Vicerrectorado
de Cultura, Deporte
y Responsabilidad Social

Obsolescencia en tecnología sanitaria: los casos de Europa y España

Programa Universitario "José Saramago" *50 plus*

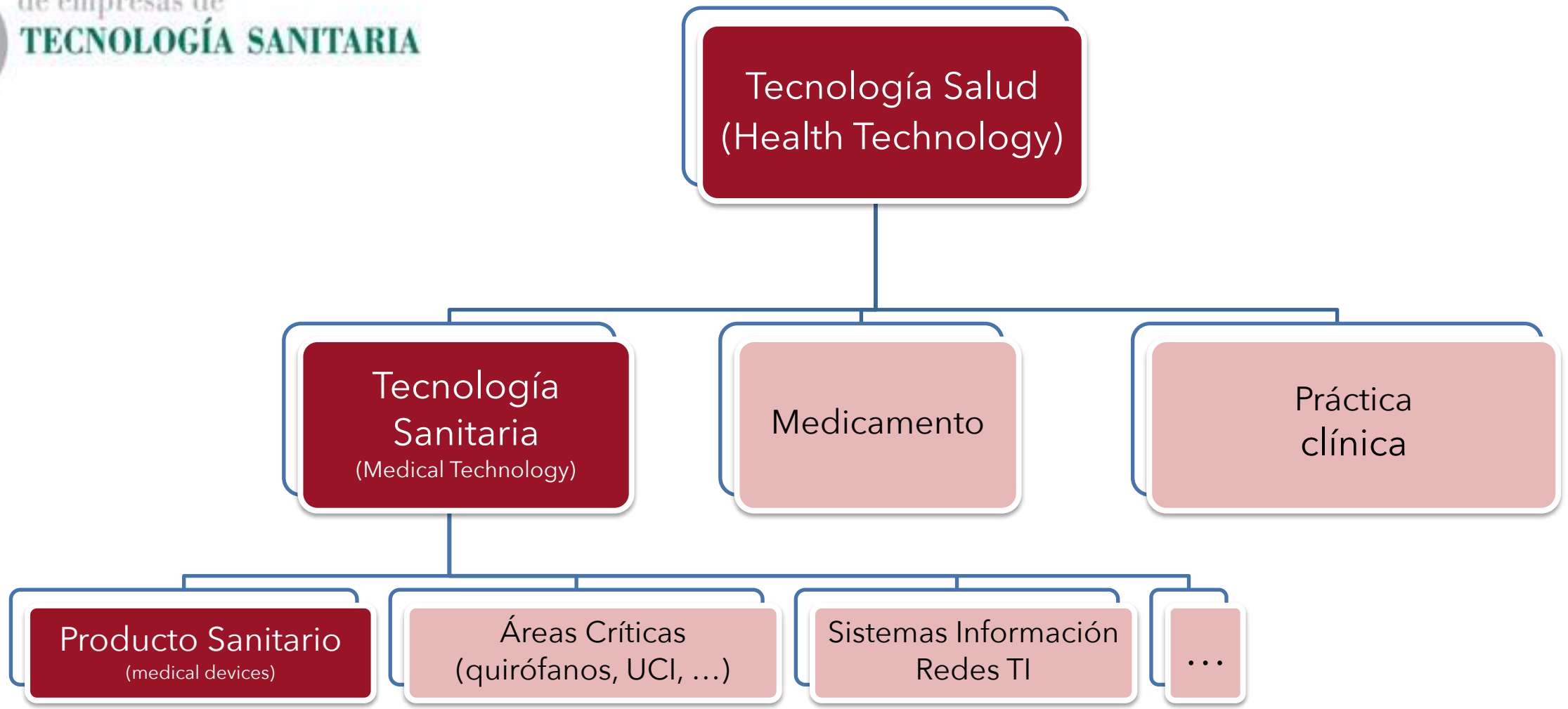
César Sánchez Meléndez

Vicerrector de Cultura, Deporte y Responsabilidad Social

Profesor Titular de la E. Politécnica Cuenca

Tecnología sanitaria

federación española de empresas de TECNOLOGÍA SANITARIA



Pregunta:

Las gafas premontadas que se venden en farmacias,

¿se pueden considerar productos sanitarios?

Producto Sanitario ?

Scanner/RMN

Cama

Electrodo

Protesis brazo

A MEDICA

Test autodiagnostico embarazo

Condon

Ecografo

Auto-lanceta para glucemia

93/42

Analizador glucemia

IVD

Reactivos

Si No RUO, ASR

Productos Lab Gral

No

Productos higienicos

No

implantes quirurgicos

ortopedia

marcapasos

Monitor medico

terminal informática

Si 93/42

No 73/23

bajalenguas

Producto Sanitario ?

Guantes quirúrgicos- examen laboratorio

No

CE

EPI

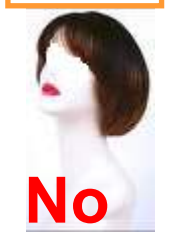
Sillón Paciente - Doctor

andador

Bolsa sangre

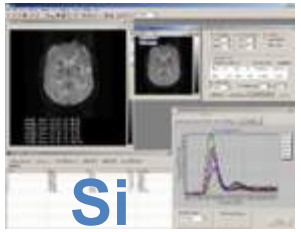
Refrigerador sangre

Peluca



Contenedor agujas

Software calculo almacenamiento



Contenedor muestras

Gafas

Si

=

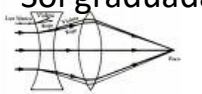
+

Gafas de sol

EPI

No

Sol graduada



Si

Dosificador medicamento

jeringas

Esterilizador Autoclave laboratorio

No

Centrifuga lab gral banco sangre Hematocrito

No

CE 73/23

CE 93/42

IVD

CE 98/79

Analizador Lab

IVD

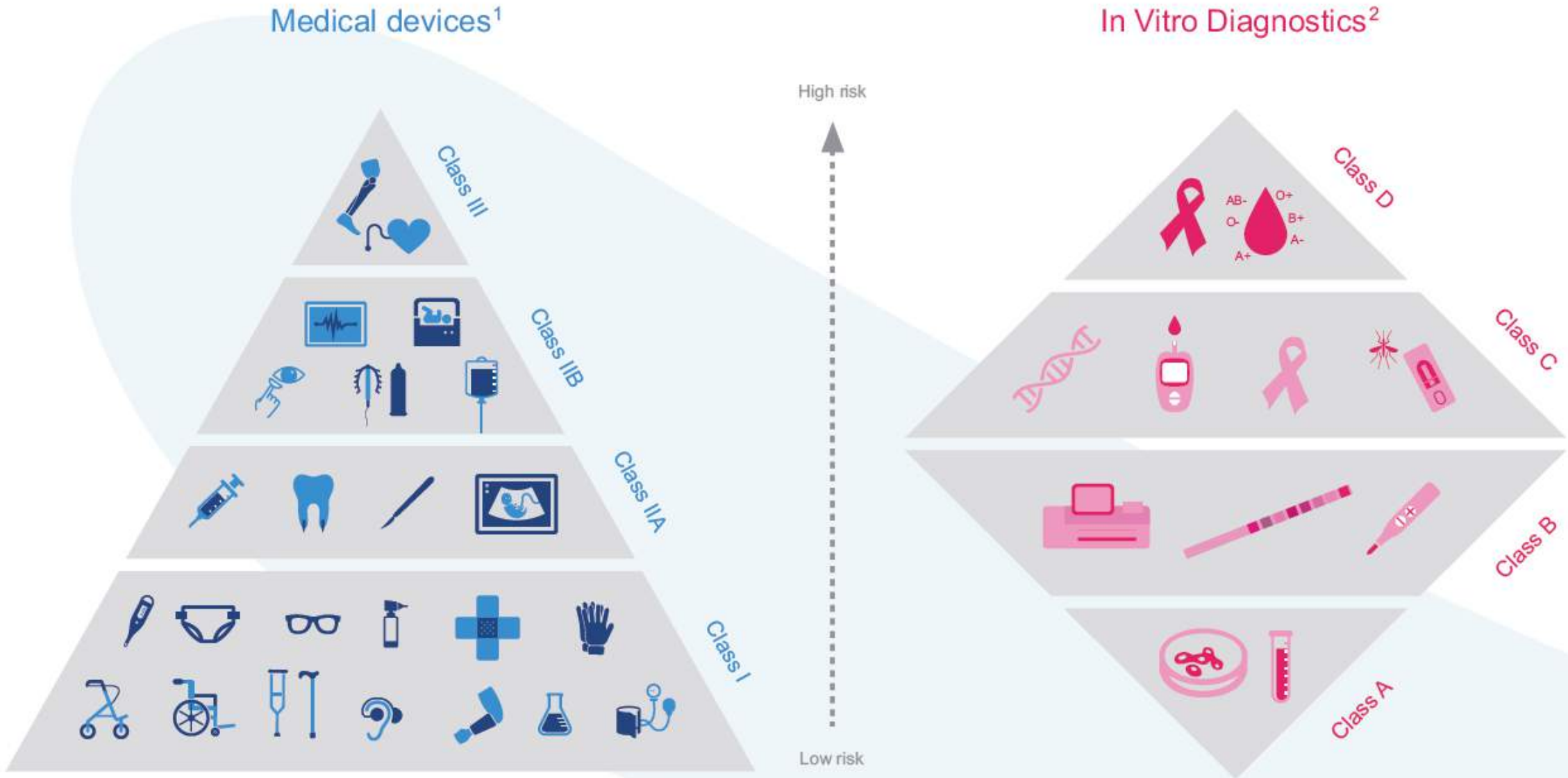
No

CE 73/23

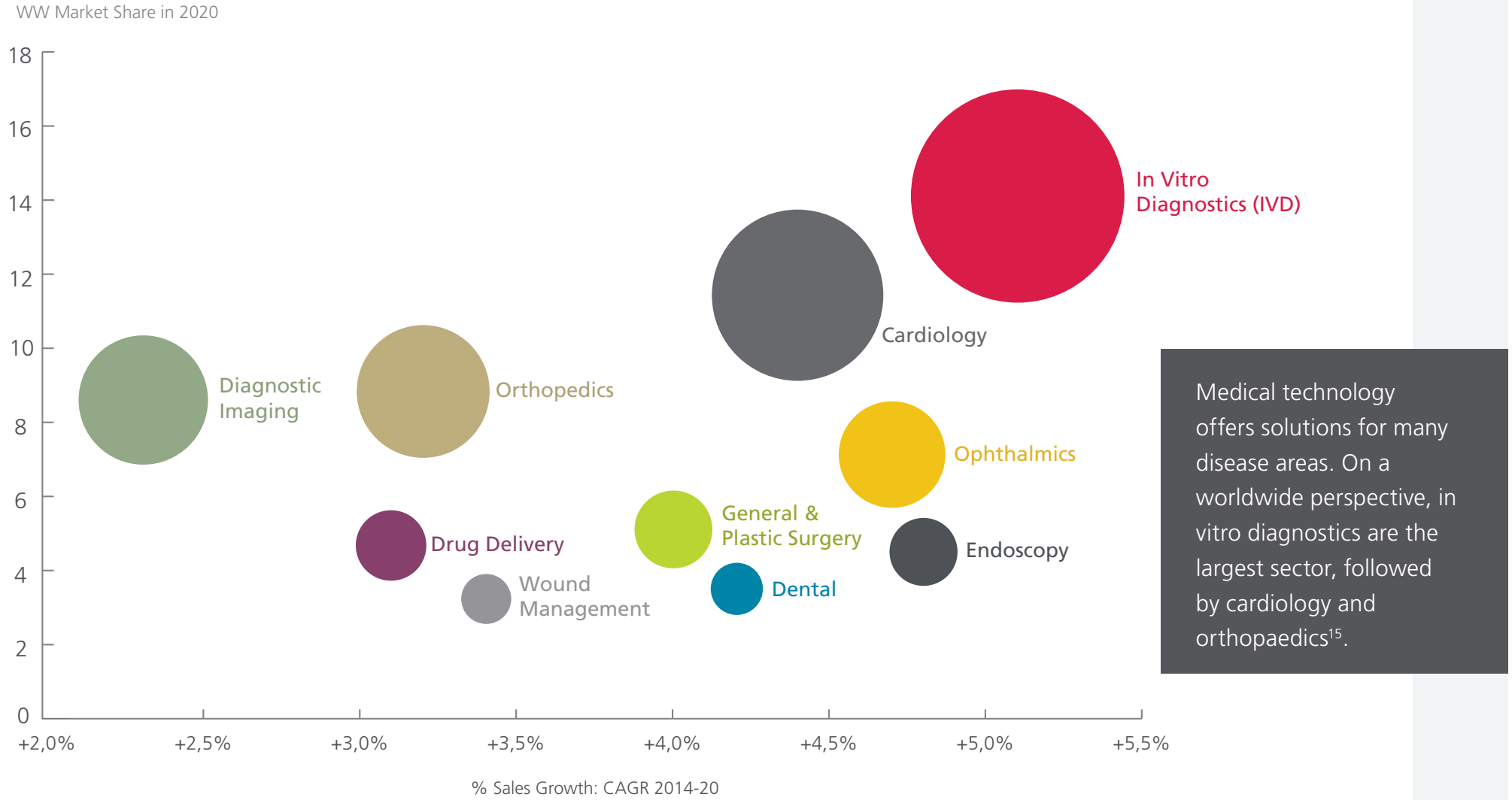
CE 98/79

MEDICAL DEVICES
THROUGHOUT LIFE

Eucomed
Medical Technology
www.eucomed.org


Medical devices[1]
In Vitro Diagnostics[2]
High risk
Low risk
Class III
Class IIB
Class IIA
Class I
Class D
Class C
Class B
Class A
AB-
O+
O-
B+
A+
A-

World medical technology market by area and sales growth, 2014-2020[15]



Medical technology offers solutions for many disease areas. On a worldwide perspective, in vitro diagnostics are the largest sector, followed by cardiology and orthopaedics[15].

Note: Size of Bubble = WW Sales in 2020

Source: EvaluateMedTech® September 2015

Xiaomi Mix 2s (2018):

256 GB memoria

8 núcleos de 2,8 GHz, 64 bits

AGC, 1969:

2KB memoria

1 núcleo, 1 MHz

Memoria: 128 millones de veces mayor
Capacidad cálculo: 2800 veces mayor

Luna: 1969

2021 d.c.

Salud(t,tec) dt dtec

-950 a.c

Prótesis egipcias (950 a.c.)

Civilizaciones antiguas...

- Hipócrates (460-370 a.c.): coleccionista de técnicas y remedios médicos. Se empieza a vencer a la superstición ....
- Galen: médico griego, más de 300 libros de observaciones anatómicas basadas en disecciones de animales.

Edad Media...

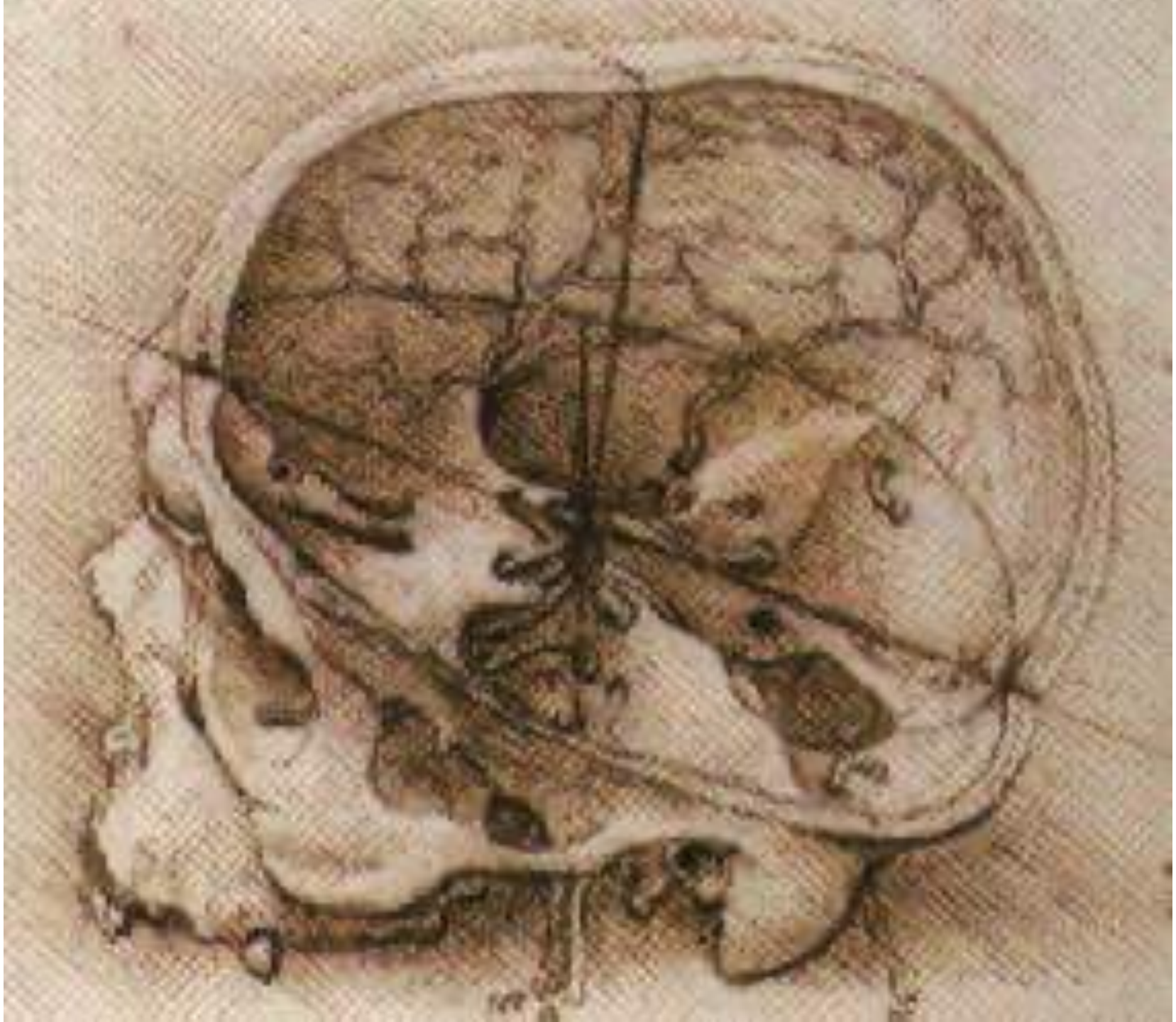
- Las iglesias se convierten en depósito de la información médica.

