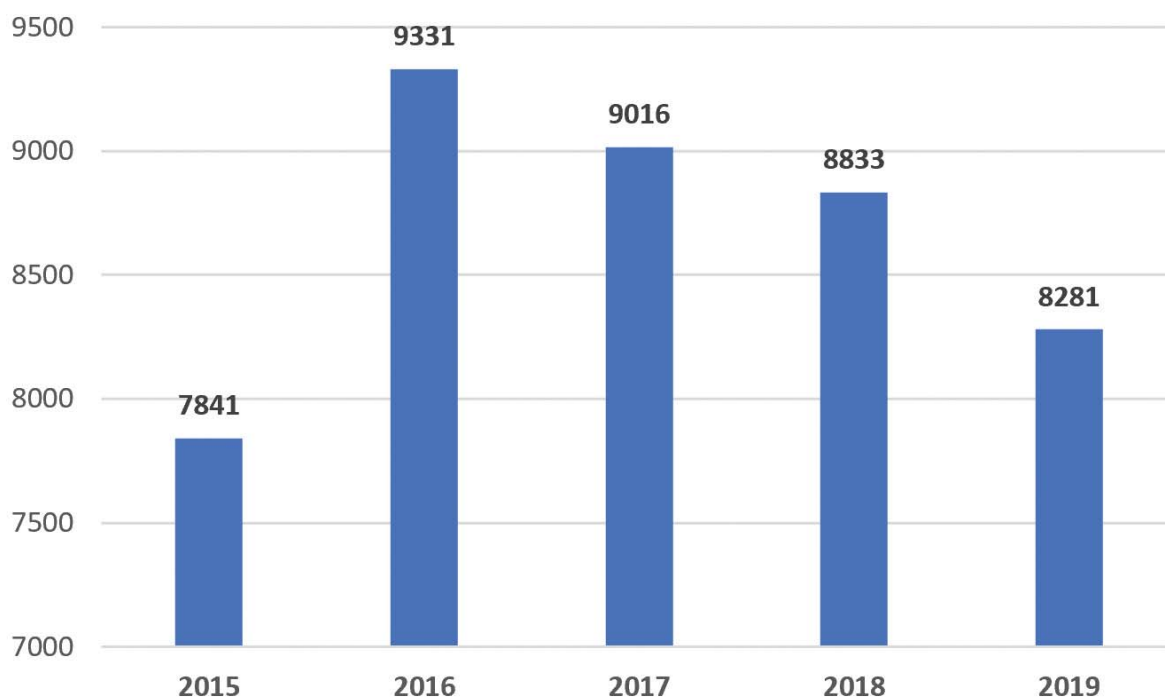


Figure 3. Total number of primary percutaneous coronary interventions in STEMI patients from 2015 to 2019 in interventional centers from Romania (STEMI - ST segment elevation myocardial infarction).

