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# EP in Non-European Countries

## The MENA region, Egypt

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Cardiac EP division

Ain-Shams University

Cairo, Egypt

Past president, Egyptian Cardiac Rhythm Association (ECRA)



# EP in the Non European countries (MENA region)

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- **Non-European ESC countries comprise 15 countries:**

Algeria – Armenia – Azerbaijan - Cypress – Egypt – Georgia – Israel - Kazakhstan – Kyrgyzstan- Lebanon – Libya – Morocco – Syria -Tunisia – Turkey.

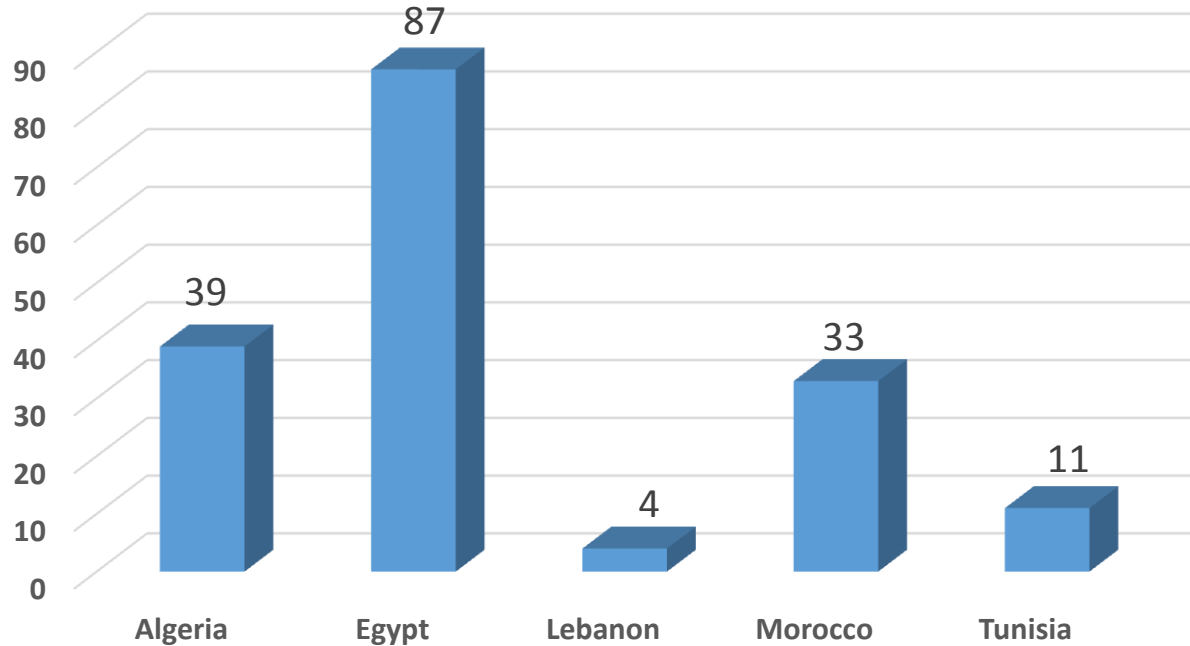
- **The talk will include countries in the MENA region (Middle East North Africa)**

Algeria- Egypt – Lebanon – Libya – Morocco – Syria - Tunisia

# Population in the MENA (NEC)

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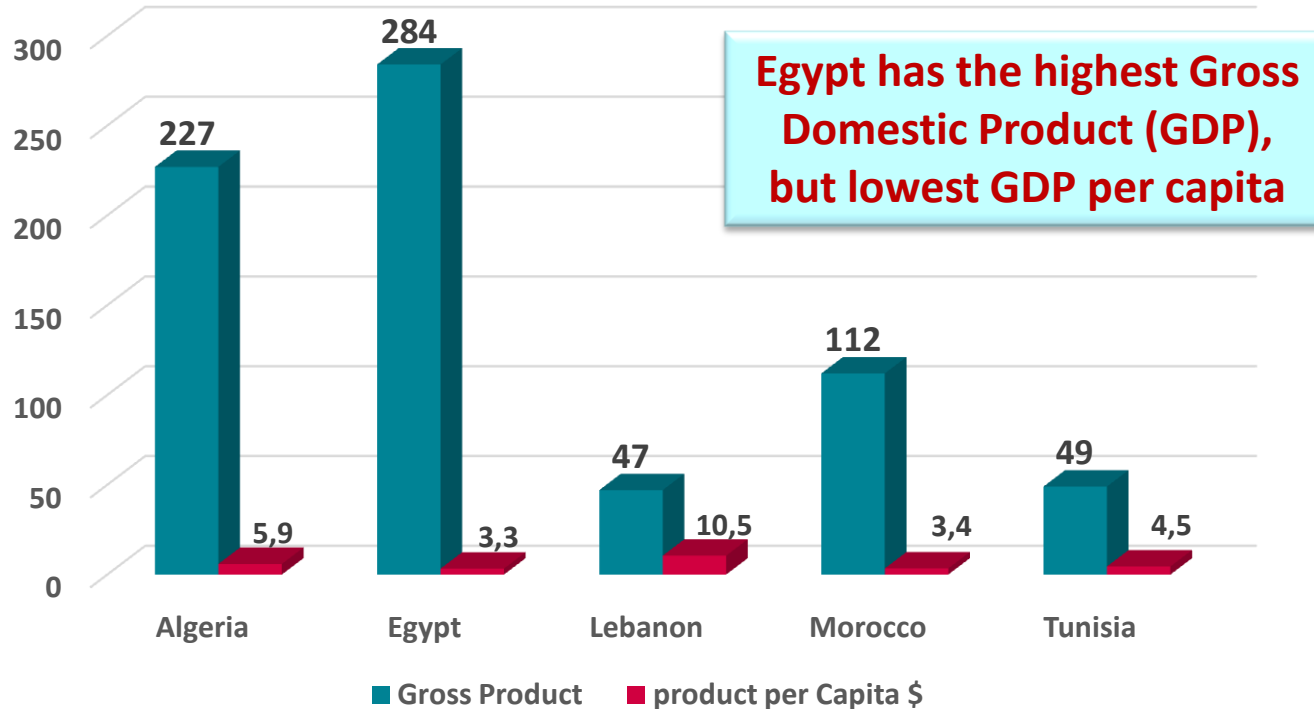
Population (Millions)