- Época oscura (hasta finales siglo X): estancamiento de la investigación.

- Expansión de sistema hospitalario (XI-XIII). Miedo, superstición ...

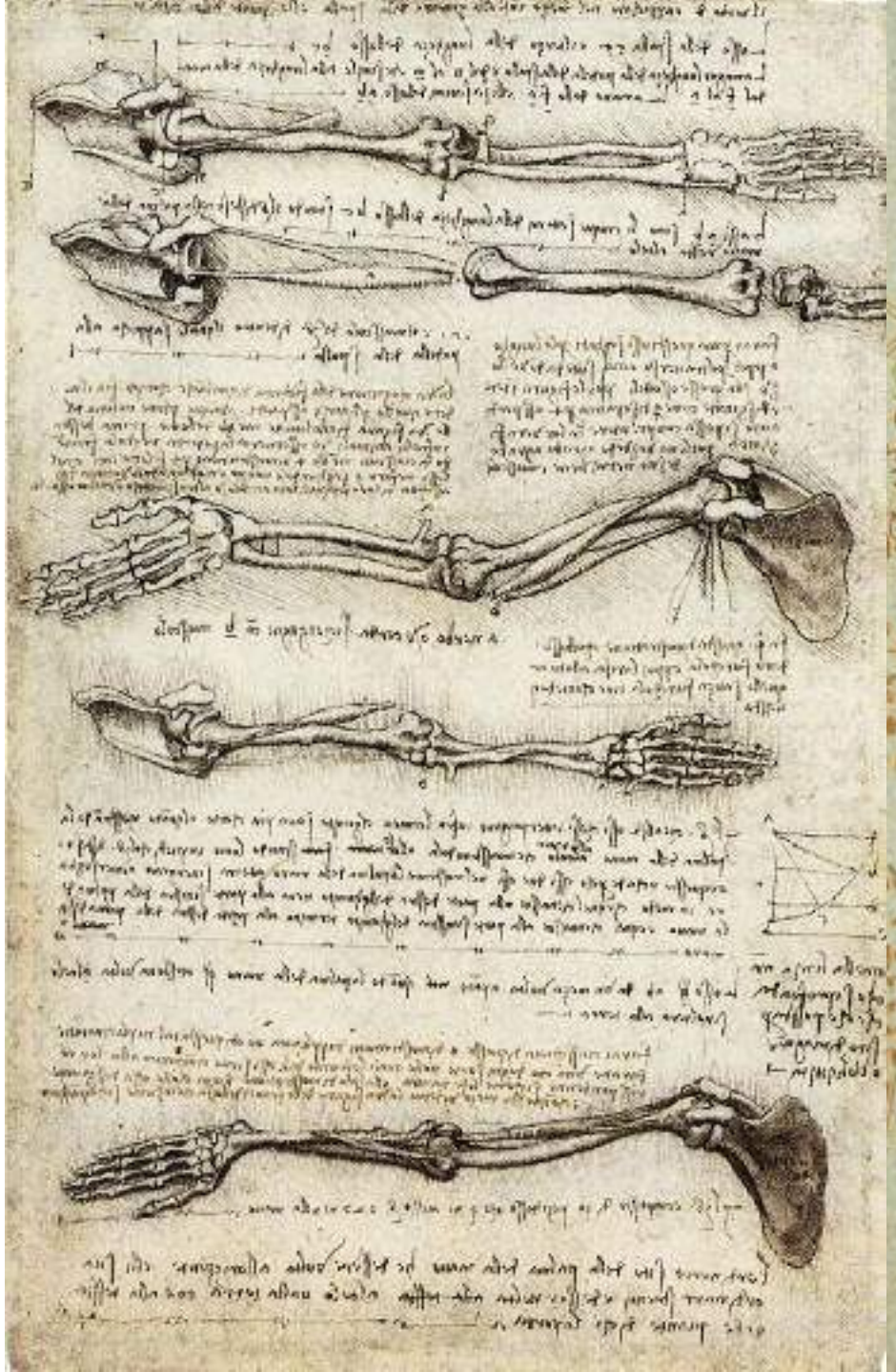
Renacimiento ....

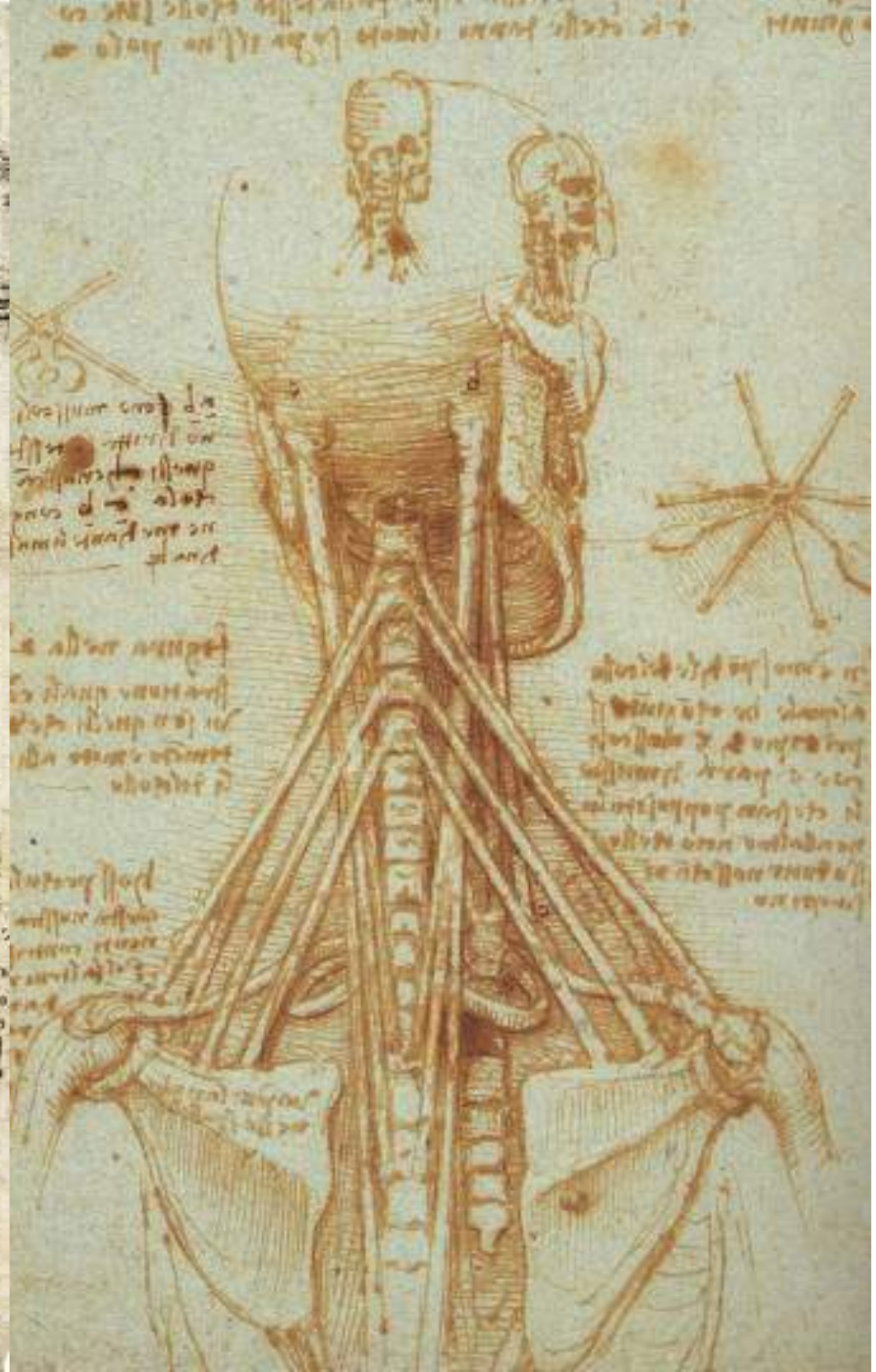
- Miguel Angel ...
- Leonardo da Vinci ...
- Durero ...
- Vesalio ...