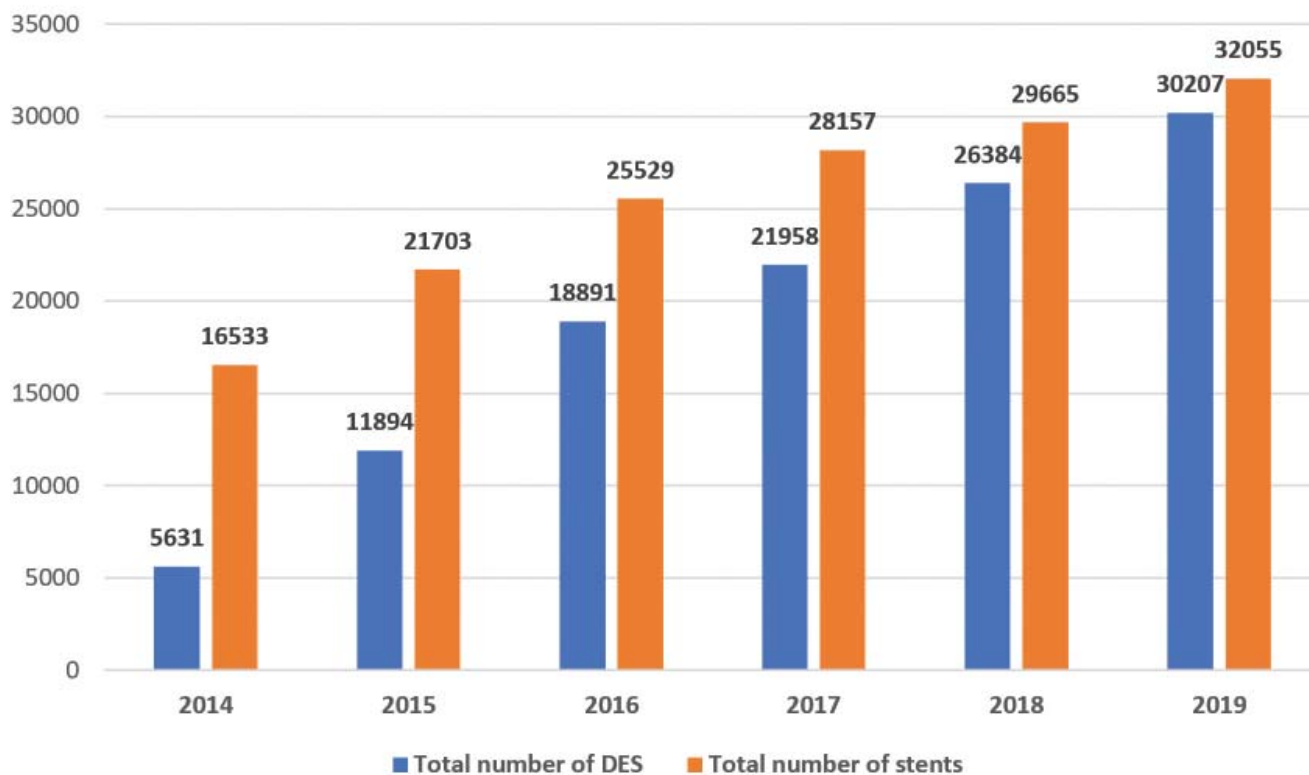


Figure 4. Total number of stents implanted from 2014 to 2019 in Romania (DES – drug eluting stent).