*Due to the  
Political turmoil,  
Syria and Libya  
are not included*

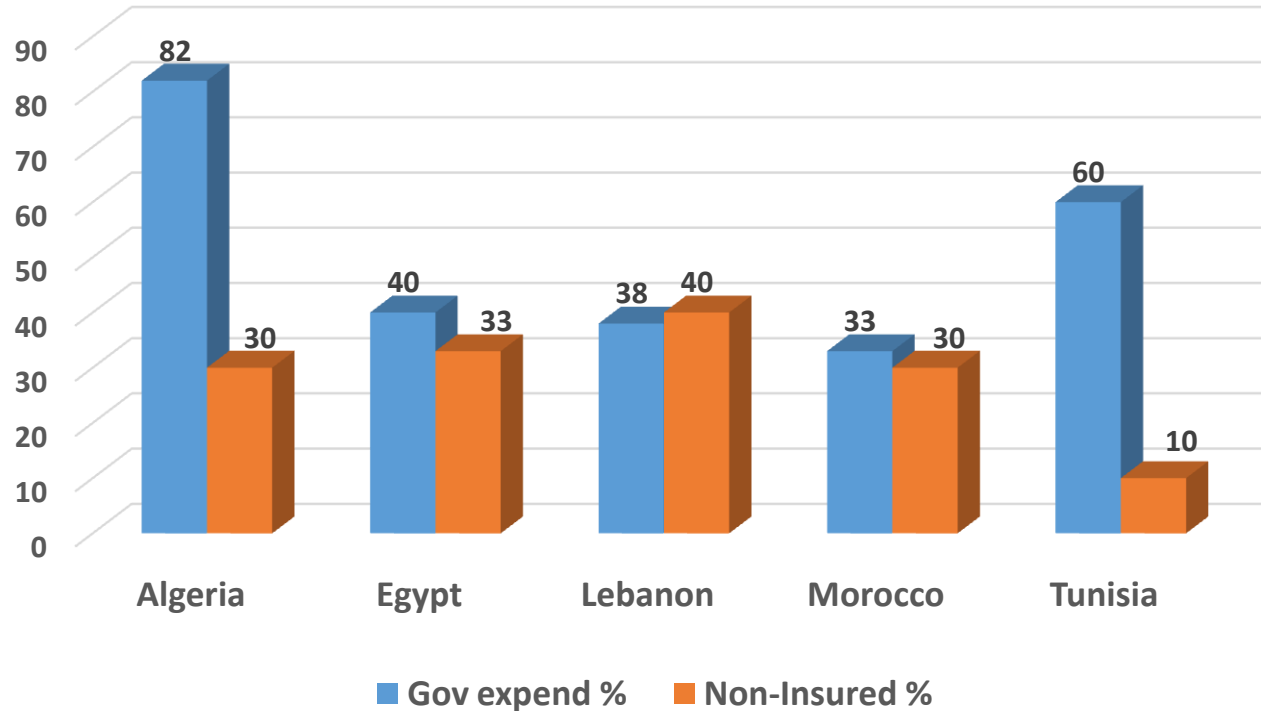
# Gross Product and per Capita in NEC (MENA)

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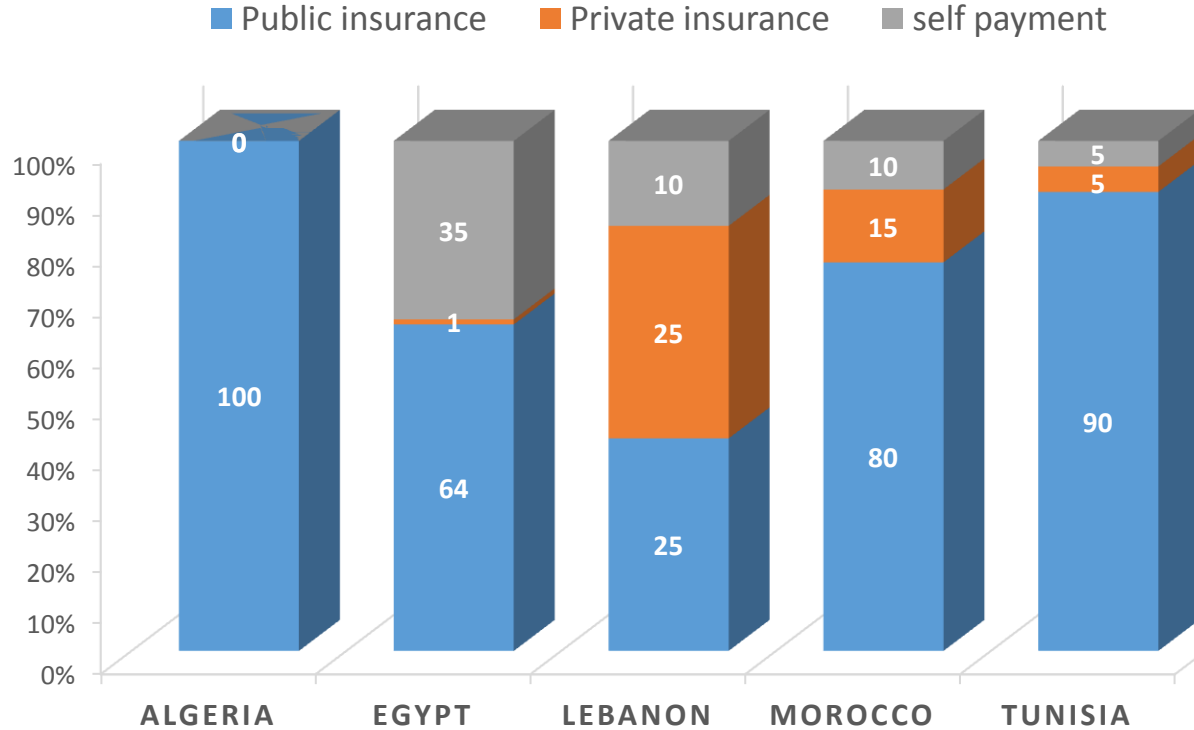


# Government Expenditure and insurance

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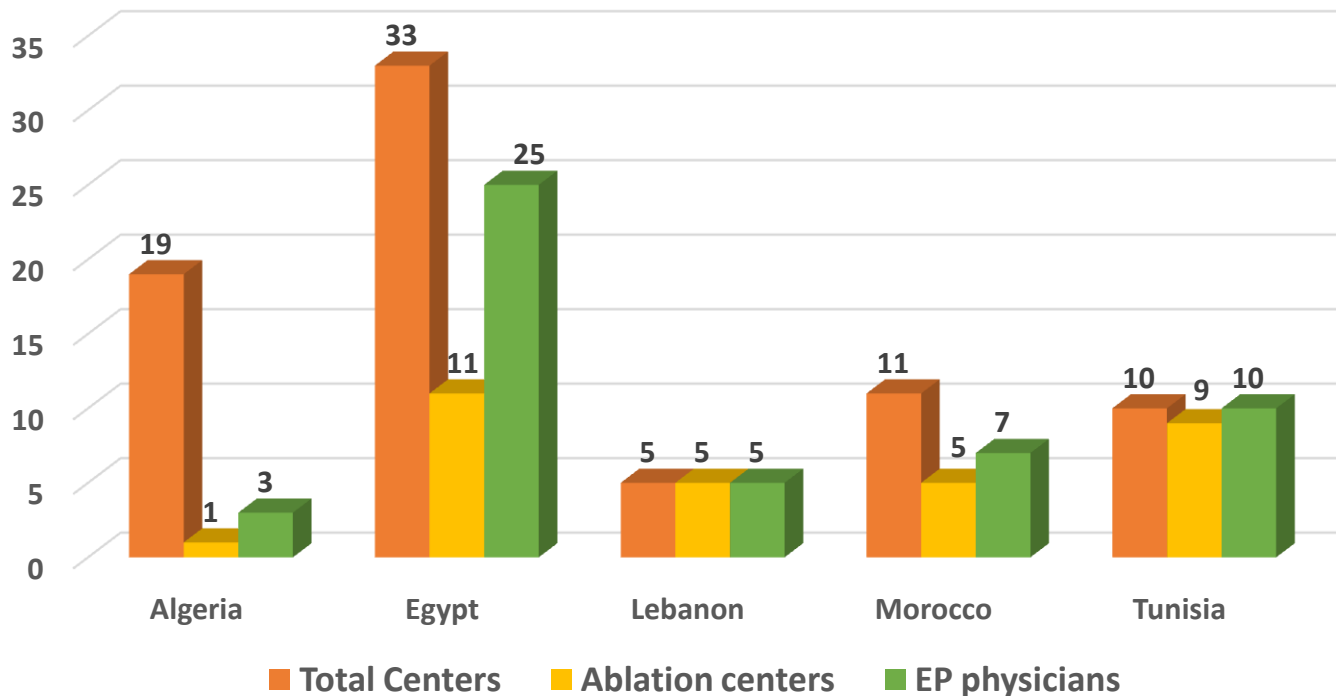
# Procedure payment in MENA (NEC)