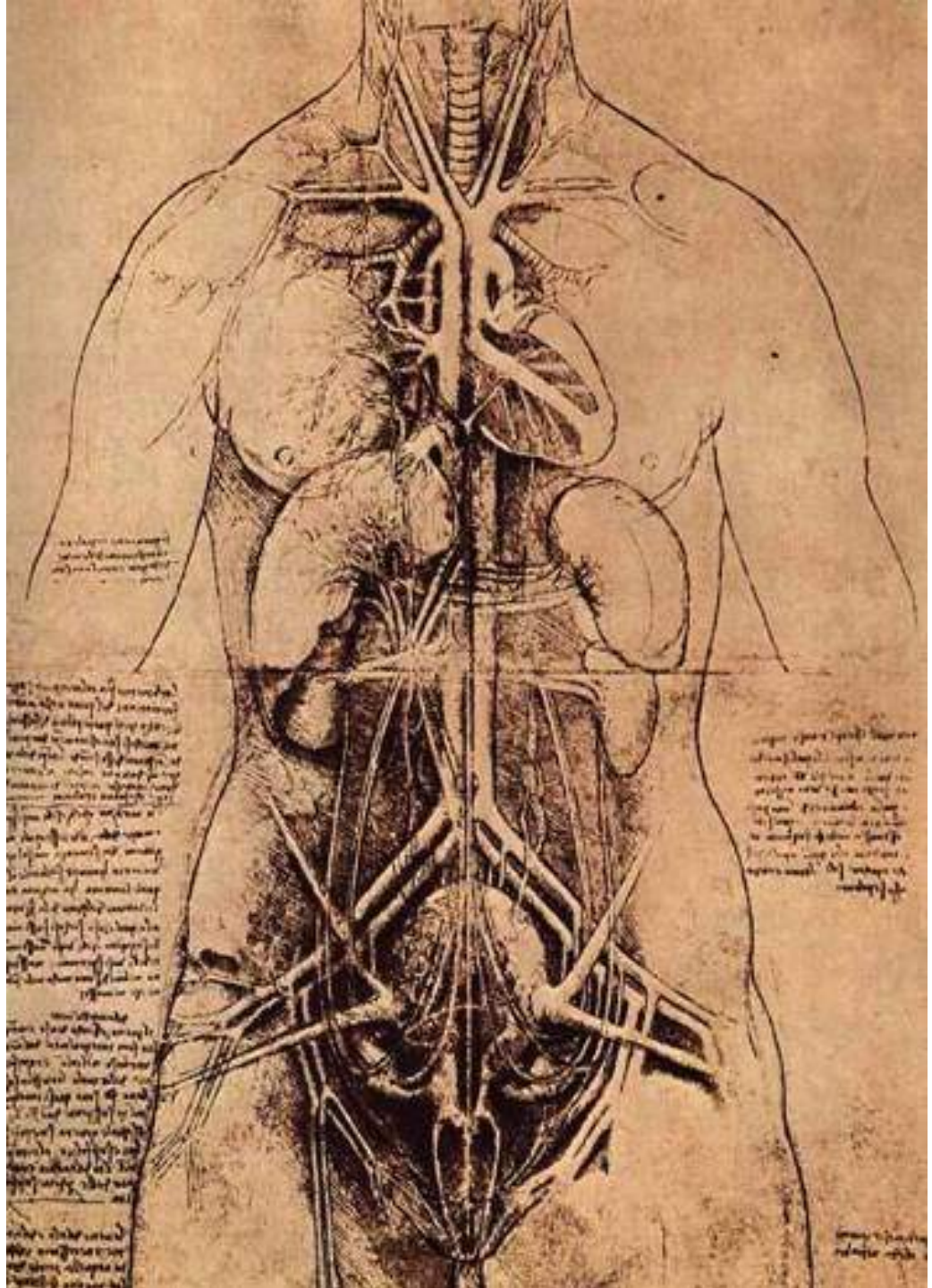
Leonardo Da Vinci
Grabados y dibujos

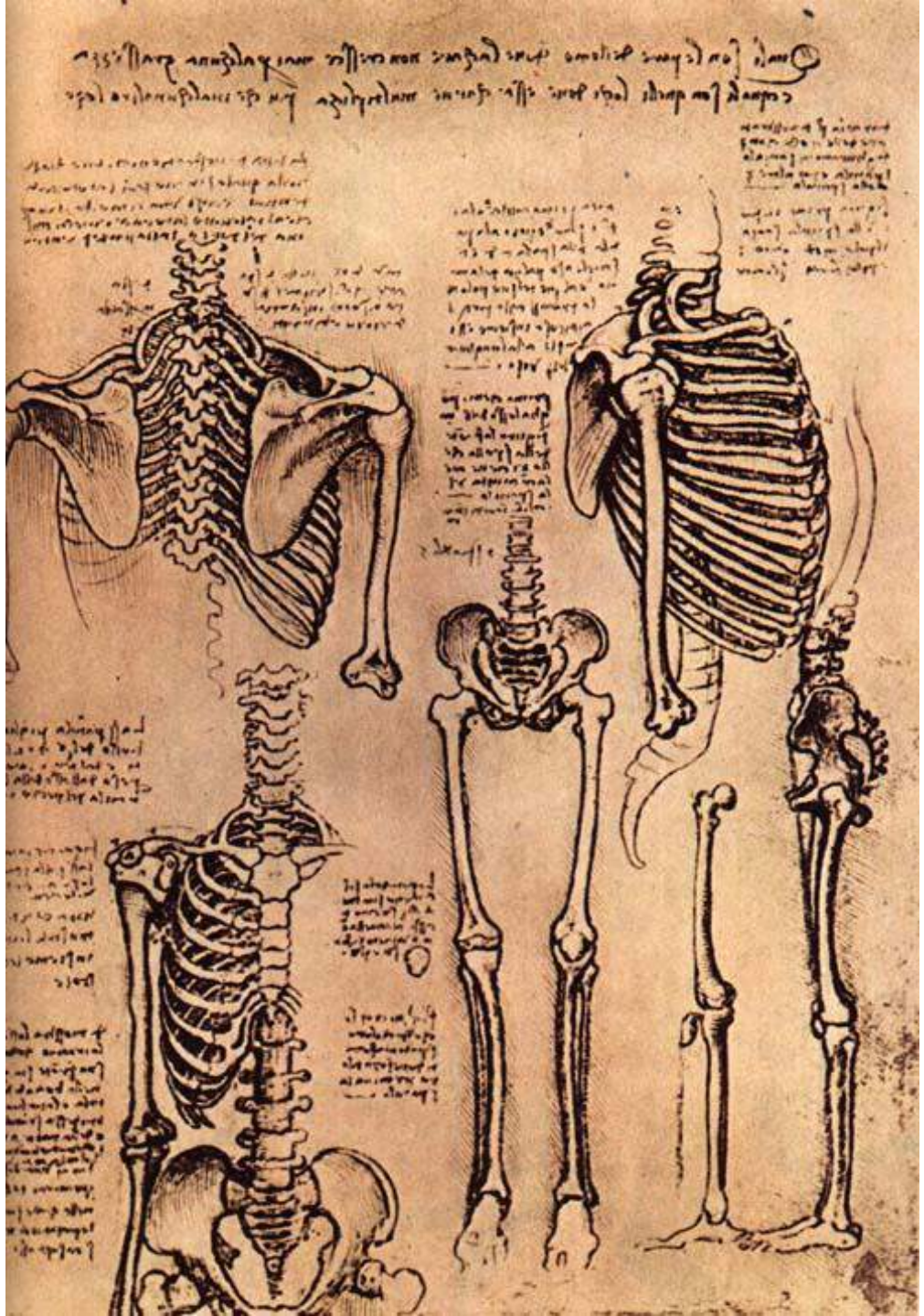
Leonardo Da Vinci
Grabados y dibujos

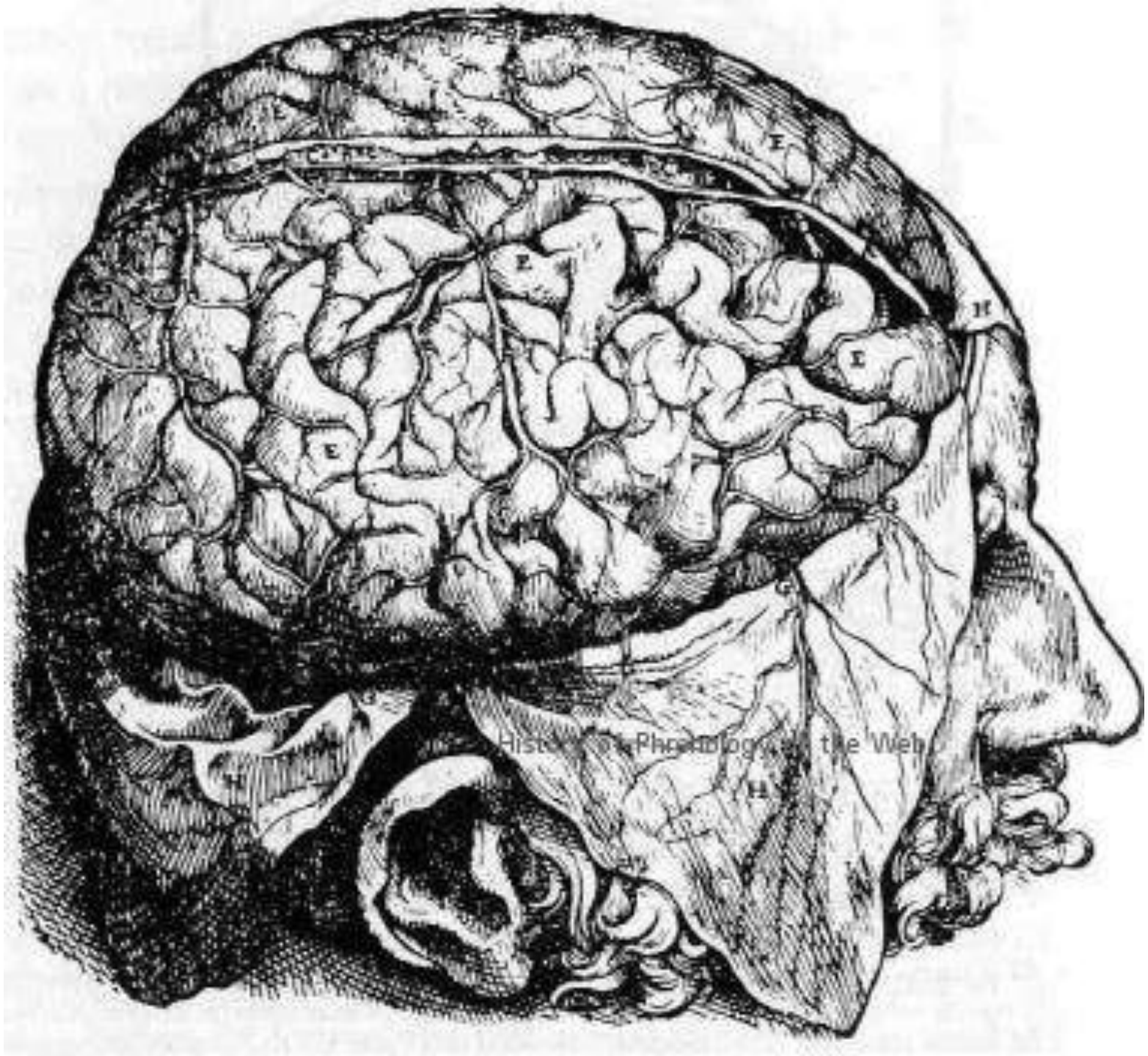




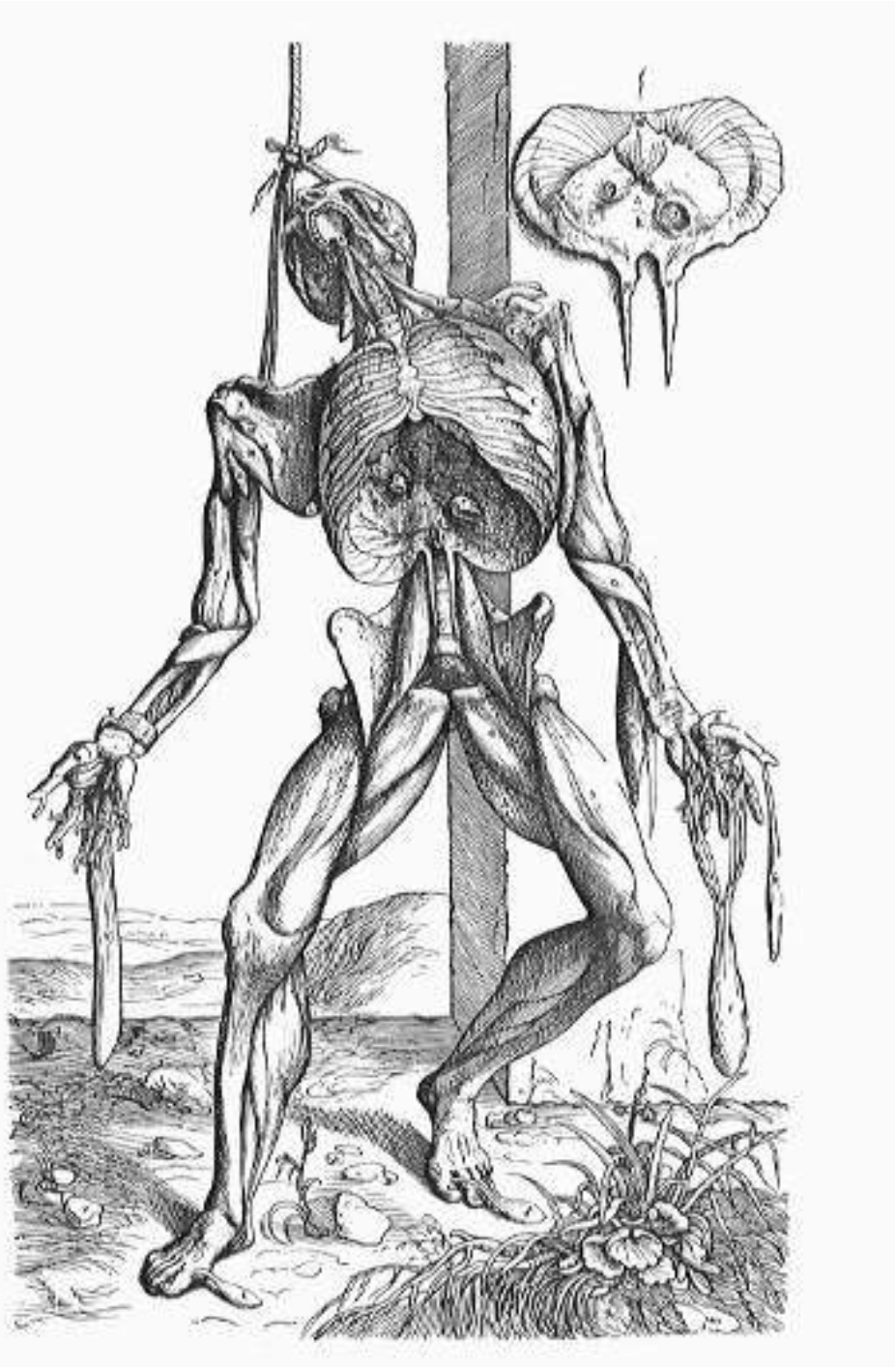
Leonardo Da Vinci
Grabados y dibujos







Andrea Vesalio
Grabados y dibujos



Andrea Vesalio
Grabados y dibujos

Renacimiento (s. XV-XVI)

- Primeros colegios médicos: Salerno, Bolonia, Padua, Montpelier, Oxford.

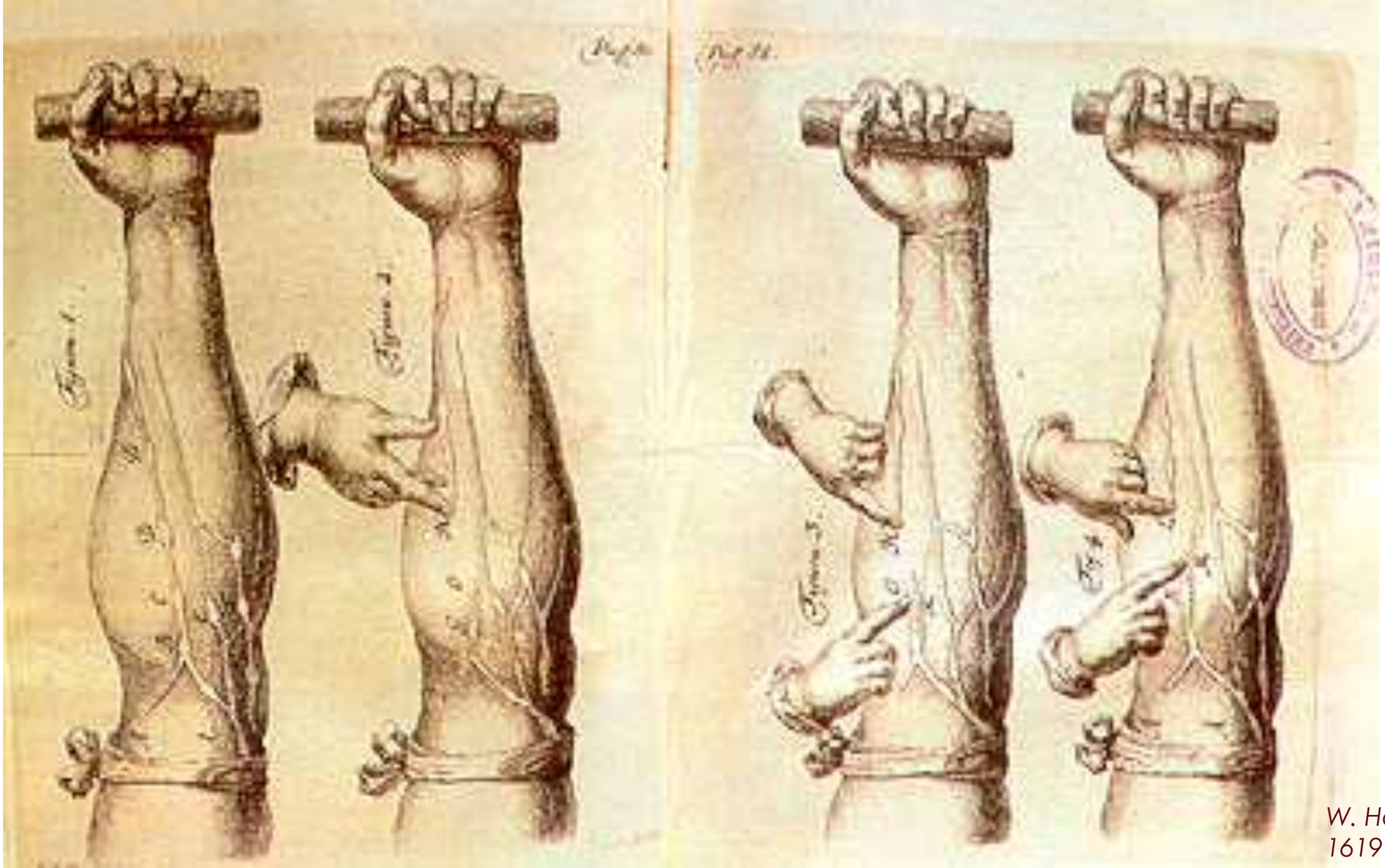
- Galileo inventa el termómetro (1596).

- Representaciones del esqueleto humano basadas en ingeniería.

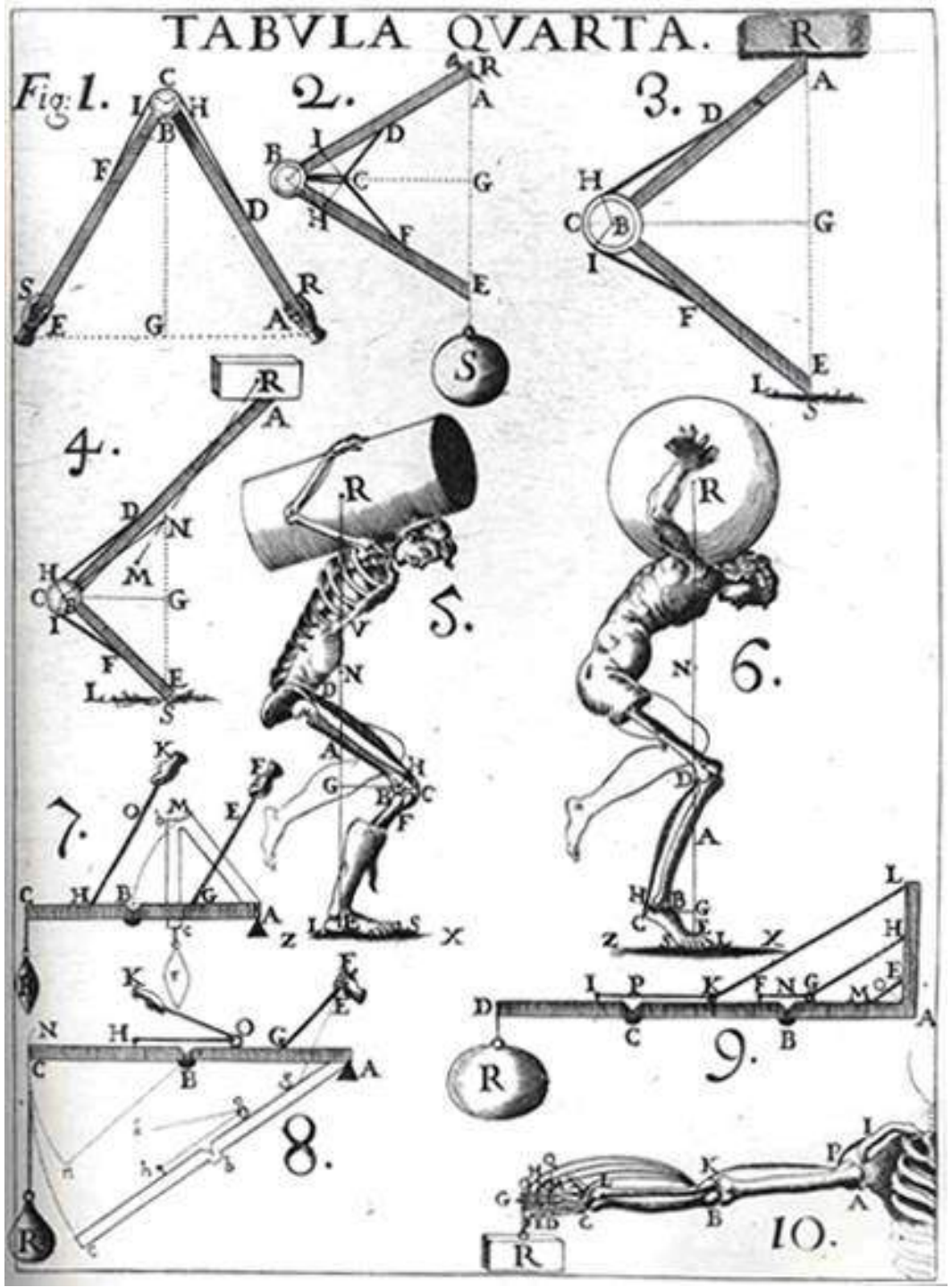
Revolución científica ....

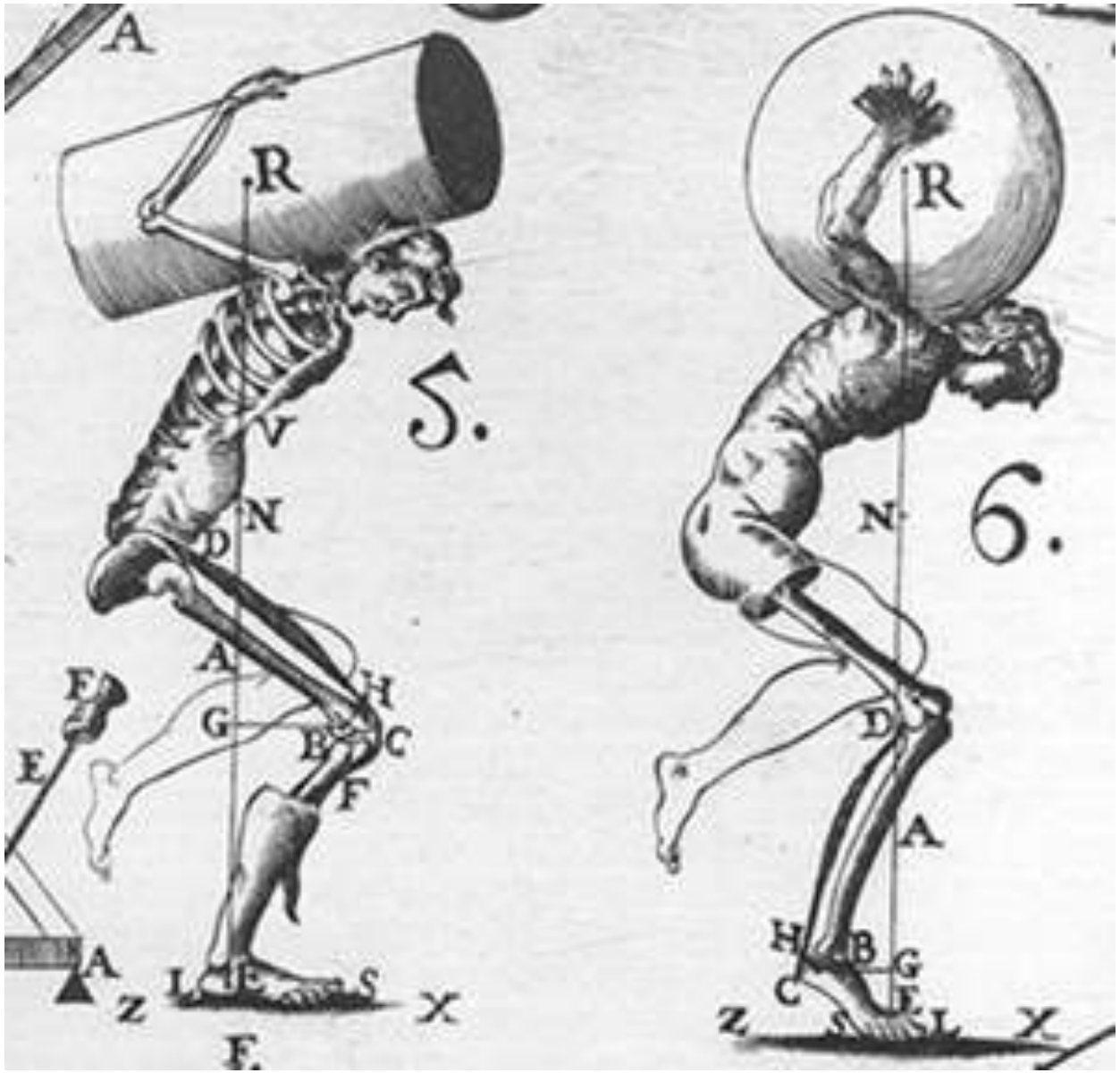
- W. Harvey: hemodinámica. Descubrimiento funcionamiento sistema circulatorio (1619).

- G. Borelli: descripción sistema músculo esquelético según posturas y movimientos.