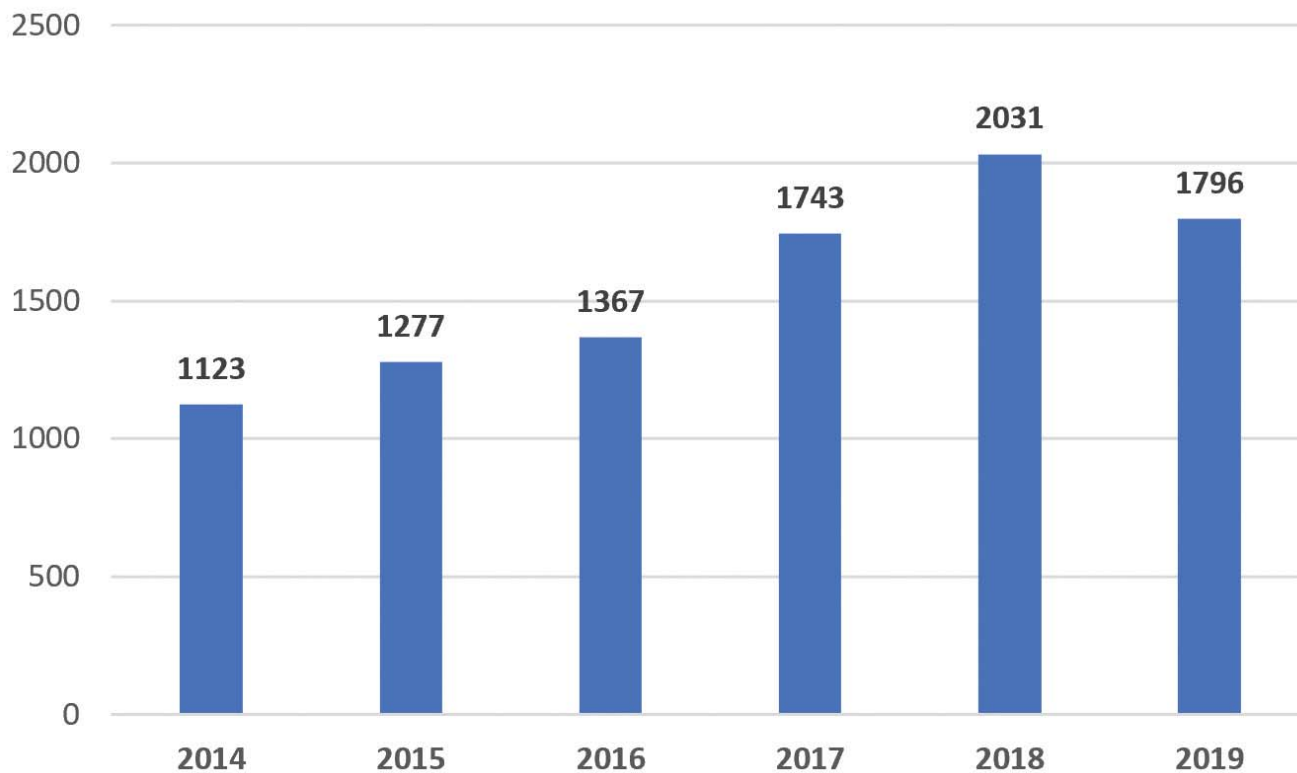


Figure 5. Total number of peripheral angioplasties from 2014 to 2019 in Romania (only in interventional cardiology centers).

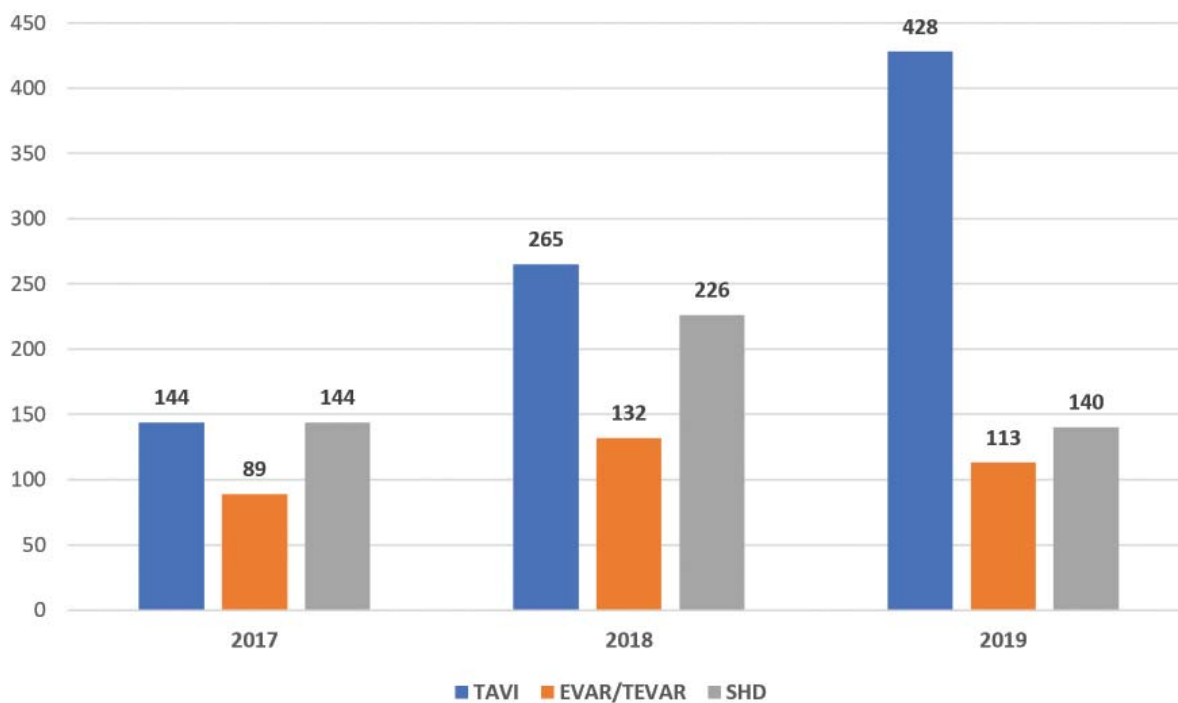


Figure 6. Total number of TAVI, EVAR/TEVAR and SHD interventions performed from 2017 to 2019 in Romania (TAVI - transcatheter aortic valve implantation, EVAR - Endovascular Aneurysm Repair; TEVAR - Thoracic endovascular aortic repair; SHD – structural heart diseases).

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