Algeria and Tunisia are fully covered by public insurance. While in Egypt has the highest self payment

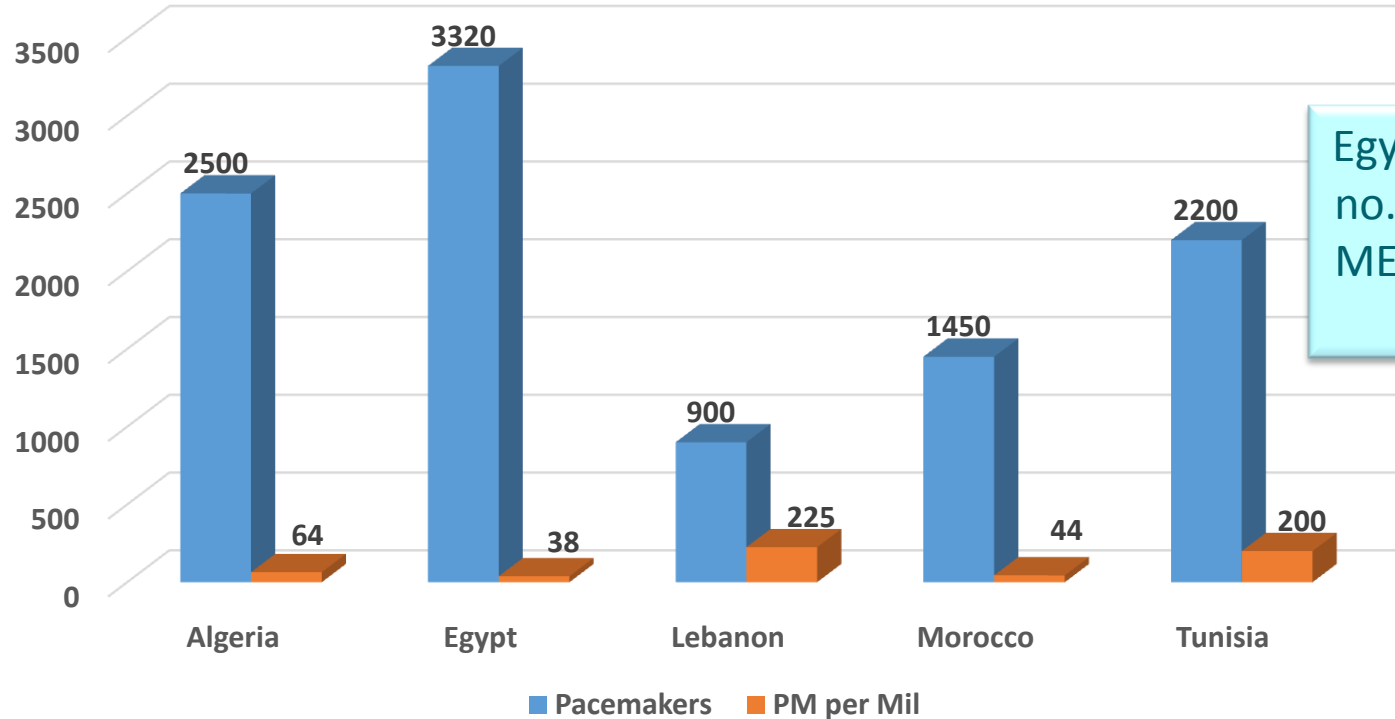
# EP centers and EP physicians

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# PM implanted in 2014 (MENA / NEC)

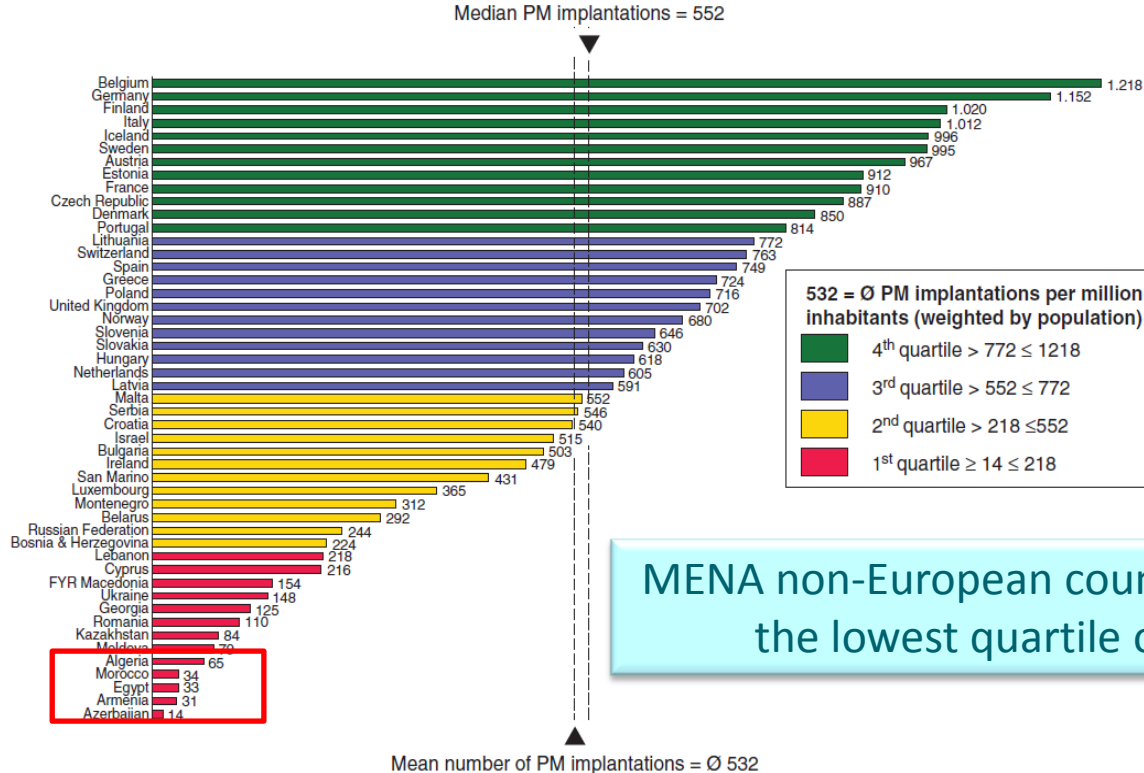
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Egypt has the highest no. of PM among the MENA non-European countries