W. Harvey
1619





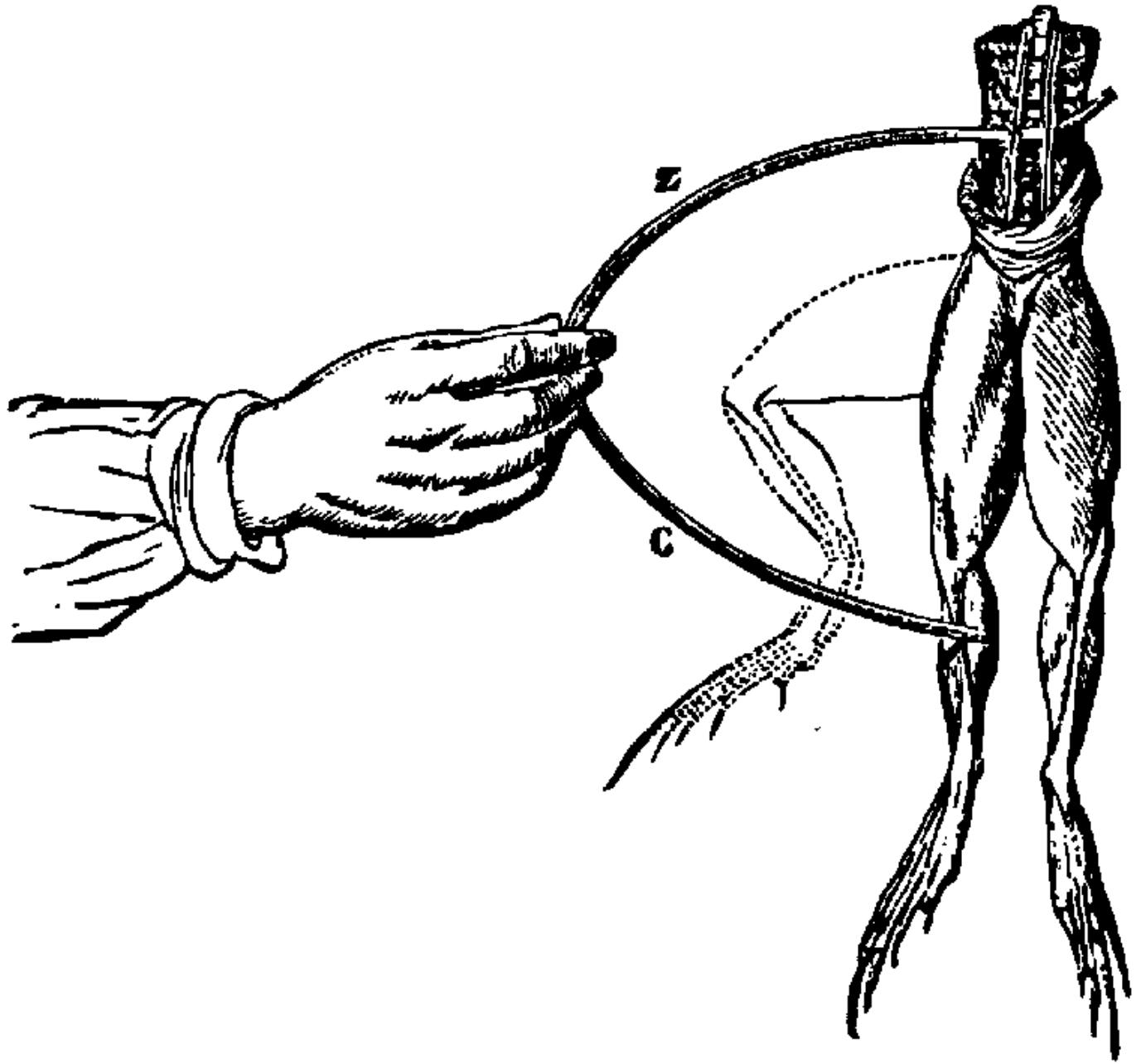
G.A.Borelli
1608-1679

- L. Galvani (1780): electrofisiología.

- T. Young (1808): teoría propagación vasos sanguíneos.

- W. Thomson (1855): conducción en fibras nerviosas.

- Hermann von Helmholtz: oftalmoscospio, oftalmómetro.



L.Galvani
1780

- T. Green (1872): resucitación cardiorespiratoria.
- A. D. Waller (1888): registro no invasivo de potenciales eléctricos.
- W. Rontgen (1895): Imagen por Rayos-X.

Y llegamos al siglo XX ...

- Primeros años SIGLO XX: medicina eléctrica.
- Años 20: electrocardiógrafo, angiografía.
- Años 30: electroencefalógrafo, microscopio electrónico.
- Años 40: ultrasonidos (sonar), resonancia magnética, mod. matemáticos.

A BOON TO WOMEN OF ALL AGES.

HARNESS' ELECTRIC CORSET

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THE COMPANY'S QUALIFIED LADY NURSES MAY BE CONSULTED DAILY

IF UNABLE TO CALL SEND REMITTANCE DIRECT TO 52, OXFORD STREET, LONDON, W.

Regd. Trade Mark.

TRY IT.

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IN appearance they do not differ from the regular corsets, being made of the same material (best quality) in the latest style, and most approved shapes. They are, in fact, the

"VERY THING"

FOR ALL Women—Young or Old

THESE Health-giving CORSETS CURE

"WEAK BACK,"

prevent Irregularities of the System, and speedily relieve

HYSTERIA,

Internal Complaints, Loss of Appetite,

DYSPEPSIA,

Kidney Disorders, and all

RHEUMATIC & ORGANIC AFFECTIONS.

A LADY'S OPINION.

Mrs. CHAS. COBBINGTON, of Misterton, Notts., writes: "I shall be glad if you will send me another pair of your splendid Electric Corsets. I have derived

For HEALTH

1885

1902

Años 50 ...

- Crecimiento económico.
- **Marcapasos y desfibriladores.**
- Respiración y circulación asistida.
- Radiaciones de alta energía.
- **Analizadores químicos automáticos.**

Años 60 ...

- ❑ Incertidumbre social.
- ❑ Corazón artificial (¿5 años?).
- ❑ Telemetría biomédica.
- ❑ Imagen por ultrasonidos.
- ❑ Implantes auditivos.

1914

Speak Softly!

"Not so loud, dearie. Speak softly—I can hear now as well as you." "Why, mumsie! You have been deaf ever since I was a baby."

"True, but my hearing has been entirely restored as if by magic. I am using a wonderful new scientific invention for the deaf. I can hear every kind of sound—even conversation in an ordinary tone with my

New 8-Tone Mears Ear Phone

Thousands of sufferers from deafness have recovered their hearing with this perfected instrument. It is *eight* times as efficient, *eight* times as convenient, *eight* times as satisfactory, and *eight* times as valuable as our famous Standard model. It has *eight* different sound strengths, *eight* different tone adjustments, instantly changed by a touch of the finger.

15 Days' Free Trial

Will you try a Mears Ear Phone for fifteen days in your own home at our expense? Will you believe the evidence of your own ears? The trial costs you nothing. You're not asked to buy unless satisfied. Send us the free coupon today.

The Offer:

In order to give our patrons the *personal service* that is possible only when we deal with them **direct**, we have discontinued all our American Agencies. *Our new 8-tone model ear phone can be had only direct from our New York office.* To advertise our new direct selling plan and to introduce the perfected Mears 8-Tone, we are making a **Special Introductory Offer** direct to you.

If you live in New York, call at our offices for free demonstration.

Booklet on Request

Fill out coupon and mail it to us. We will send you promptly the Mears Ear Phone Book. This book explains the causes of deafness, tells how to check the progress of the malady and how to treat it. Mail the coupon today for this book and Special Introductory Offer. Do it now.

Mears Ear Phone Co.
Dept. 1297
45 W. 34th St.,
NEW YORK N. Y.

COUPON

Mears Ear Phone Co.
Dept. 1297
45 W. 34th Street
New York, N. Y.

Gentlemen: Please mail me, free and postpaid, your Mears Ear Phone Booklet and particulars of your Special Introductory Offer on your new model Eight-Tone Mears Ear Phone and Free Trial Offer.

Name _____

1960

FAMOUS ZENITH QUALITY in a new full-powered miniature hearing aid, worn entirely at the ear...price $115.

Now! Zenith makes better hearing *simple and practical* for new thousands in every walk of life. The new "Diplomat" *Slip-On* Hearing Aid fits snugly and securely *behind* the ear . . . weighs less than an ounce, including tiny pill-size battery. Discover the thrill of a *new experience in hearing* with the great new Zenith "Diplomat" *today!*

The seven superb 4- and 5-transistor Zenith models are designed to meet every type and degree of electronically correctable hearing impairment. Prices range from $50 to $150, including Ten-Day Money-Back Guarantee, One-Year Warranty, Five-Year Service Plan.

Zenith keeps selling costs low, cuts down overhead . . . savings are passed on to you. If we paid sales commissions of $160 to $180, as some others do, even our $50 model would have to sell for over $200!

Visit your nearby Zenith Hearing Aid Dealer, listed in the classified phone directory. Or mail coupon for free literature and list of franchised dealers.

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HEARING AIDS
By the Makers of World-Famous Zenith TV, Radios, Amazing "Space Command" TV Tuner

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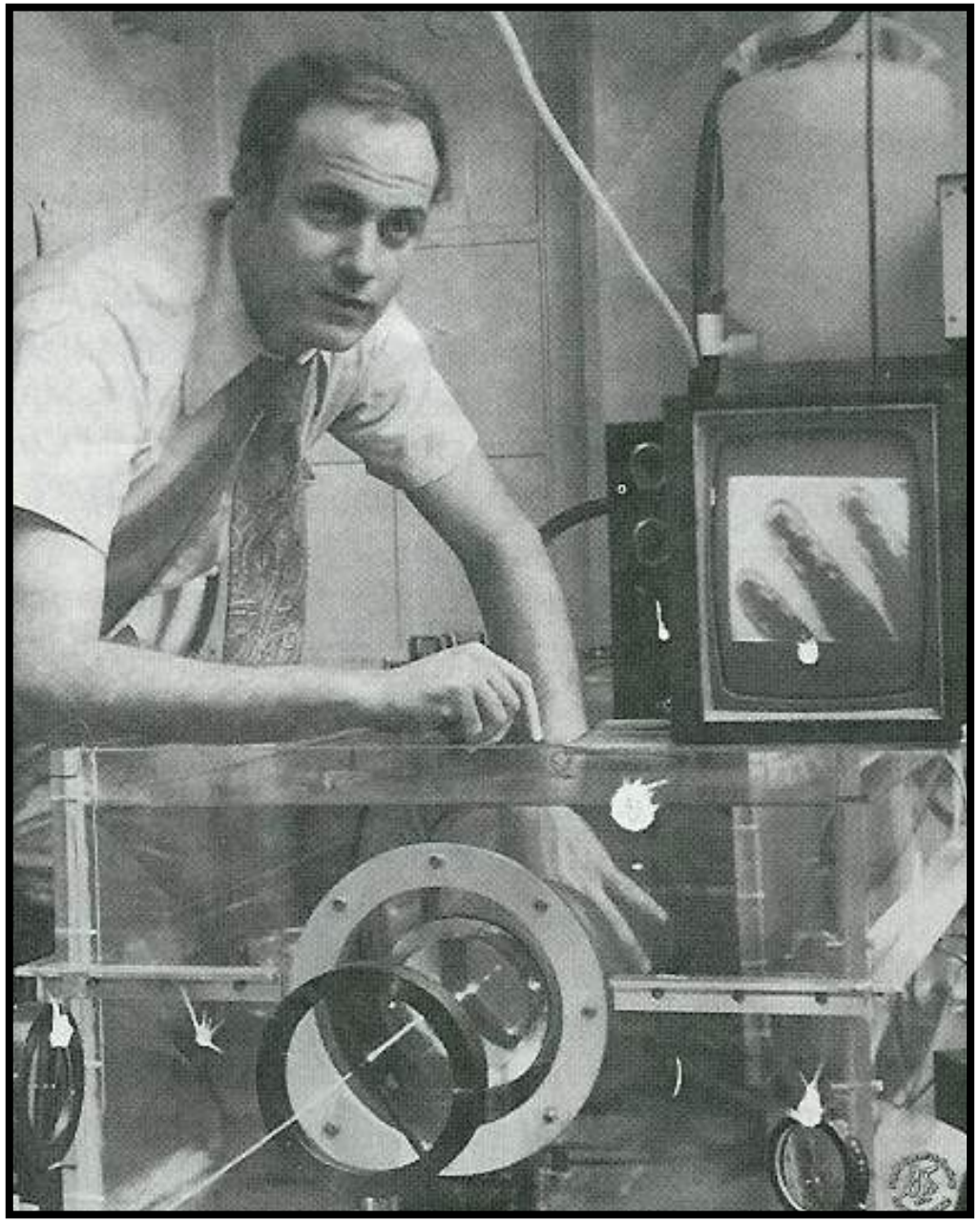
5801 Dickens Ave., Dept. 4P, Chicago 39, Ill.
Please mail facts on "Diplomat" *Slip-On* Hearing Aid. Also list of Zenith Dealers.

NAME (PLEASE PRINT)
ADDRESS
CITY ZONE STATE

Mention the National Geographic—It identifies you

Años 70 ...

- ¿Problema o solución?.
- Tomografía computerizada.
- Resonancia magnética nuclear.
- Tomografía emisión de positrones.
- Problemas de compatibilidad.



1970


ID; 020-60-57 10/4/79
NORMAL MITRAL VALVE 4.14
ID: 020-56-76 10/04/79
MITRAL INSUFF. 4.14

1979

Años 80 ...

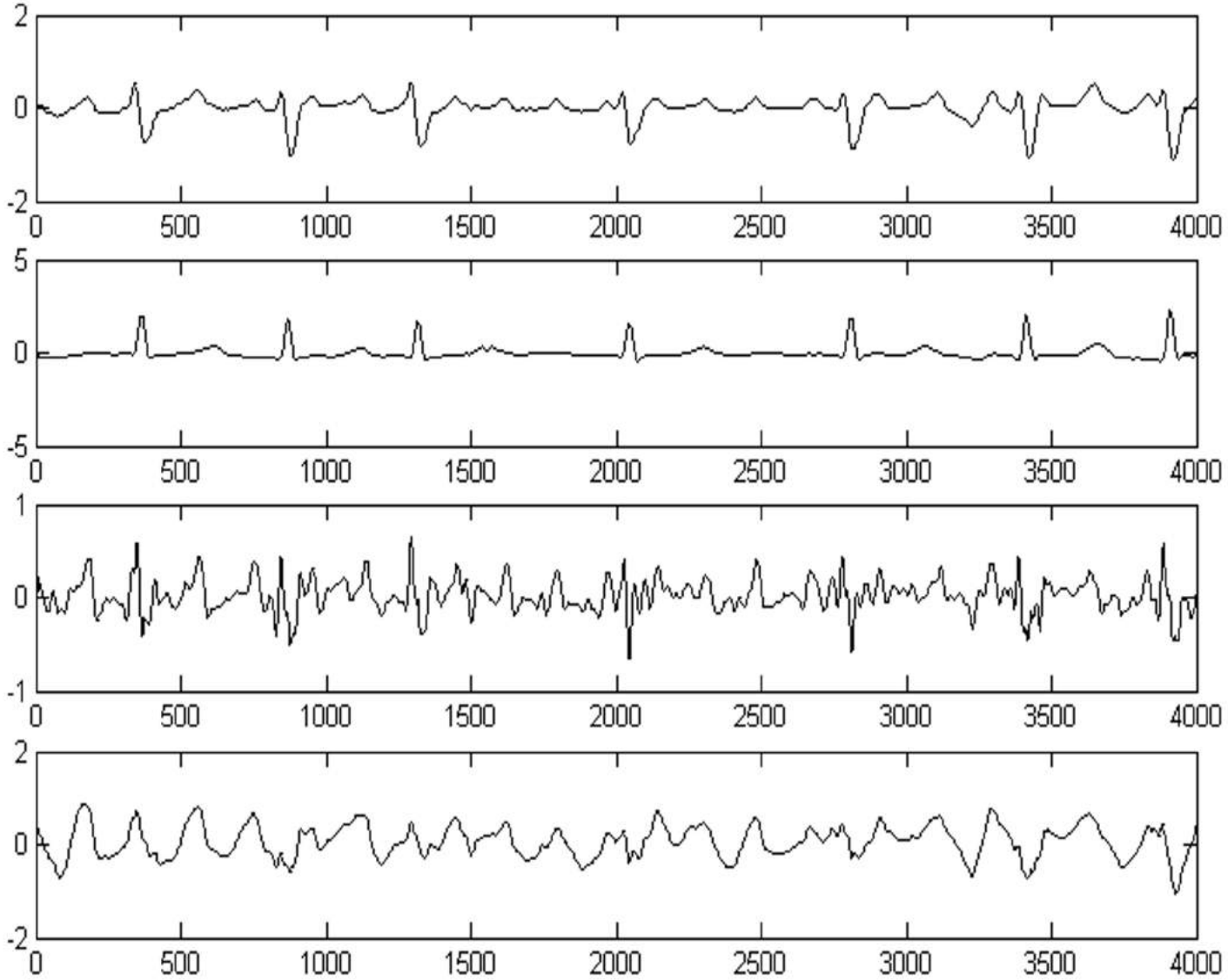
- Aumento 71 % en inversiones.
- Corazón artificial temporal.
- Angioplastia, Endoscopia.
- Ingeniería rehabilitación (paraolimpiadas).
- Ingeniería de tejidos (Gore-Tex, 1986).

Años 90 ...

- Proyecto genoma humano.
- Robótica médica, prótesis.
- Tejidos implantables.
  - Córnea, huesos, cartílagos ...
- Resonancia magnética funcional.
- Visible Human Project (1994).