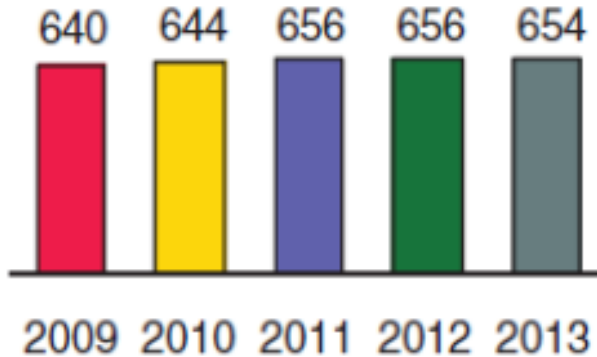
# PM implanted per Mil inhabitants



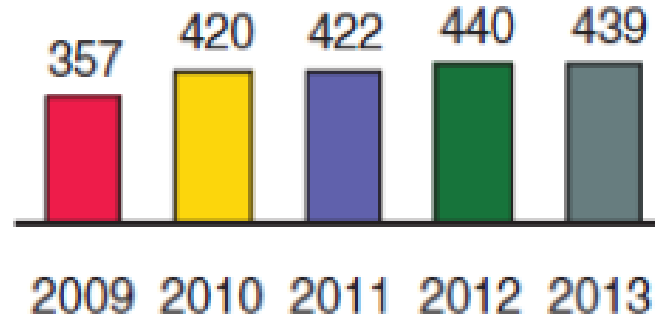
# PM implantation per mil 2009-2013

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## European ESC countries



## Non-European ESC countries

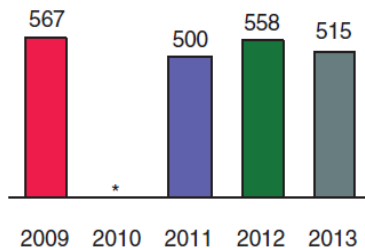


Non-European countries are lower than the Europ. ESC in PM/Mil

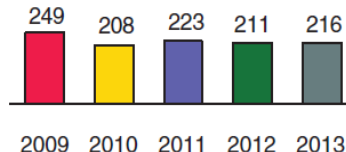
# PM per Mil in Non-European countries

TOP 3

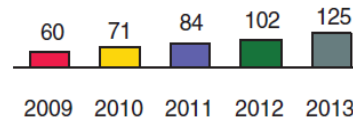
Israel



Cyprus

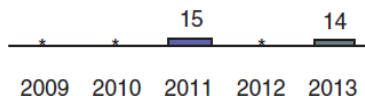


Georgia

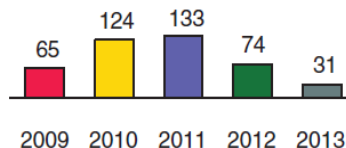


Lowest 3

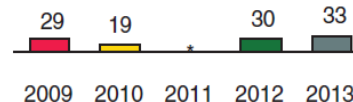
Azerbaijan



Armenia



Egypt



Among the Non-European countries, **Egypt** has the lowest PM/Mil

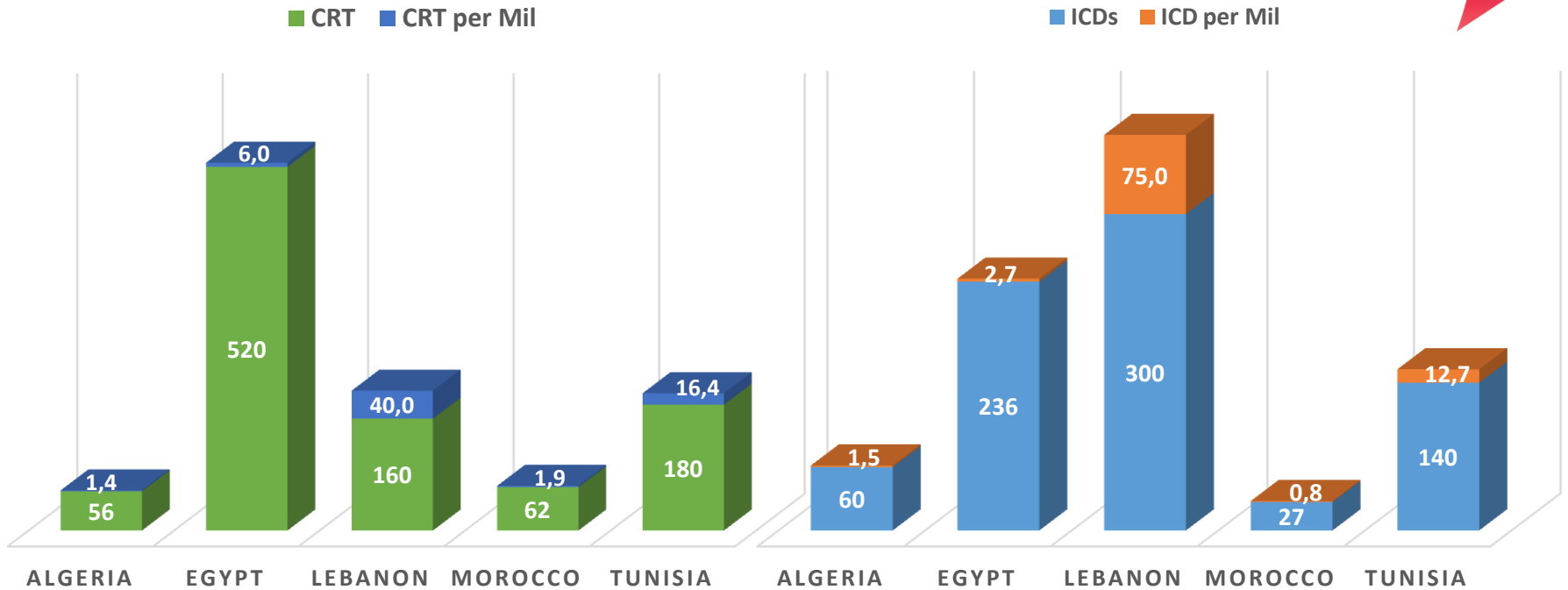
# PM implanted per Mil inhabitants

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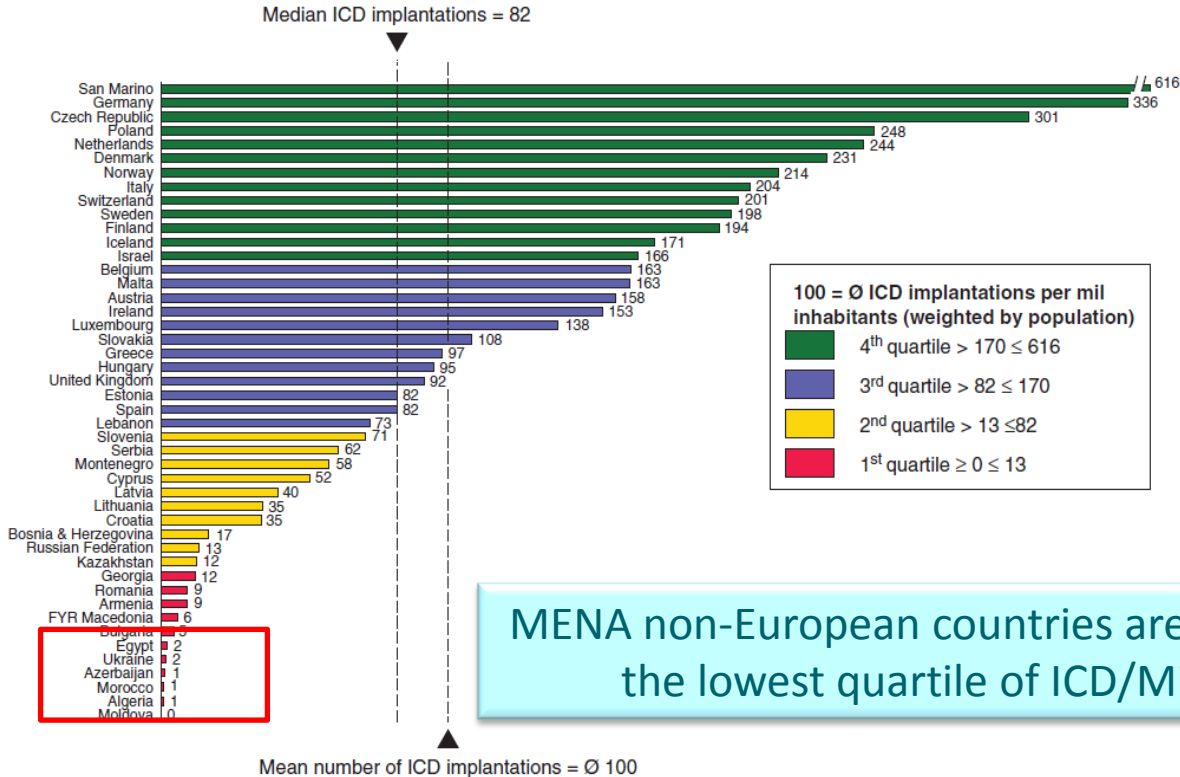
Country	ISO code	National Registry for PM implants	Number of PM implanting centres 2013		PM implantations 2013		Development potential—target number of PM implantations ...		PM implantations per mil inhabitants					
			Absolute number	Per mil inhabitants	Absolute number	Per mil inhabitants	To attain mean ESC area level	To attain mean EU-28 level	2009	2010	2011	2012	2013	
Albania <sup>a</sup>	AL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Algeria	DZ	No	19	0.50	2480	65	20 251	31 875	N/A	N/A	N/A	N/A	65	65
Armenia	AM	No	2	0.65	94	31	1629	2564	65	124	133	74	31	31
Austria	AT	Yes	57	6.93	7950	967	–	–	948	919	950	957	967	967
Azerbaijan	AZ	No	6	0.63	131	14	5099	8026	N/A	N/A	15	N/A	14	14
Belarus	BY	Yes	10	1.04	2813	292	5118	8056	196	238	258	275	292	292
Belgium	BE	Yes	105	10.05	12 725	1218	–	–	869	838	N/A	1156	1218	1218
Bosnia & Herzegovina	BA	No	6	1.55	868	224	2061	3244	N/A	205	138	234	224	224
Bulgaria	BG	Yes	17	2.43	3511	503	3712	5843	360	329	385	448	503	503
Croatia	HR	N/A	18	4.02	2418	540	–	3746	513	531	565	561	540	540
Cyprus	CY	No	5	4.33	250	216	614	967	249	208	223	211	216	216
Czech Republic	CZ	Yes	37	3.49	9416	887	–	–	859	849	881	899	887	887
Denmark	DK	Yes	11	1.98	4725	850	–	–	713	744	795	841	850	850
Egypt	EG	No	28	0.33	2850	33	45 351	71 382	29	19	N/A	30	33	33
Estonia	EE	No	5	3.95	1155	912	–	–	770	745	766	748	912	912
Finland	FI	No	20	3.80	5369	1020	–	–	796	917	923	990	1020	1020
France	FR	No	500	7.58	60 000	910	–	–	1029	1022	969	958	910	910
Georgia	GE	No	9	1.82	620	125	2628	4136	60	71	84	102	125	125
Germany	DE	No	1010	12.45	93 520	1152	–	–	1248	1257	1313	1311	1152	1152
Greece	GR	No	56	5.20	7800	724	–	9016	611	713	701	691	724	724
Hungary	HU	Yes	17	1.71	6143	618	–	8318	532	539	584	607	618	618
Iceland	IS	No	2	6.34	314	996	–	–	836	828	1006	967	996	996
Ireland	IE	Yes	17	3.56	2288	479	2539	3997	457	418	507	451	479	479
Israel	IL	No	20	2.60	3966	515	4098	6450	567	N/A	500	558	515	515
Italy	IT	Yes	420	6.83	62 198	1012	–	–	1047	1047	1034	1001	1012	1012
Kazakhstan	KZ	No	27	1.52	1489	84	9431	14 844	N/A	N/A	N/A	70	84	84
Kosovo <sup>a</sup>	XK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kyrgyzstan <sup>a</sup>	KGZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Among all ESC, **Egypt** needs almost the highest no. implantations to attain the mean ESC value

# CRT and ICD in NEC (MENA) in 2014



# ICD implantation per mil inhabitants

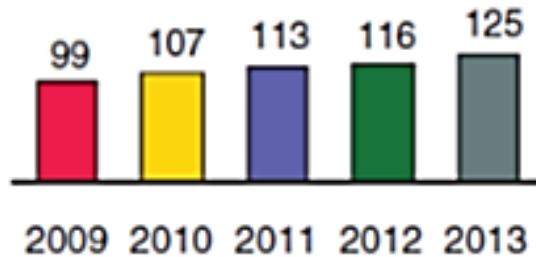


MENA non-European countries are in the lowest quartile of ICD/Mil

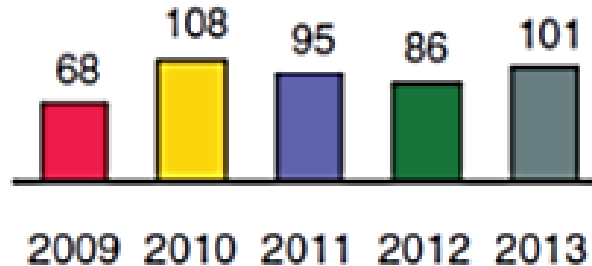
# ICD implanted per mil inhabitants

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European ESC  
countries



Non-European ESC  
countries



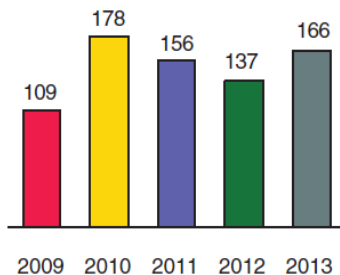
Though non-European countries may approach the Europ. ESC in ICD/Mil.....