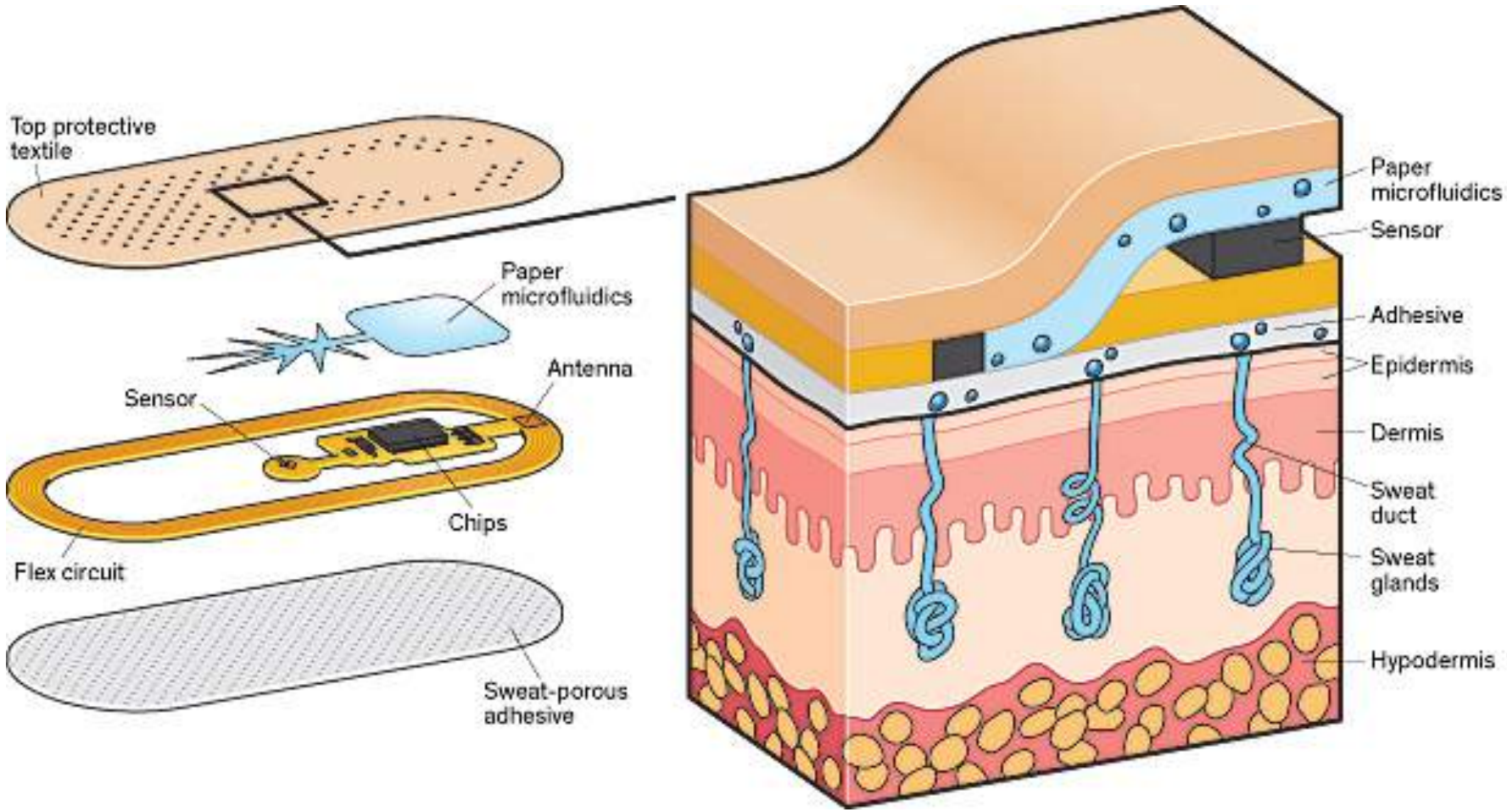
Siglo XXI

- Medtronic Inc: estimuladores cerebrales, espina dorsal, incontinencia ....
- Cochlear Ltd: implantes cocleares, prótesis paralíticos.
- Synapse Biomedical Std: estimulador diafragma.
- Cyberonics Inc: depresión, obesidad, epilepsia.



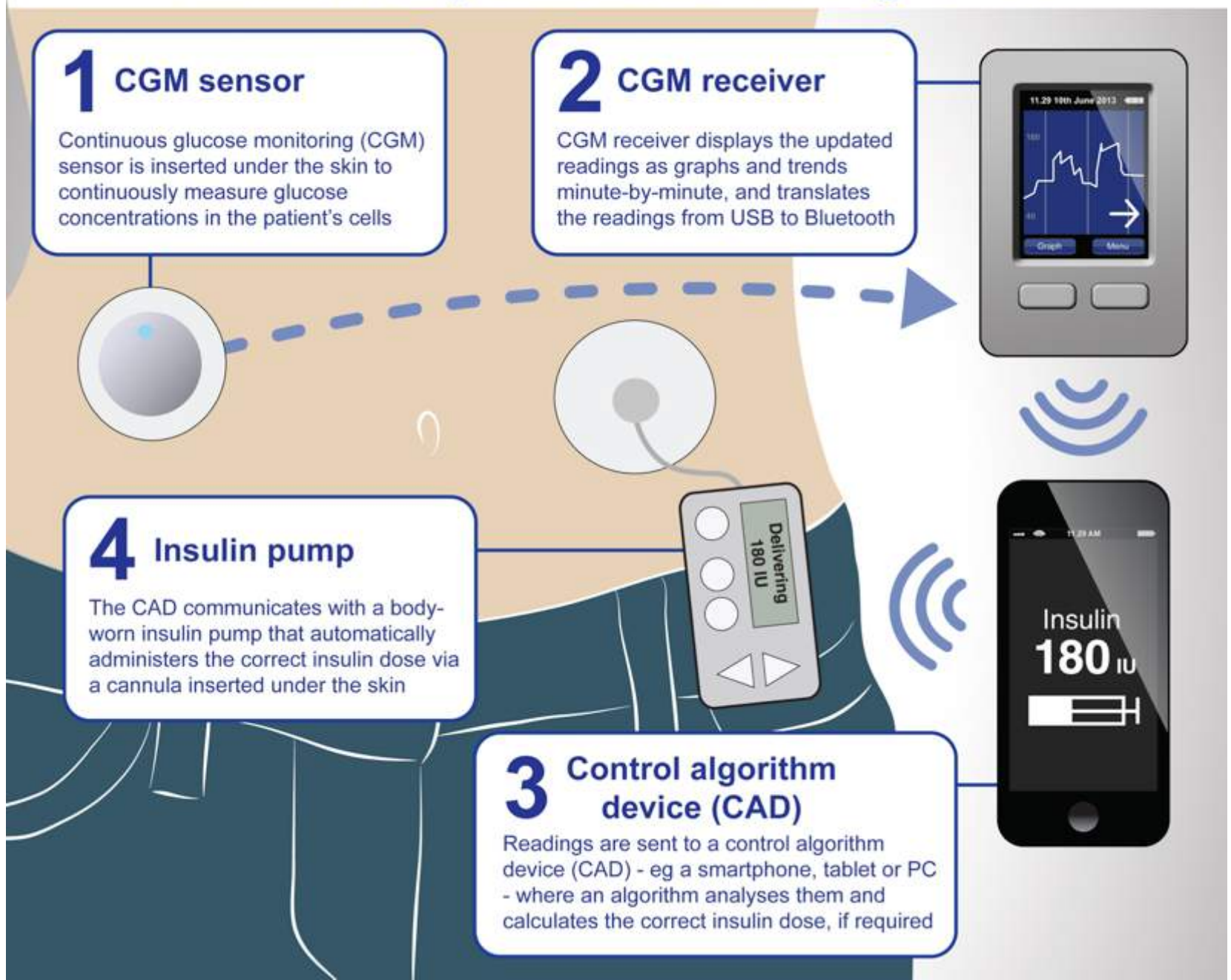
Cardiología: sistemas de predicción implantados


CYBEX
CYBEX


Top protective textile
Paper microfluidics
Antenna
Sensor
Chips
Flex circuit
Sweat-porous adhesive
Paper microfluidics
Sensor
Adhesive
Epidermis
Dermis
Sweat duct
Sweat glands
Hypodermis

1 Liquid Biopsies:
The New Wave of Genetic Testing?

Artificial pancreas *at a glance*

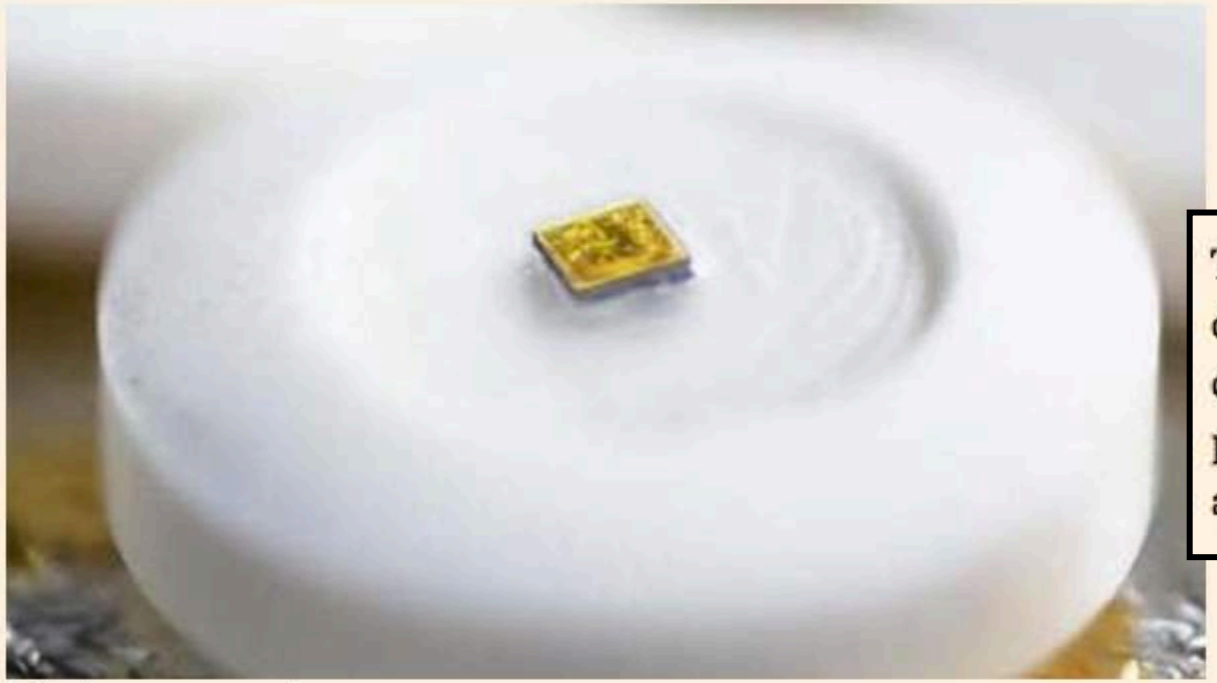



XENEX

September 10, 2015 2:45 pm

US regulators accept ‘chip in a pill’ application

Andrew Ward, Pharmaceuticals Correspondent



Inside story: a sensor on a pill

Smart medicines that tell doctors when their patients have taken them moved a step closer to reality after a company developing the first “digital pill” had its drug application accepted by US regulators.

The hope is that the pill, produced by Proteus Digital Health, will help ensure patients stick to their prescriptions and so reduce wasteful spending on drugs that are not taken properly.

THE WEEK'S BEST IN COMPANIES

Glencore goes defensive ANALYSIS
Glasenberg grapples with commodities fallout

Clock ticks on Cryan ANALYSIS
Deutsche Bank chief faces deadline on targets

Pop a new kind of pill NEWS
US regulators accept ‘chip in a pill’ application

Danger of regulation COMMENT
Watchdogs risk needless pain for investment banks

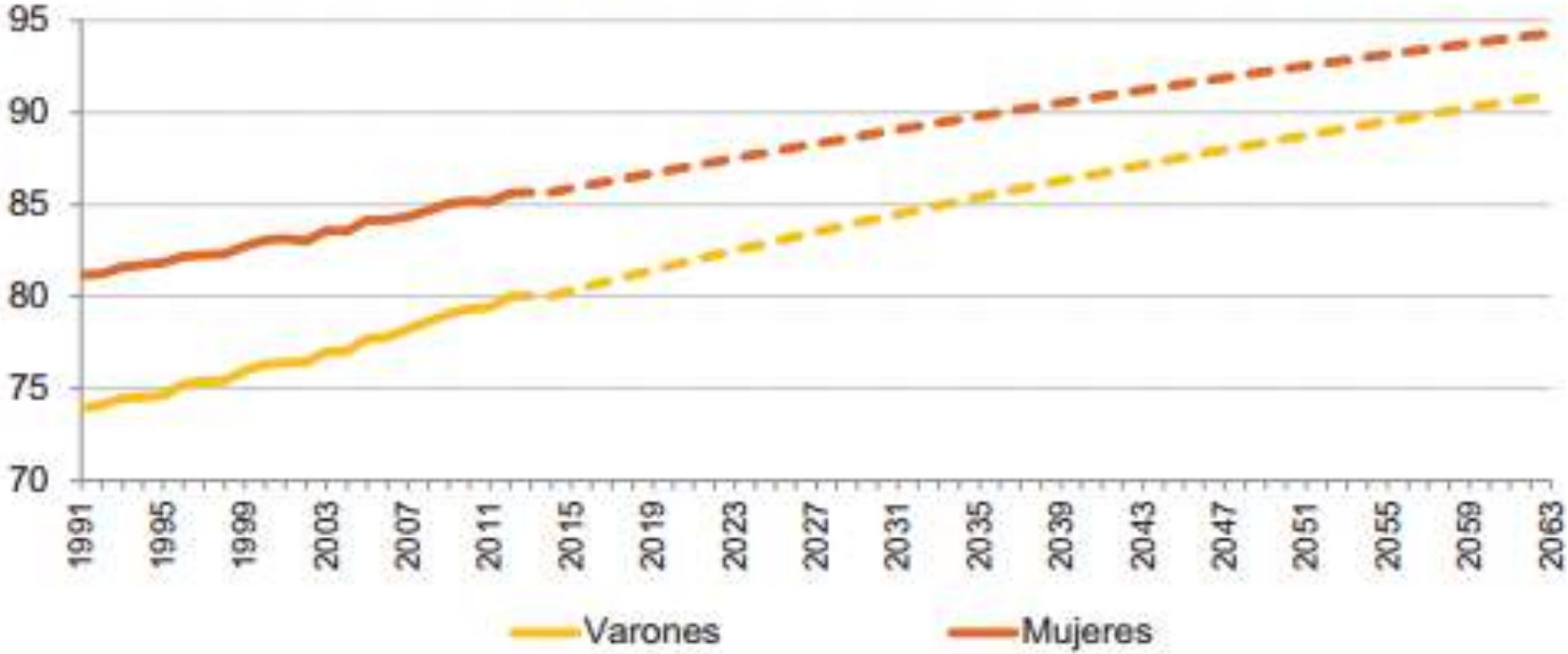
The “smart pill” contains a tiny ingestible sensor that detects when the drug has reached the stomach. It communicates with a wearable patch plastered to the patient’s skin which then transmits the information to a mobile device.


Activity
10:09
MOVE
EXERCISE
STAND
Workout
10:09
Running
Last: 8.0 Miles
September 6, 2014
Walking
Cycling

Obsolescencia

Instituto Nacional de Estadística

Esperanza de vida al nacimiento




80535

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Long term care
£ £ £ £ £
STOP

Universidad de Castilla-La Mancha

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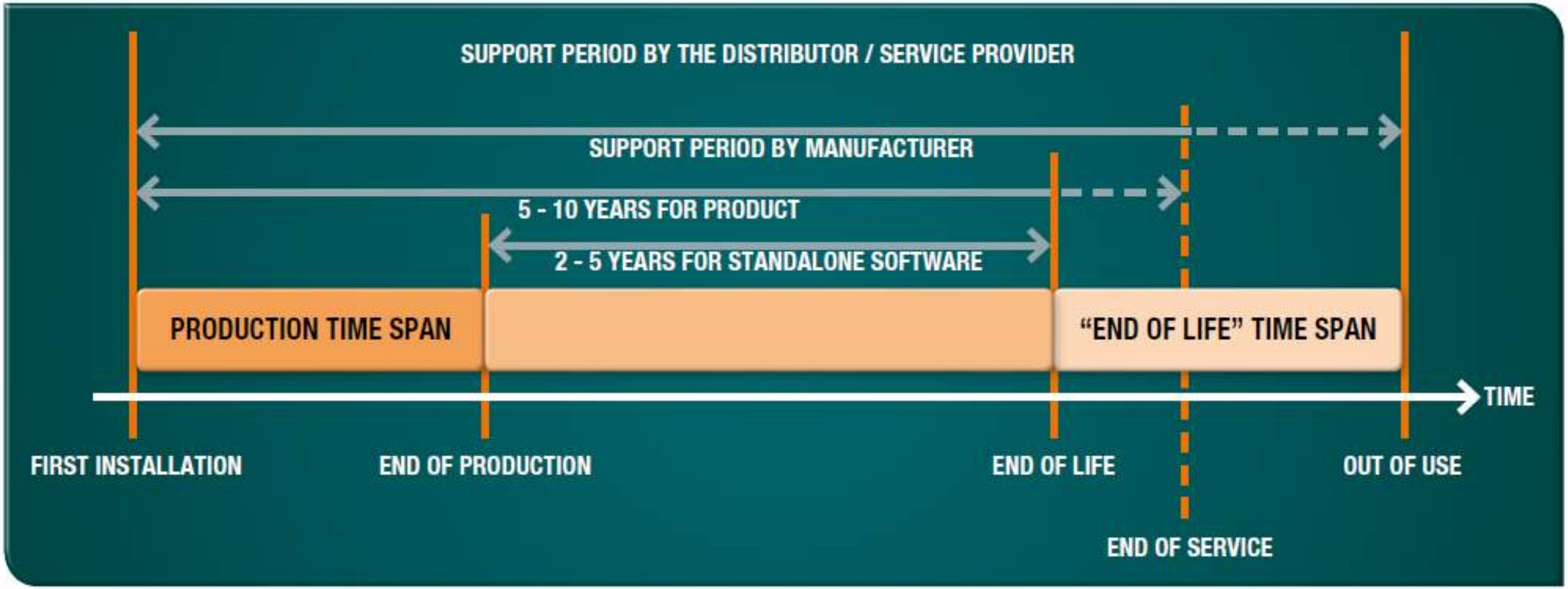
César Sánchez Meléndez