# ICD implantation/Mil in Non European countries

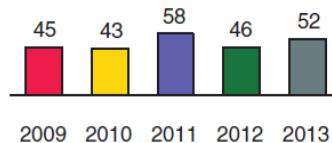


TOP 3

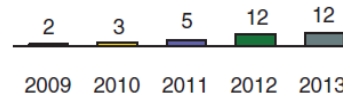
Israel



Cyprus

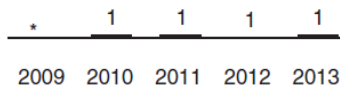


Georgia

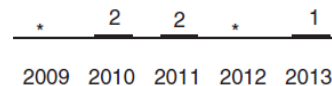


Lowest 3

Morocco



Azerbaijan



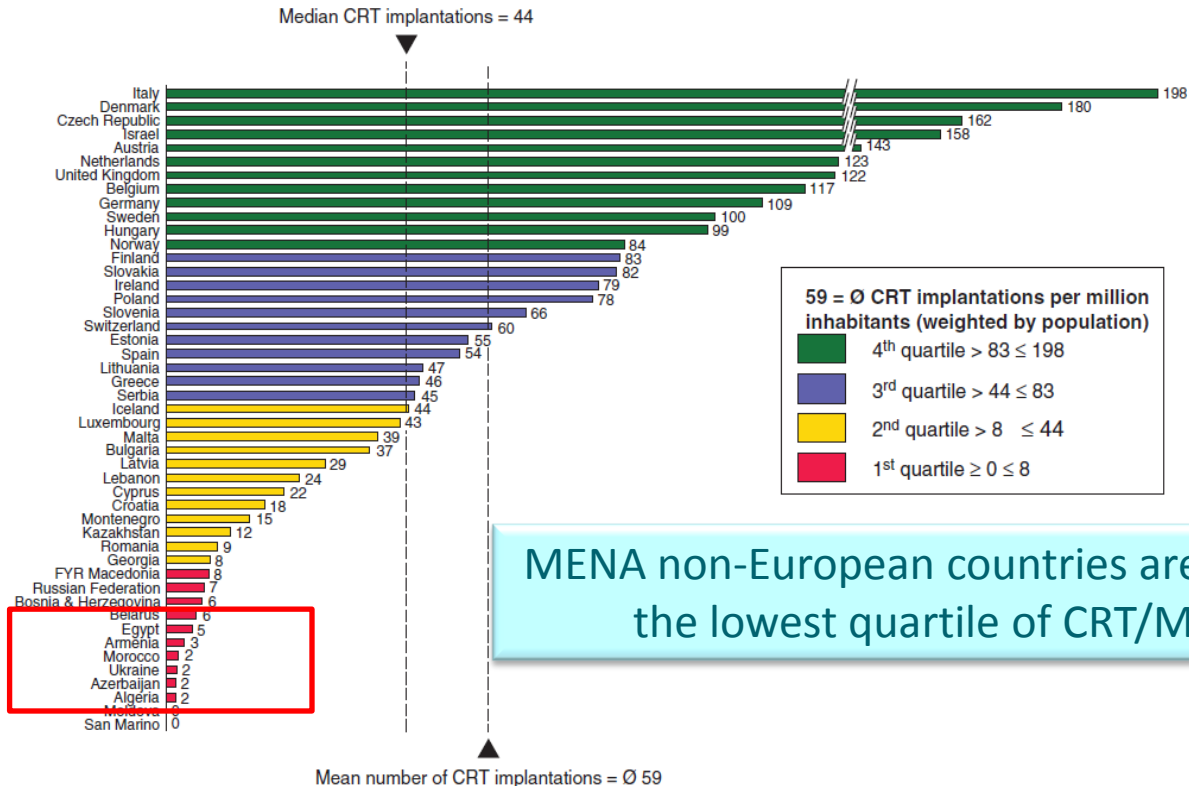
Egypt



BUT among the Non-European countries, **Egypt** has the lowest ICD/Mil



# CRT implantations per mil inhabitants

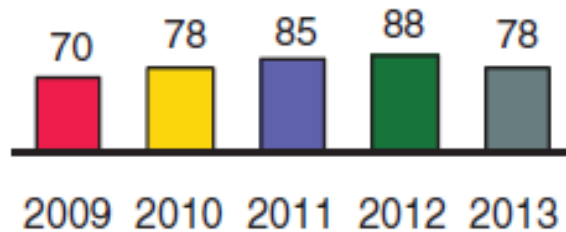


MENA non-European countries are in the lowest quartile of CRT/Mil

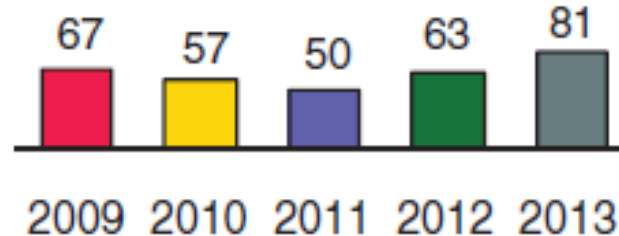
# CRT per mil 2009-2013

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European ESC  
countries

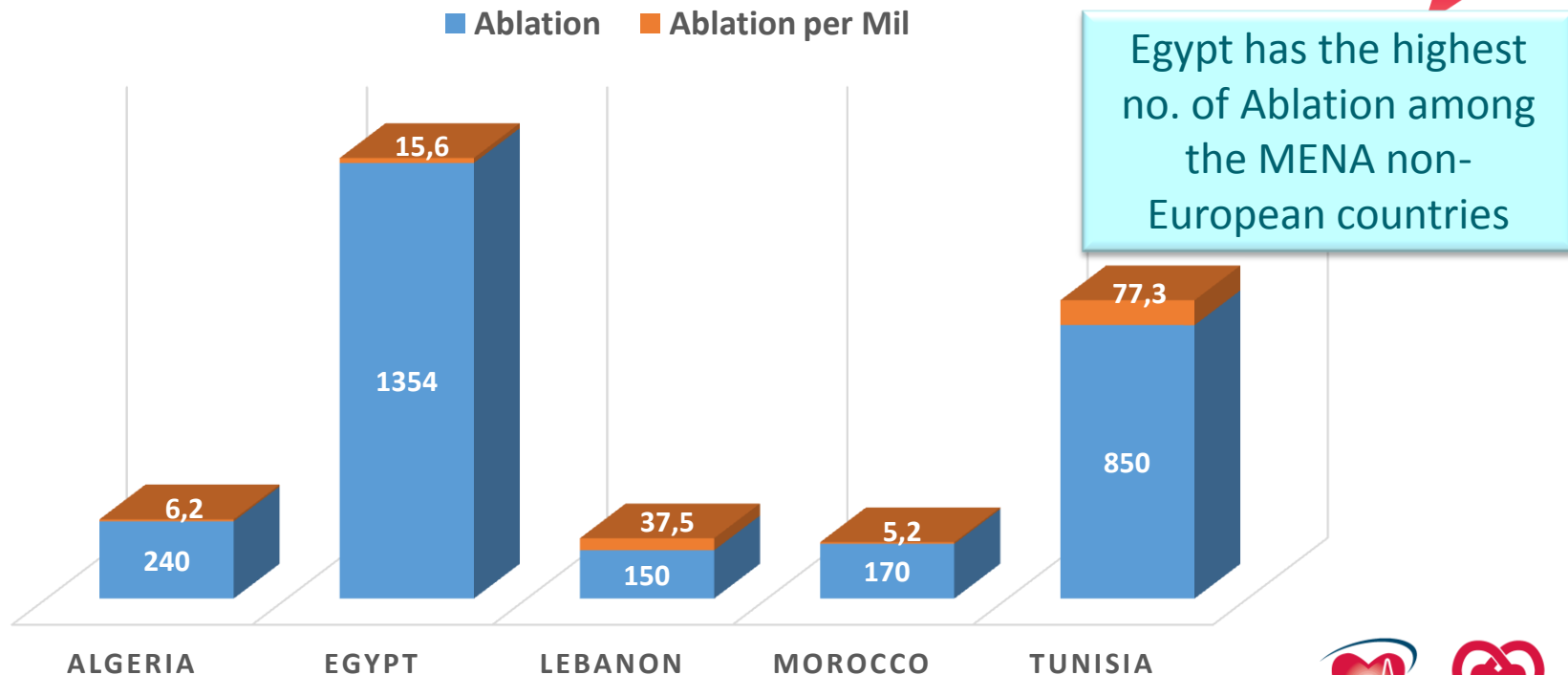


Non-European ESC  
countries

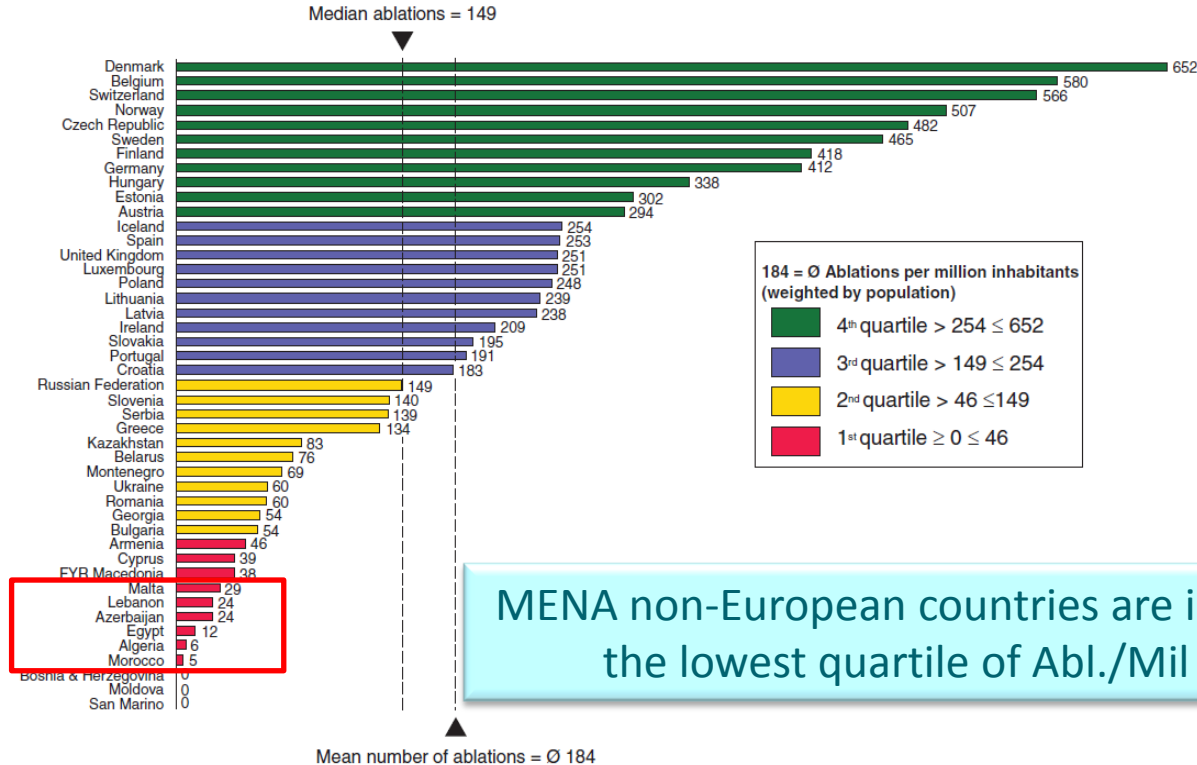


# Ablation in NEC (MENA) in 2014

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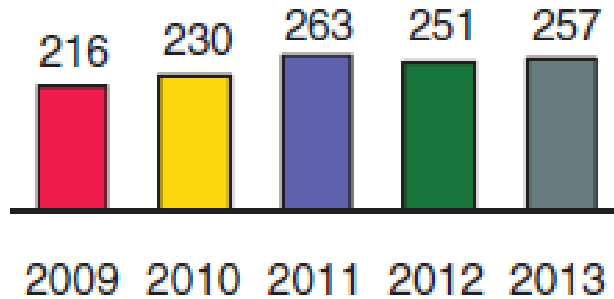
# Ablations per mil. inhabitants



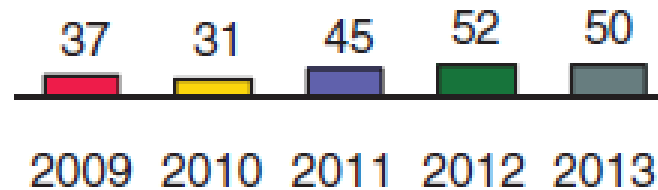
# Ablations per mil. in ESC vs NEC

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## European ESC countries



## Non-European ESC countries



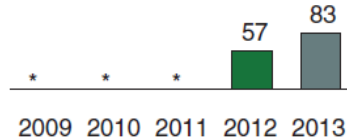
There is a big difference between the ESC and NEC regarding ablation/Mil

# Ablation per mil in NEC 2009-2013

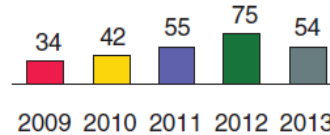
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ESC

TOP 3

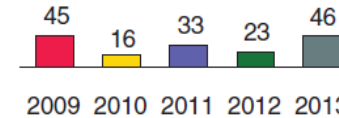
Kazakhstan



Georgia

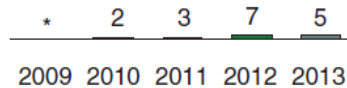


Armenia



Lowest 3

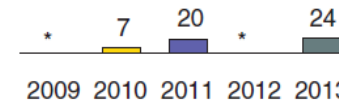
Morocco



Egypt



Azerbaijan

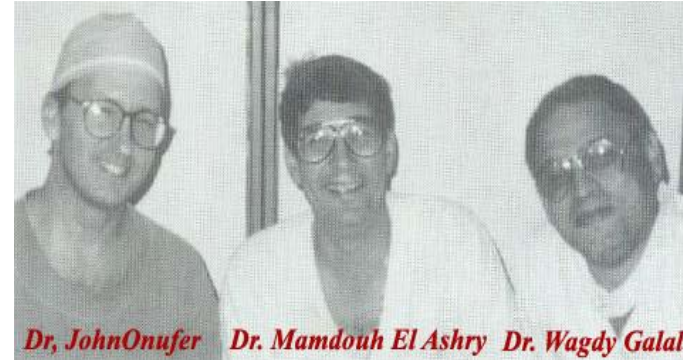


And still among the  
NEC, Egypt is one of  
the lowest no. of  
Abl./Mil

# The start of EP in the MENA region

## Egypt

- **MD Thesis of Dr Mamdouh Elashry 1973**
  - His bundle recording in Pts with AMI compared to Normal Egyptians
- **MD Thesis of Dr Wagdy Galal 1977**
  - Prognostic implication of HV interval in Patients with LBBB. Provocation with Ajmaline
  - First extrastimulation technique in Egypt
  - France