Vicerrector de Cultura, Deporte y Responsabilidad Social

Profesor Titular de la E. Politécnica Cuenca

PRODUCT LIFE CYCLE



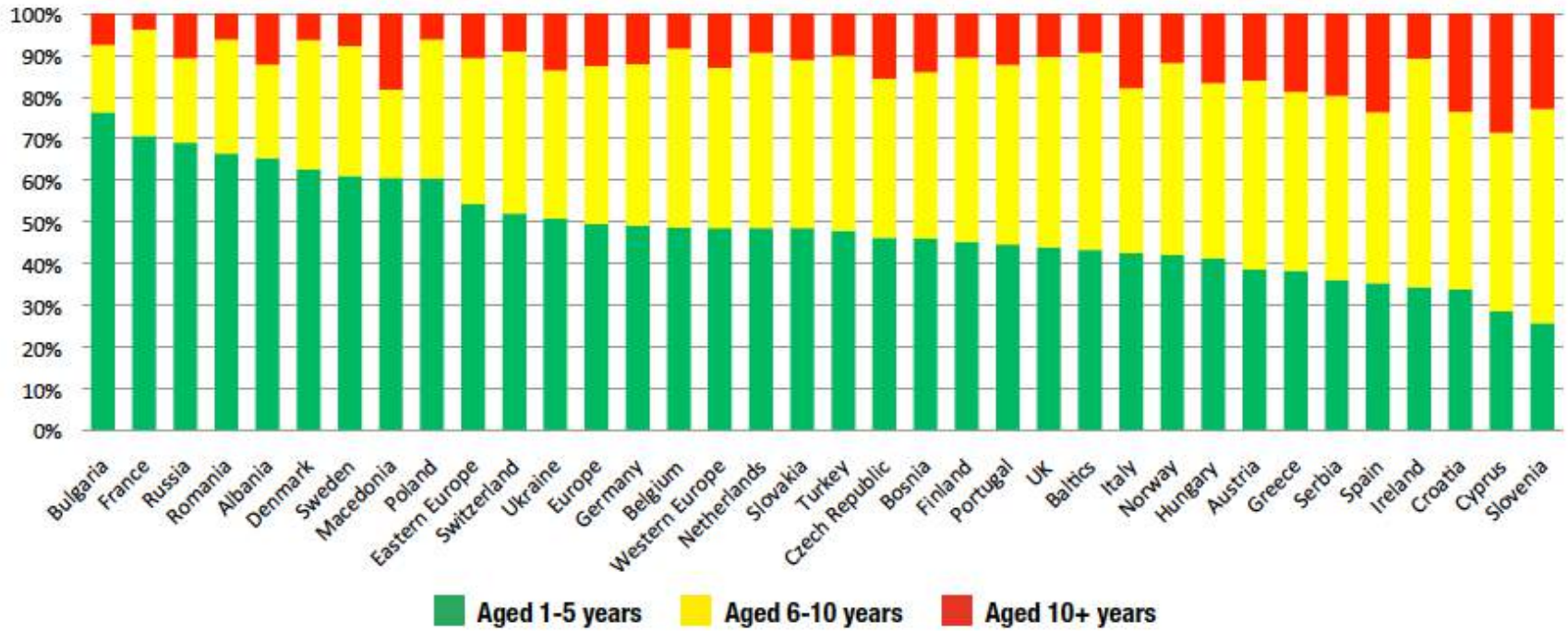
THE GOLDEN RULES

1. **AT LEAST 60% OF THE INSTALLED EQUIPMENT BASE SHOULD BE YOUNGER THAN 5 YEARS**
   Medical technology life-cycle averages suggest equipment that is up to 5 years old adequately reflects the current state of technology and offers opportunities for economically reasonable upgrade measures

2. **NOT MORE THAN 30% SHOULD BE BETWEEN 6 - 10 YEARS OLD**
   Medical technology which is between 6 - 10 years old is still fit for use, but already requires replacement strategies to be developed in order for systems to benefit from efficiency gains afforded by current technologies

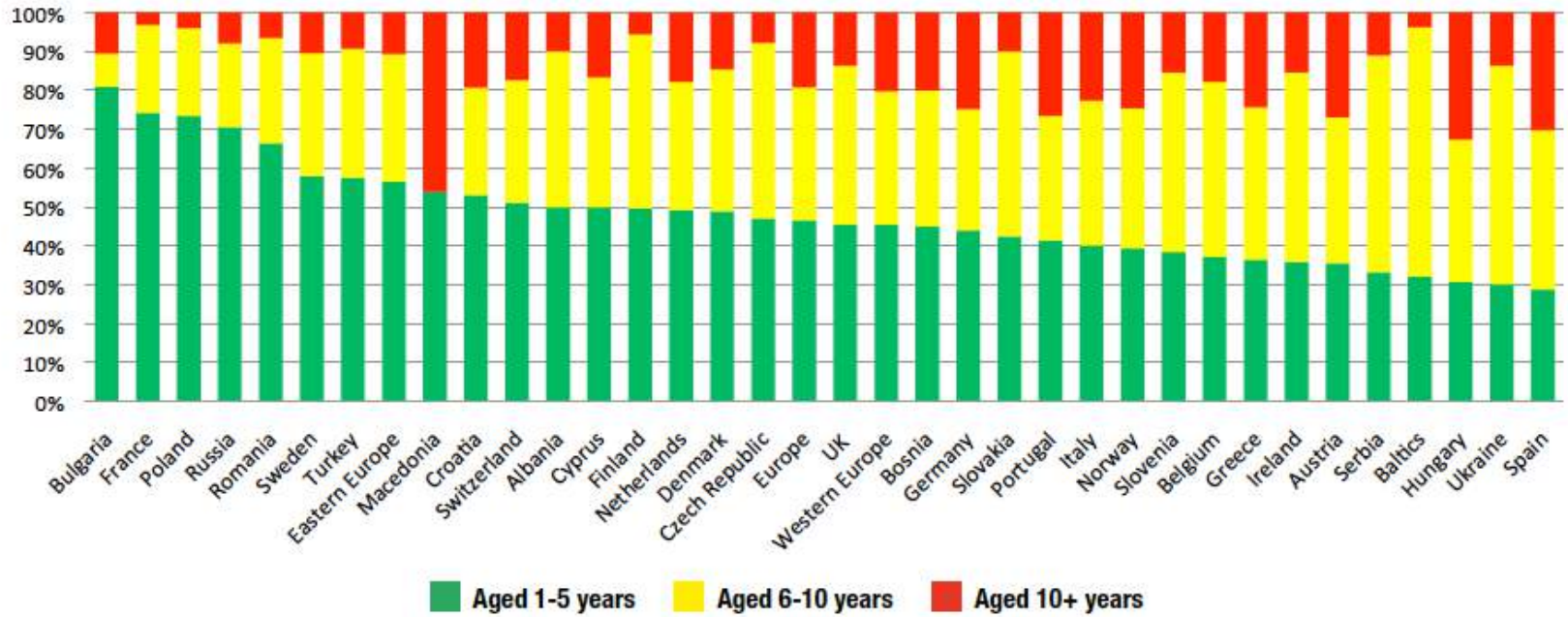
3. **NOT MORE THAN 10% OF THE AGE PROFILE SHOULD BE OLDER THAN 10 YEARS**
   Medical technology older than 10 years is outdated, difficult to maintain and repair, and may be considered obsolete and inadequate for conducting some procedures when compared with current medical guidelines and best practices; replacement is essential

TABLE 2 Country overview age profile for COMPUTER TOMOGRAPHY in 2013



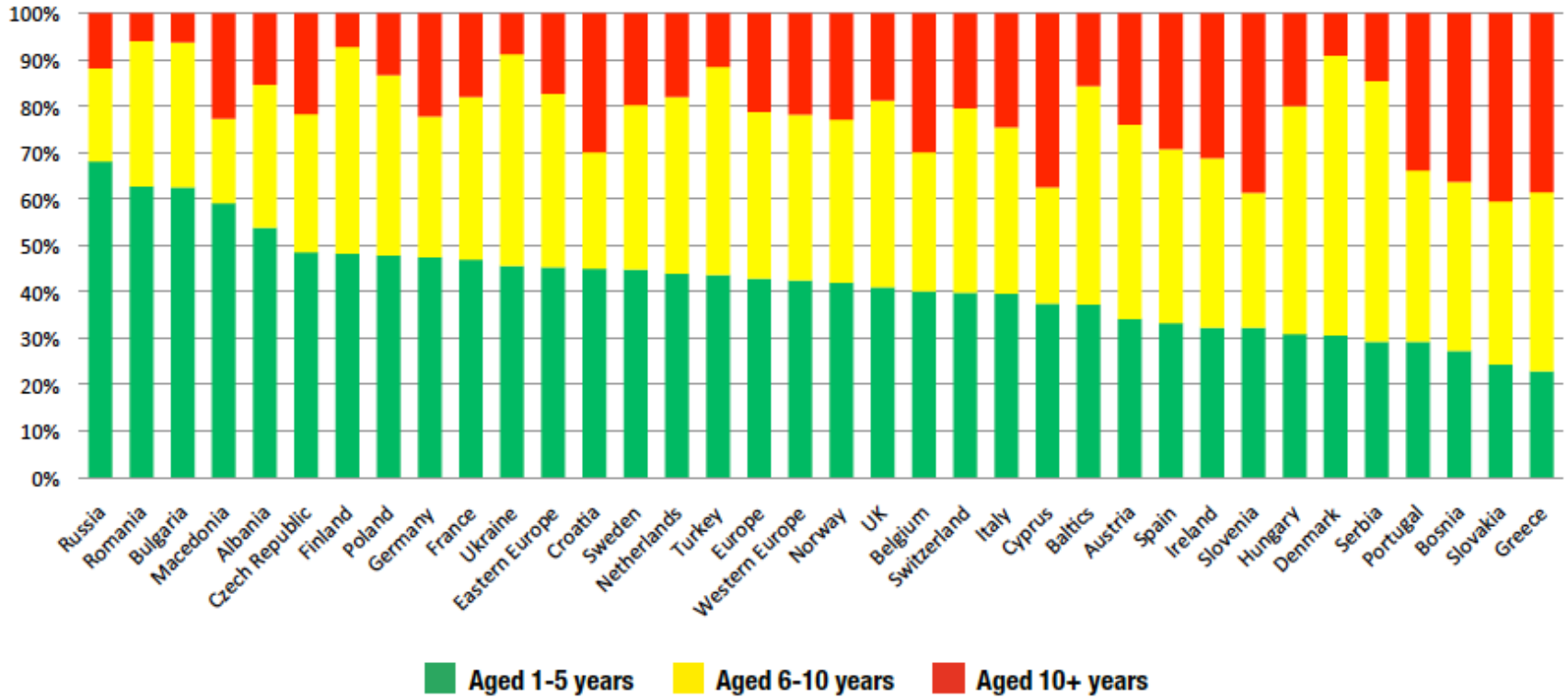
- In Western Europe the known CT installed base has significantly aged; the percentage of over 6 year old systems has risen from 40% in 2008 to 51.5% in 2013.
- Several countries, including Spain, Italy, Ireland, Greece, and Austria, are showing significant and negative deviations from the Golden Rules criteria.
- Aging CT equipment has specific issues relating to patient exposure to radiation – these are addressed in Section 6.

TABLE 3 Country overview age profile for MAGNETIC RESONANCE IMAGING in 2013



- In Western Europe the situation has deteriorated significantly. In all 54.5% of all installed MRI systems exceed 6 years of age versus 47.8% in 2008.
- On average 1 in 5 MRI systems is currently more than 10 years of age. Notably the Spanish Greek and Portuguese age profiles show rapid and extensive ageing, in Spain this translates to 1 system every 3, and in Portugal and Greece 1 every 4 is over 10 years old. At this age, MRI equipment is simply not as powerful in diagnostic capability or function compared to new machines and the older equipment will be slower to operate. Additionally current technology has allowed for wider bores and much quieter operating.

TABLE 4 Country overview age profile for X-RAY ANGIOGRAPHY in 2013



- Many countries have shown deterioration in age profile compared to the previous years; none of the countries in Western Europe meet the Golden Rule.
- Installed equipment over the age of 6 years is substantially over 60% in many countries; in Greece 77.1%, in Portugal 70.7%, in Denmark 69.3, and in Spain 66.7%.

COCIR Medical Imaging Equipment Age Profile & Density - 2019 Edition

30.07.2019 | Publications

Despite COCIR raising concerns over the deterioration in the age of the installed base of medical imaging equipment in Europe, approximately one-fifth of such equipment is now more than ten years old and therefore challenging to maintain and repair and inadequate for conducting some procedures. Their replacement is essential. This is the main finding of the 2019 edition of the COCIR Medical Imaging Equipment Age Profile and Density.

Back

Related Files

- 19076_COC_AGE_PROFILE_web.pdf | 4 MB

https://www.cocir.org/media-centre/publications/article/cocir-medical-imaging-equipment-age-profile-density-2019-edition.html

		INSTALLED BASE (IB): EU + Switzerland & Norway					AGE VS 'GOLDEN RULES'		
		2008	2011	2013	2015	2018	Mkt% by age 2015	Mkt% by age 2018	Golden Rules
X-Ray Angiography/Interventional	Installed Base (IB) 1-5 years - units	2650	3811	3084	2361	3766	49%	44%	60%
X-Ray Angiography/Interventional	IB 6-10 years - units	1571	2163	2579	1641	2982	34%	35%	30%
X-Ray Angiography/Interventional	IB >10 years - units	1237	1780	1534	769	1765	16%	21%	10%
X-Ray Angiography/Interventional Total		5458	7754	7197	4771	8513			
Computed Tomography	IB 1-5 years - units	6189	6569	5898	5669	5955	48%	45%	60%
Computed Tomography	IB 6-10 years - units	3155	3627	4528	4574	4523	39%	34%	30%
Computed Tomography	IB >10 years - units	933	1061	1477	1548	2748	13%	21%	10%
Computed Tomography Total		10277	11257	11903	11791	13226			
Magnetic Resonance Imaging	IB 1-5 years - units	3568	4287	4002	4081	5062	47%	51%	60%
Magnetic Resonance Imaging	IB 6-10 years - units	2082	2546	2898	2947	2823	34%	28%	30%
Magnetic Resonance Imaging	IB >10 years - units	808	1178	1653	1587	2048	18%	21%	10%
Magnetic Resonance Imaging Total		6458	8011	8553	8615	9933			
Molecular Imaging PET	IB 1-5 years - units	430	532	448	378	565	49%	47%	60%
Molecular Imaging PET	IB 6-10 years - units	118	294	325	332	417	43%	35%	30%
Molecular Imaging PET	IB >10 years - units	40	110	91	63	219	8%	18%	10%
Molecular Imaging PET Total		588	936	864	773	1201			

Table A *Age Evolution[7] of Installed Base vs. COCIR Golden Rules*

OBSOLESCENT MEDICAL IMAGING TECHNOLOGY IS UNDERMINING PATIENT SAFETY

COMPUTED TOMOGRAPHY (CT)

21%

Over one fifth of the CT installed base in Europe is now **MORE THAN 10 YEARS OLD**.

2.900

Around 2900 CT units in Europe are obsolete, challenging to maintain and repair, inadequate for conducting some procedures; **REPLACEMENT** is **ESSENTIAL**.

The majority of these CT units are in: **ITALY**, **GERMANY**, **SPAIN**, **POLAND**, **UK**, **GREECE**, **PORTUGAL** and **FRANCE**.

In **10 YEARS**, the number of countries that do not meet the COCIR Golden Rules is over **3 TIMES** more.

OBSOLESCENT MEDICAL IMAGING TECHNOLOGY IS UNDERMINING PATIENT SAFETY

MAGNETIC RESONANCE IMAGING (MRI)

21%

Over one fifth of the MRI installed base in Europe is now **MORE THAN 10 YEARS OLD**.

2100

Around 2100 MRI units in Europe are now more than 10 years old. Medical technology more than ten years old is outdated and challenging to maintain and repair. Compared with current medical guidelines and best practices, it can be considered obsolete or inadequate for conducting some procedures; **REPLACEMENT** is **ESSENTIAL**.

The majority of these MRI units are in: **GERMANY**, **SPAIN**, **ITALY**, **UK** and **GREECE**.

In **10 YEARS**, the number of countries that do not meet the COCIR Golden Rules has more than **DOUBLED**.

OBSOLESCENT MEDICAL IMAGING TECHNOLOGY IS UNDERMINING PATIENT SAFETY

X-RAY ANGIOGRAPHY / INTERVENTIONAL

21%

Over one fifth of the X-Ray Angio installed base in Europe is now **MORE THAN 10 YEARS OLD**.

1,800

Around 1800 X-Ray Angio units in Europe are now more than 10 years old. Medical technology more than ten years old is outdated and challenging to maintain and repair. Compared with current medical guidelines and best practices, it can be considered obsolete or inadequate for conducting some procedures; **REPLACEMENT** is **ESSENTIAL**.

The majority of these X-Ray Angio units are in: **GERMANY**, **ITALY**, **UK**, **SPAIN**, **FRANCE**, **NETHERLANDS** and **POLAND**.

In **10 YEARS**, the number of countries that do not meet the COCIR Golden Rules has not shown any significant improvement.

OBSOLESCENT MEDICAL IMAGING TECHNOLOGY IS UNDERMINING PATIENT SAFETY

MOLECULAR IMAGING POSITRON EMISSION TOMOGRAPHY (MI-PET)

18% Nearly one fifth of the MI-PET installed base in Europe is now **MORE THAN 10 YEARS OLD**.

220 Around 220 MI-PET units in Europe are now more than 10 years old. Medical technology more than ten years old is outdated and challenging to maintain and repair. Compared with current medical guidelines and best practices, it can be considered obsolete or inadequate for conducting some procedures; **REPLACEMENT** is **ESSENTIAL**.

The majority of these MI-PET units are in: **ITALY, SPAIN**, **GERMANY**, **UK** and **FRANCE**.

In **10 YEARS**, the number of countries that do not meet the COCIR Golden Rules has not shown any significant improvement.