# History of Interventional EPS In **Egypt** DC - Surgical and RF Ablation

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1989	DC shock Ablation of the AVN and His Bundle
1990	Surgical resection of accessory pathways
1994	RF Ablation for AVNRT, AP, Atrial Tachycardia, AT Flutter, Idiopathic VT
2004	Pulmonary Vein Isolation for AF Lasso CARTO xp 2 Cairo/ 2 Ain Shams 2008
2005	Ischemic VT Ablation/3D
2010	CARTO 3 Ain Shams /Alexandria Univ. Insite 3 D mapping system



# DC shock fulguration of the His bundle

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# History of EP in Egypt

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Dr. Breithert, President of The European Society for pacing & EP during his last visit to the center "Jan 2003" to participate in the 3rd international meeting for Pacing and EP.

[www.escardio.org/EHRA](http://www.escardio.org/EHRA)



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Heart Rhythm  
ASSOCIATION  
A Registered Branch of the ESC



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# Progress of Pacing in Egypt

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1981	Simple VVI Pacing Epicardial then Endocardial
1983	Multi-programmable PM
1986	Dual Chamber PM
1988	Rate Responsive PM
1989	Antitachycardia Pacing for SVT
1993	Single Lead VDD
1994	ICD Implantation
2000	Single lead DDD
2001	AT pacemaker for AF prevention
2001	Multisite PM Implantation- CRT-p
2005	Multisite ICD Implantation-CRT-D

# EP labs and EP physicians in Egypt

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Cardiac Center	Number of RP labs / EP doctors	
Cairo University	3 labs	15 EP Doctors
Ain Shams University	2 Labs	17 EP Doctors
Alexandria University	2 labs	5 EP Doctors
El-Azhar University	2 Labs	5 EP Doctors
Mansoura University	1 Lab	5 EP Doctors
Banha University	1 Lab	4 EP Doctors
Assuit University	1 lab	3 EP Doctors
Elmenya University	1 Lab	1 EP Doctor
Suez Canal University	1 Lab	3 EP Doctors
National Heart Institute	1 Lab	6 EP Doctors
Naser Institute	1 Lab	5 EP Doctors
Military Hospitals	4 Labs	3 EP Doctors
Private Hospitals	4 Labs	
<b>Total</b>	<b>24 Labs</b>	<b>72 EP Doctors (independent =25)</b>

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# ECRA Basic course of Electrophysiology 2003-2010

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## Education

- Basic and applied EPS &PM (CRM) [8 months duration]
- Once a week lectures - twice /week Cath lab
- Mid and Final MCQ Exams
- 7 Courses (130 attendees) success 80% success
- A certificate from Ain Shams, Cairo university Egyptian Society of Cardiology and Egyptian Cardiac Rhythm Association (ECRA)
- Then a specialized practical degree of EPS at Ain Shams university



# Egyptian EP fellowship program (Ministry of Health)

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## Education

- Basic and applied EPS [3 years program duration]
- Mid and Final MCQ Exams
- Attending 3 days/wk in EP labs the largest volume centers
- A certificate is handed from the ministry of health in collaboration with the ECRA.

**Request from EHRA:**

*Accreditation of the EP certificate and fellowship project.*

# Preparatory courses of the Basic and Advanced EHRA exams in **Egypt**.

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Education



## Request from the EHRA:

1. Repeat the Basic and Advance courses in Cairo
2. EHRA exam to be conducted in Egypt/MENA region

[www.escardio.org/EHRA](http://www.escardio.org/EHRA)

Wagdy Galal, MD, PhD





# Achievements of the ECRA

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Research COUNTRIES	Registered centres	Centres that enrolled	Centre still active for the follow ups	Created CRFs	Completed CRFs	Locked CRFs
AUSTRIA	3	3	2	41	41	35
BELGIUM	1	1	1	86	86	86
BULGARIA	2	2	2	107	107	106
BELARUS	1	1	1	20	20	20
CZECH REPUBLIC	3	2	2	81	69	36
GERMANY	10	5	5	205	205	195
DENMARK	1	1	1	19	19	14
EGYPT	5	4	3	80	79	17
SPAIN	24	17	11	543	525	273
FINLAND	5	2	2	173	171	92
FRANCE	6	5	5	159	119	52
GREAT BRITAIN (UK)	1	1	1	51	50	41
GREECE	8	4	4	139	138	127
HUNGARY	4	3	2	59	58	50

EUR *Observational*  
Research  
Programme



Request from EHRA  
Involving the MENA in  
further research  
(e.g. VT Registry)



# Achievements of the ECRA

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Registry

EGYPT

**The EHRA White Book 2014**  
The Current Status of Cardiac Electrophysiology  
in ESC Member Countries

Contribution in the EHRA White Book since 2009



# History of EP in Egypt

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## Request from the EHRA:

Political healthcare support to reinforce healthcare expenditure according to guidelines

# EHRA fellowships

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**Request from the ECRA:**  
Facilitating more fellowships to the MENA region

[www.escardio.org/EHRA](http://www.escardio.org/EHRA)

*Speaker*



# Obstacles for Non European countries

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1. Political Healthcare unawareness
  - less expenditure on health systems
  - Lack of physician reimbursement
2. Healthcare administration lacks basic guideline knowledge
  - Do NOT fully cover mandatory procedures (ICDs...)
3. Lack of young EP physician experience
  - No governmental coverage of fellowships
4. Lack of patient's referrals
  - Lack of general physician awareness

# Requests from the EHRA

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1. Support with the political administration
  - Dedicated meetings with the healthcare higher administration to **reinforce healthcare expenditure** according to guidelines. (National Societies should organize and support such meetings)
2. Support in knowledge spread among administration & physicians
  - Arrange for **EHRA courses and EHRA exams** in MENA region to ensure ALL that physicians should abide with guidelines
3. More fellowships for Non-European countries
  - Re-allocating fellowships according to the country **population and EP requirements** to attain the ESC mean values for physicians and procedures.

# Requests from the EHRA

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3. Delegation of dedicated proctors for each region:
  - helping in difficult procedures,
  - answering queries of physicians
  - Improving patient's management / outcome
  
4. Initiation of an accreditation/auditing committee
  - ensure guidelines implementation,
  - Ensure competence of centers and physicians and
  - Accrediting the local fellowship programs
  - optimum patient management in NEC

# Requests from the EHRA

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5. Include MENA further in research studies and registries
  - Improves motives for research
  - Proper auditing on ablation strategies
  - Collaborate the region with the EHRA
  
6. Collaborate further in meetings
  - Joint sessions with the MENA group in Cardiostim/Europace
  - Joint session for the EHRA in the MENA/ECRA meetings
  
7. Promoting the EHRA membership in the MENA region
  - Physicians in the region should be well acquainted about the benefits of the membership.