Anexo Mantenimiento

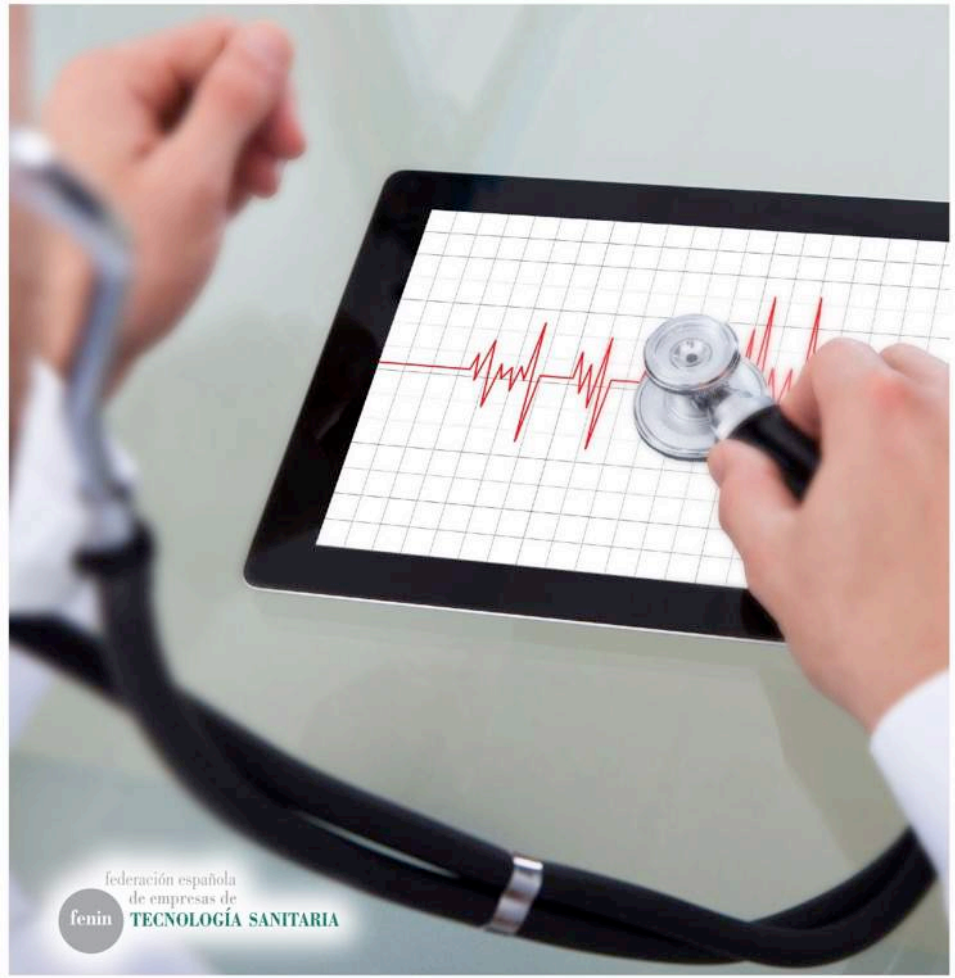
Anexo

PERFIL TECNOLÓGICO HOSPITALARIO EN ESPAÑA

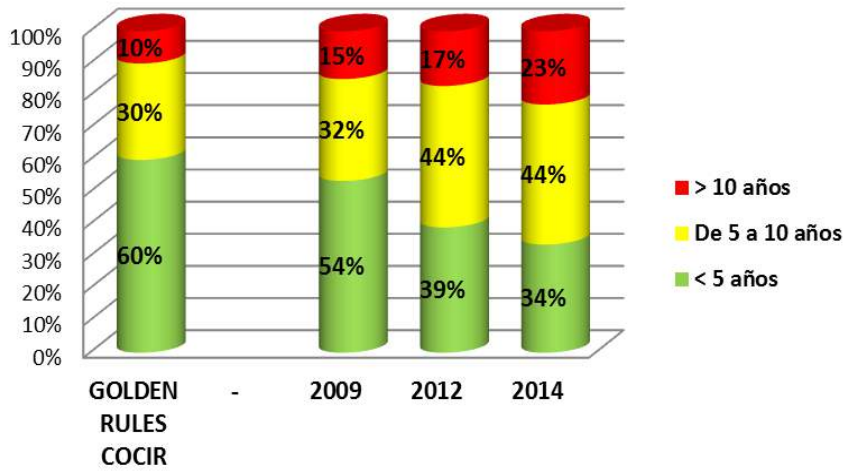
Sector de Tecnología y Sistemas de Información Clínica

Enero 2015

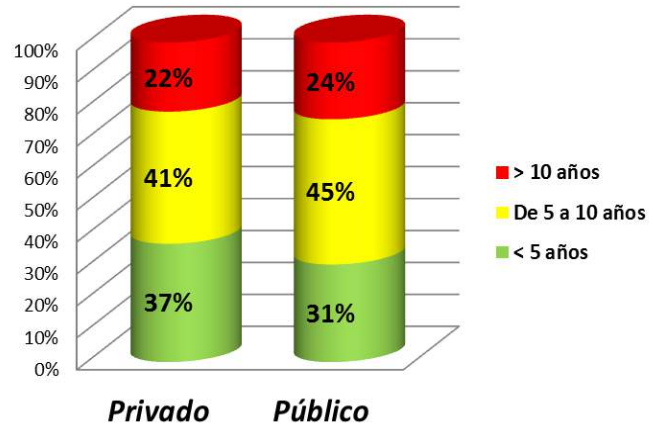
MANTENIMIENTO DE LA TECNOLOGÍA SANITARIA EN ESPAÑA

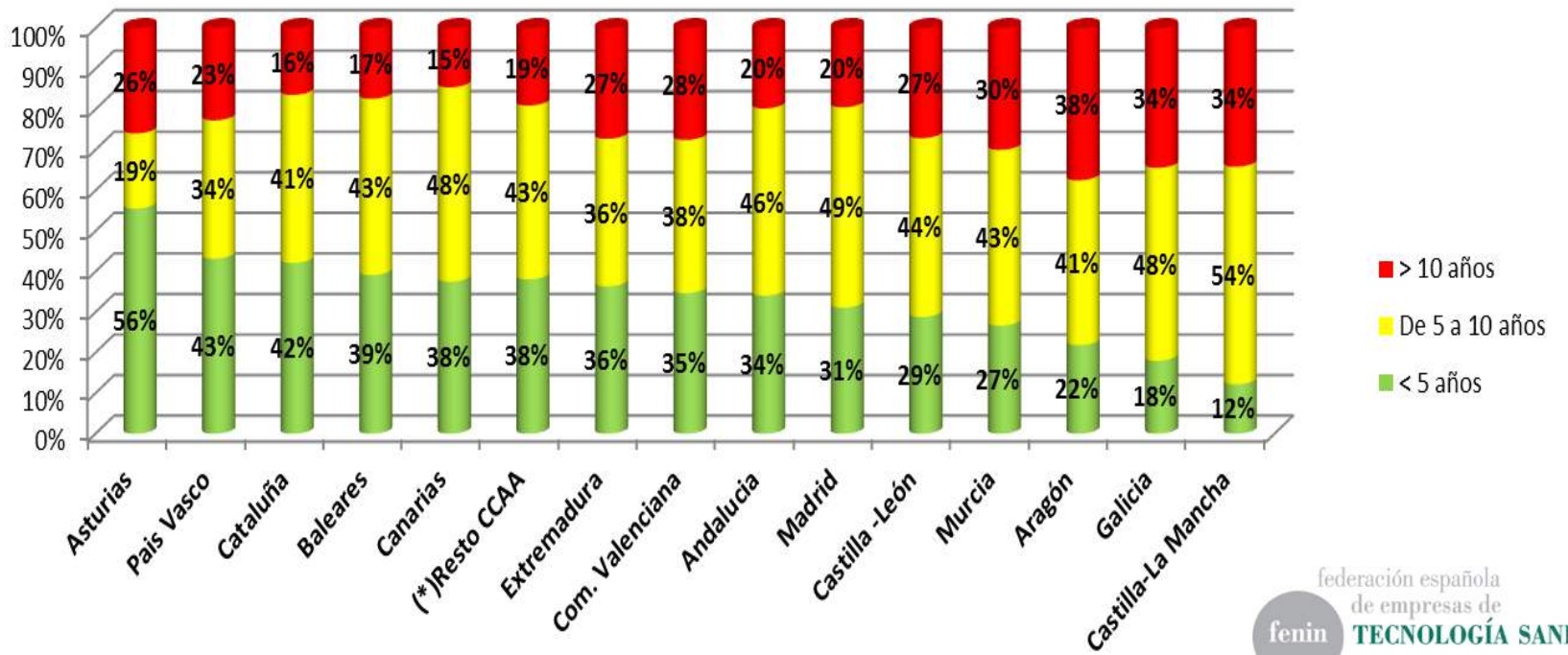


TC - España



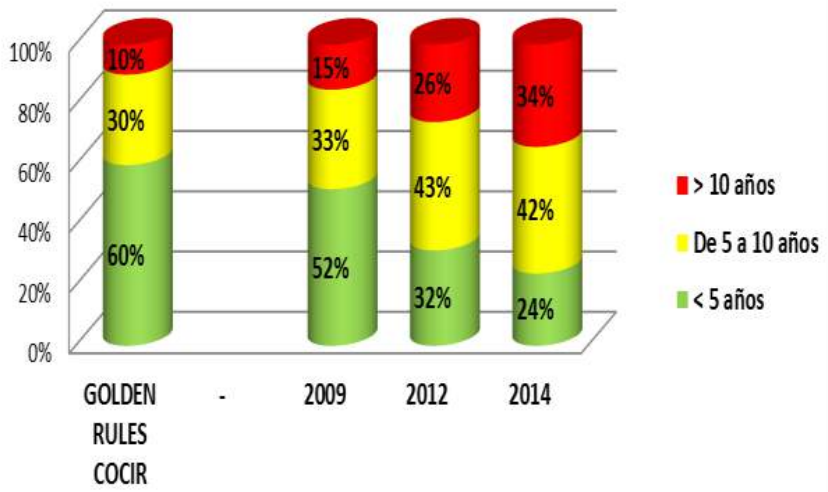
TC España 2014



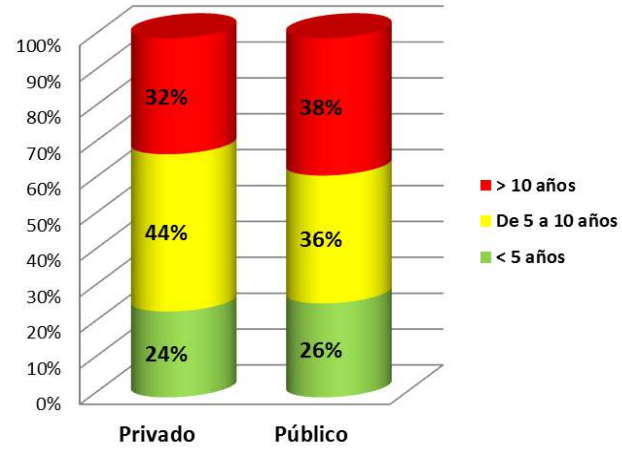


federación española de empresas de TECNOLOGÍA SANITARIA

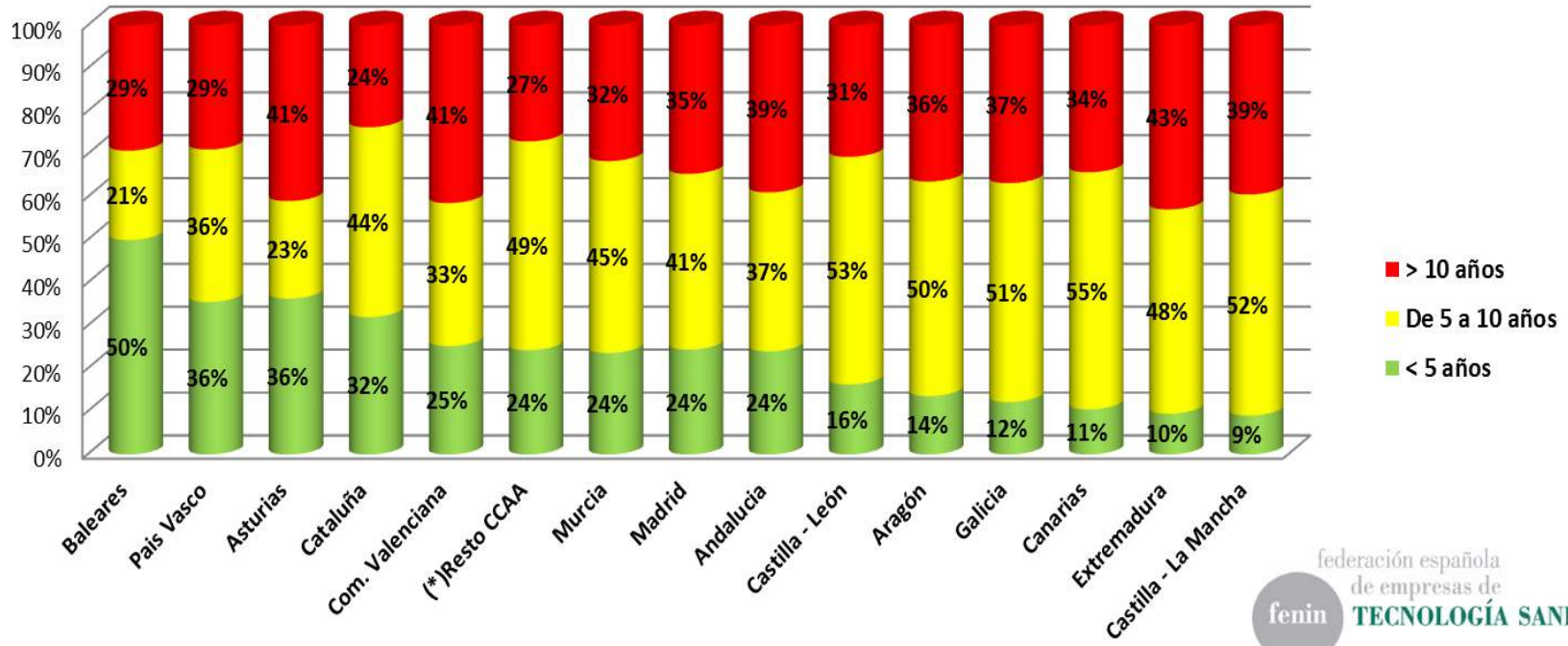
RM - España



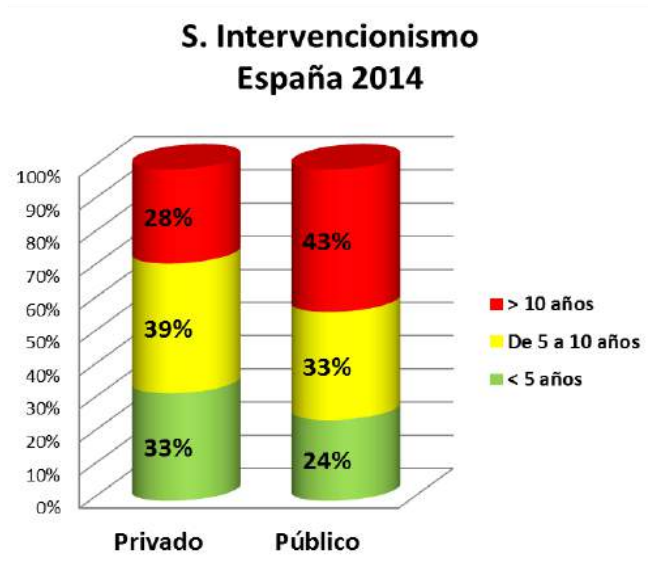
RM - España 2014

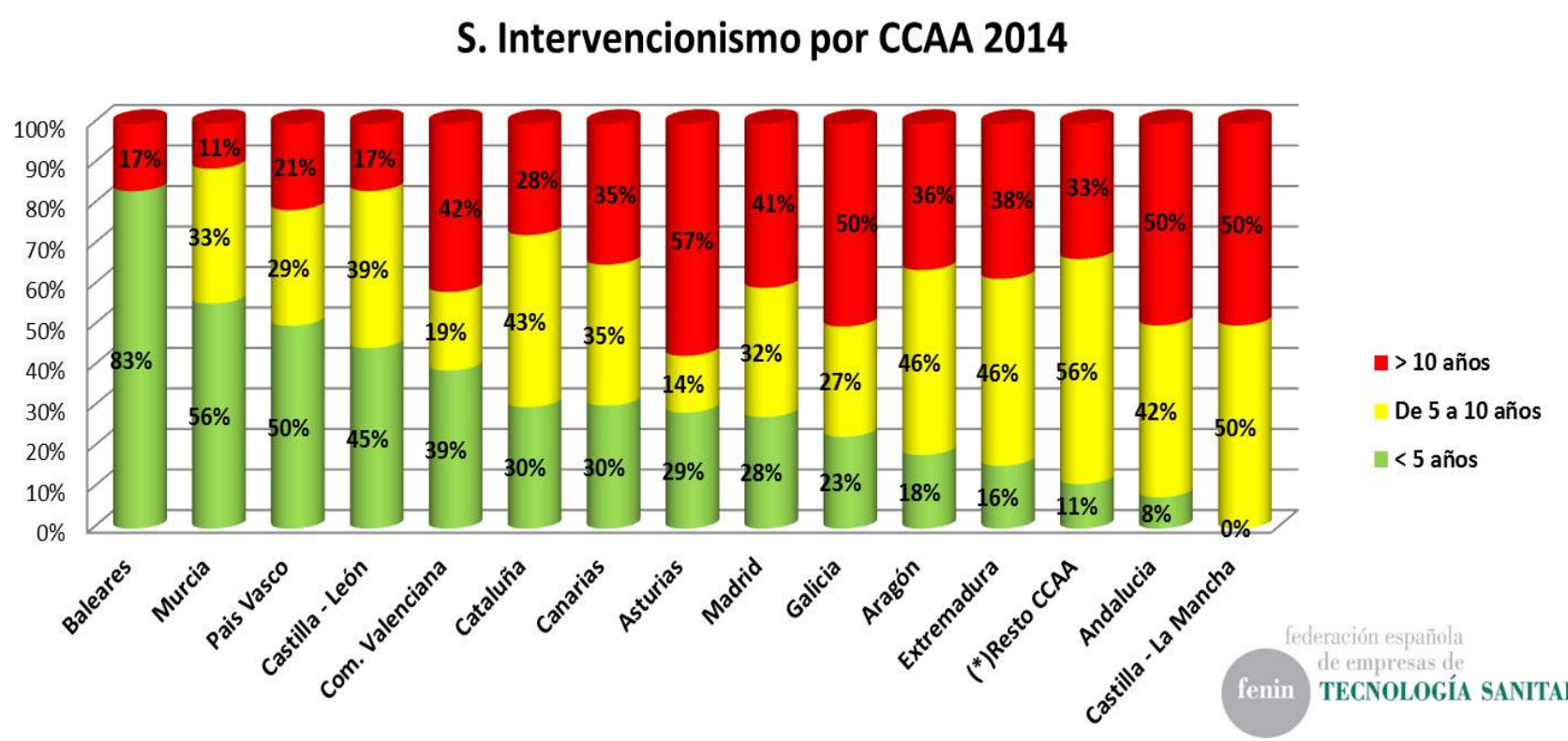


Perfil RM por CCAA 2014

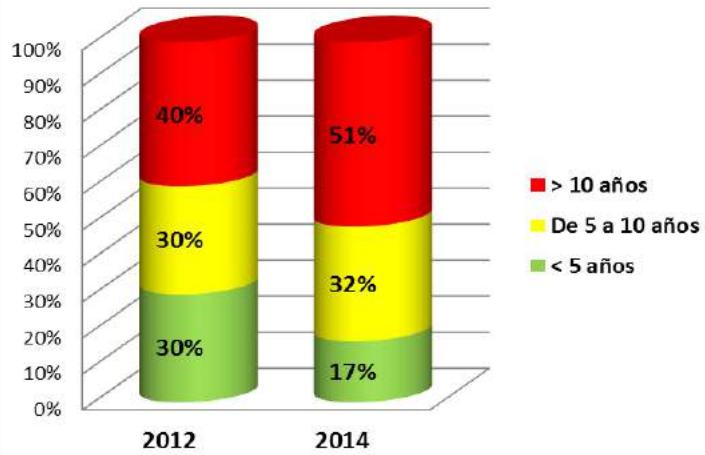


federación española de empresas de TECNOLOGÍA SANITARIA

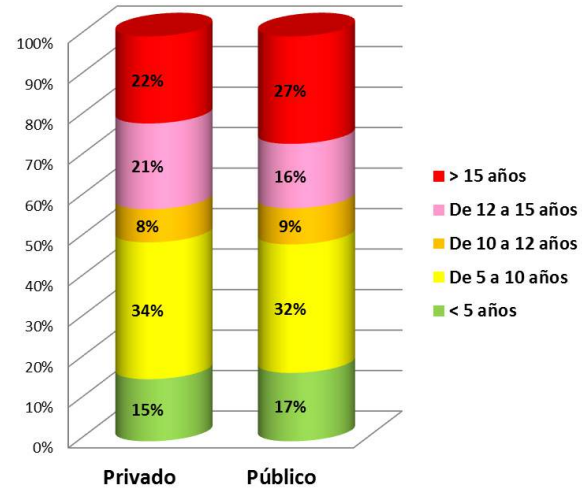




Soporte Vital - España

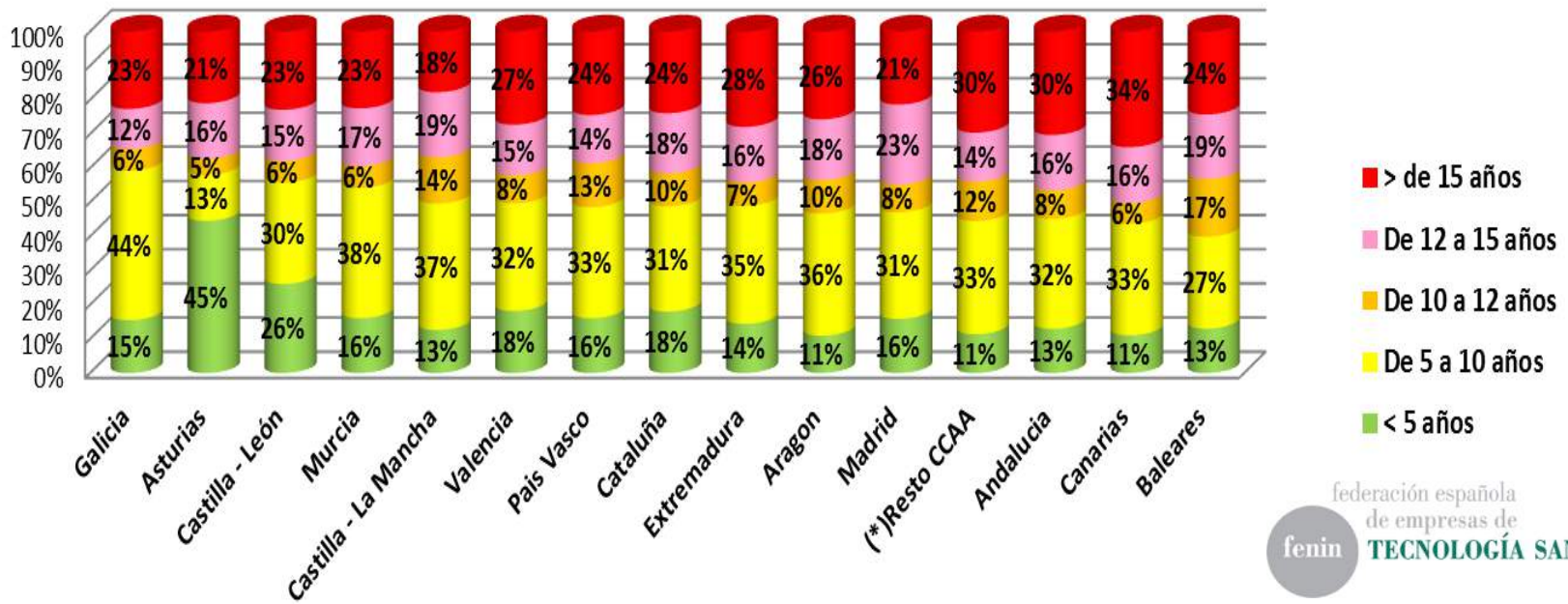


Soporte Vital 2014



Soporte Vital por CCAA - 2014

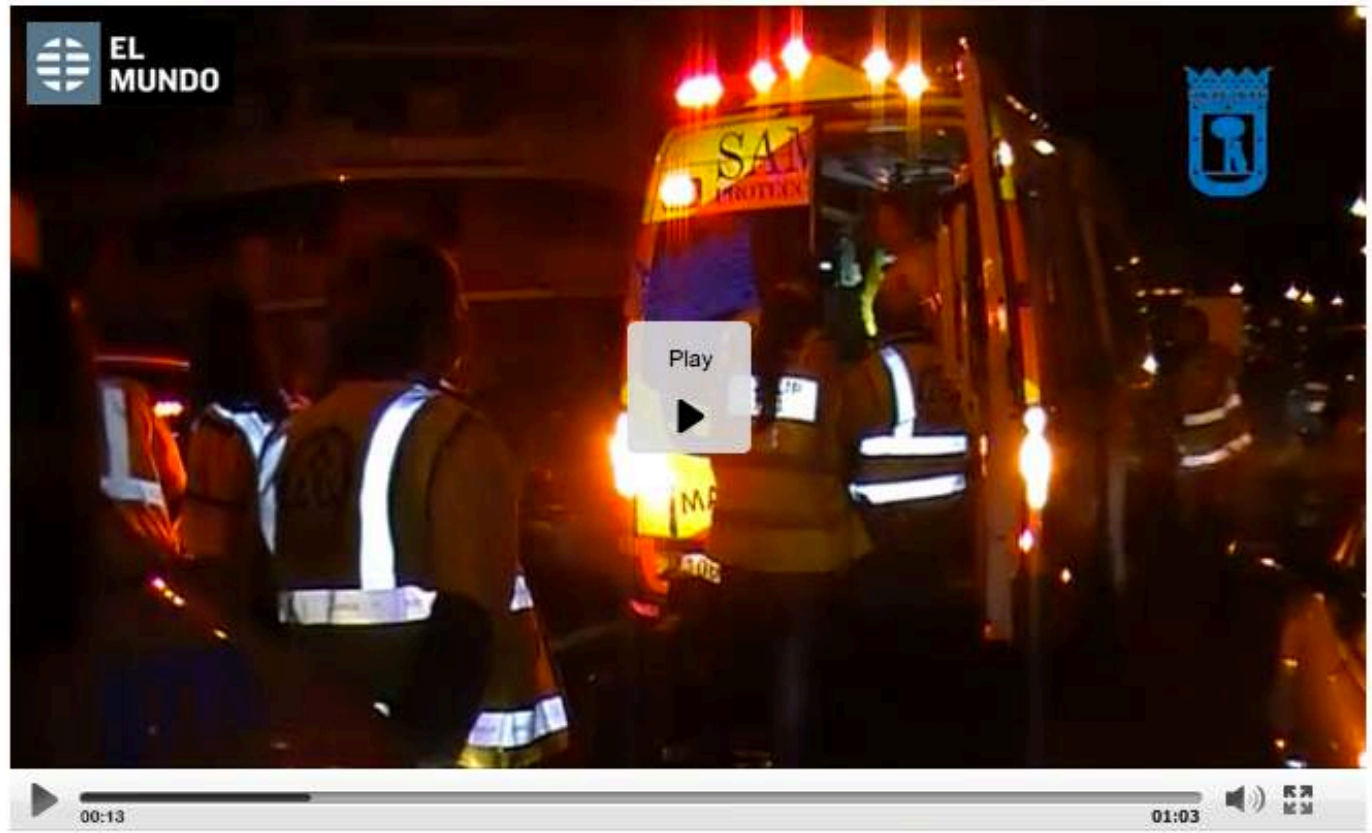
Ordenado por % inferior a 10 años



MADRID Sucesos

El hombre que siguió de copas tras recibir seis puñaladas: 'Soy manchego, me recupero pronto'

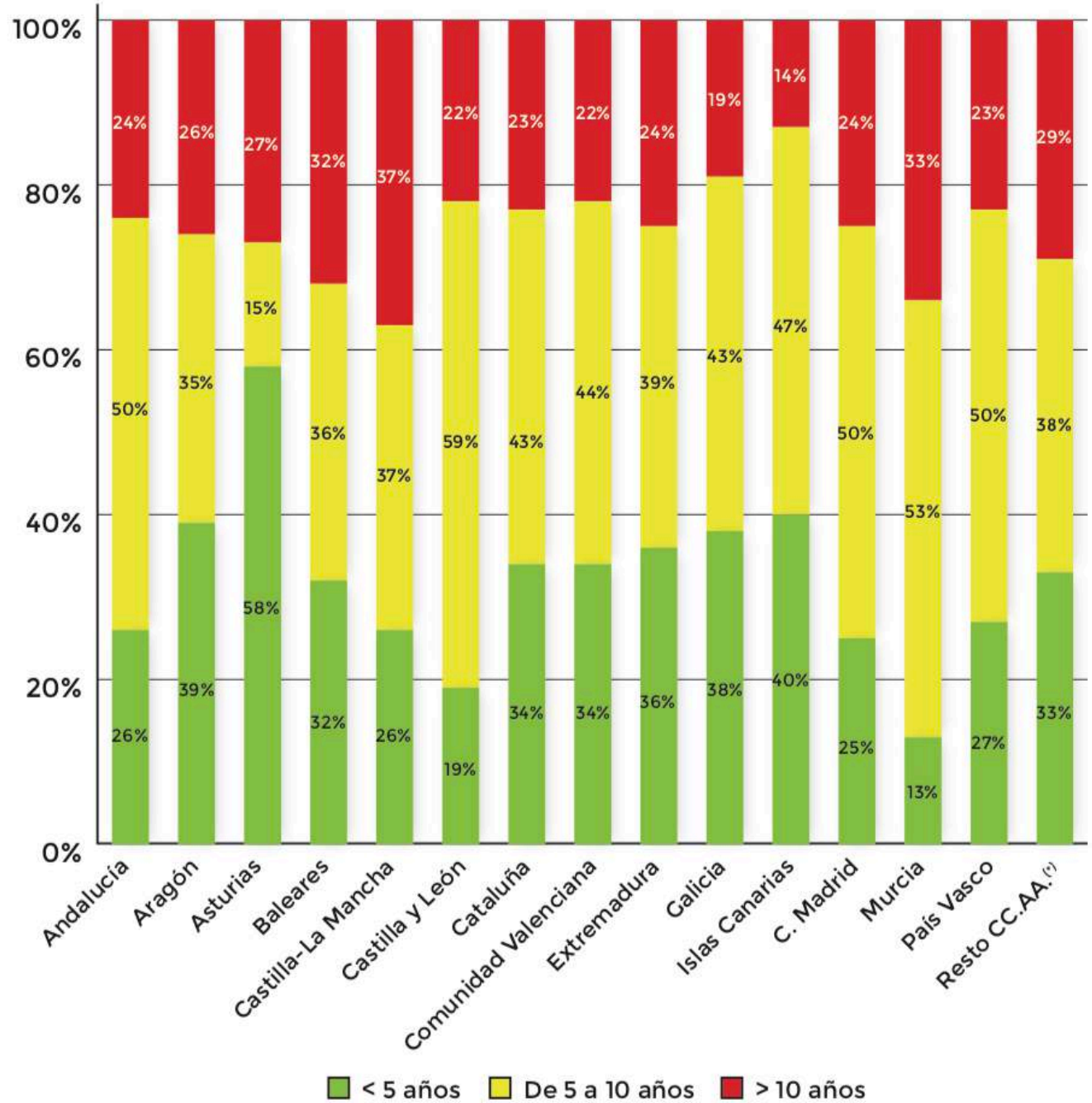
El hombre que siguió de juerga con sus amigos tras recibir media docena de puñaladas dijo en un primer momento a la Polcía que no necesitaba ayuda médica



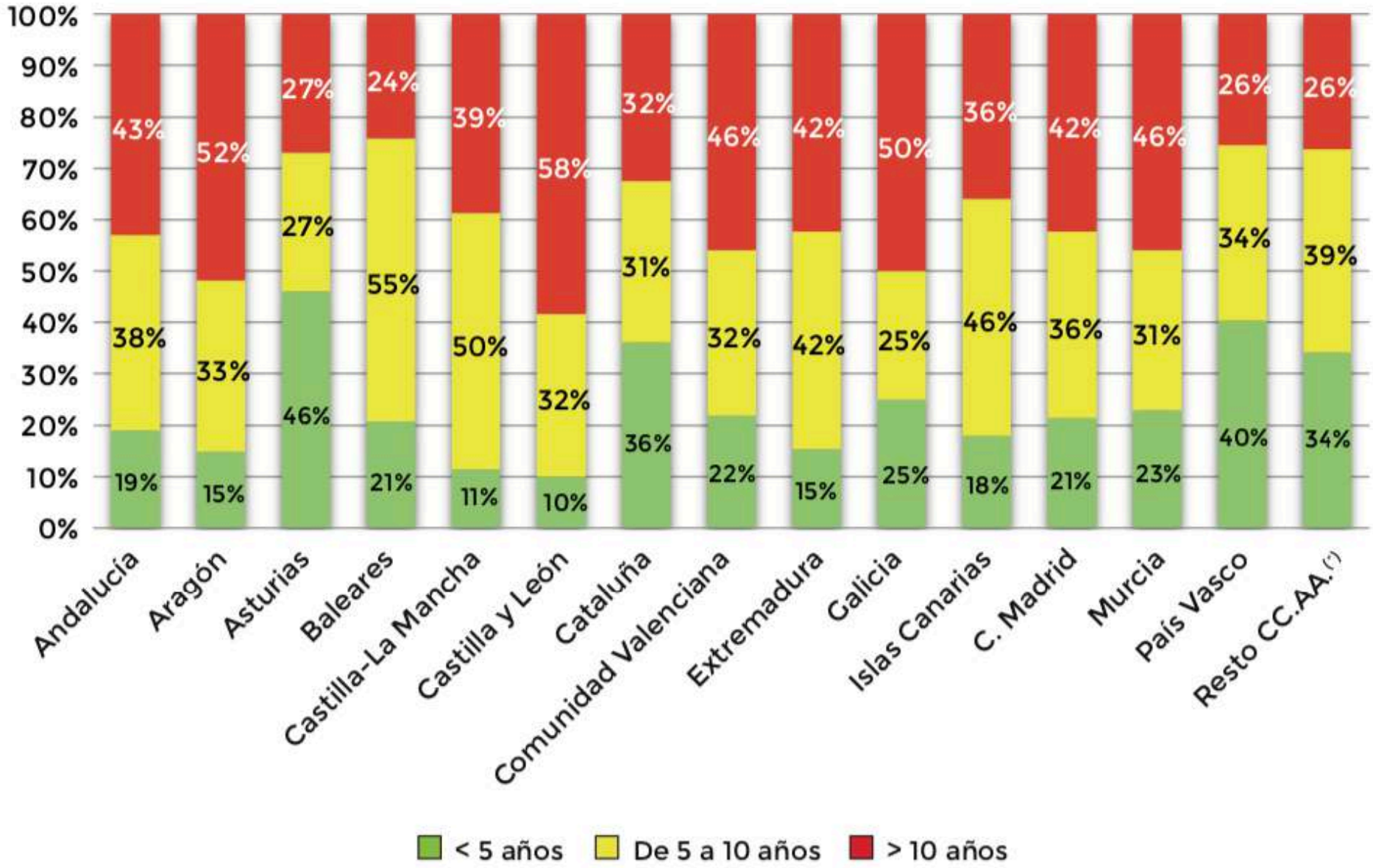
El Samur traslada al herido por arma blanca en la calle Sepúlveda. | AYTO. DE MADRID

Fuente: Datos agregados Fenin 31 dic 2016

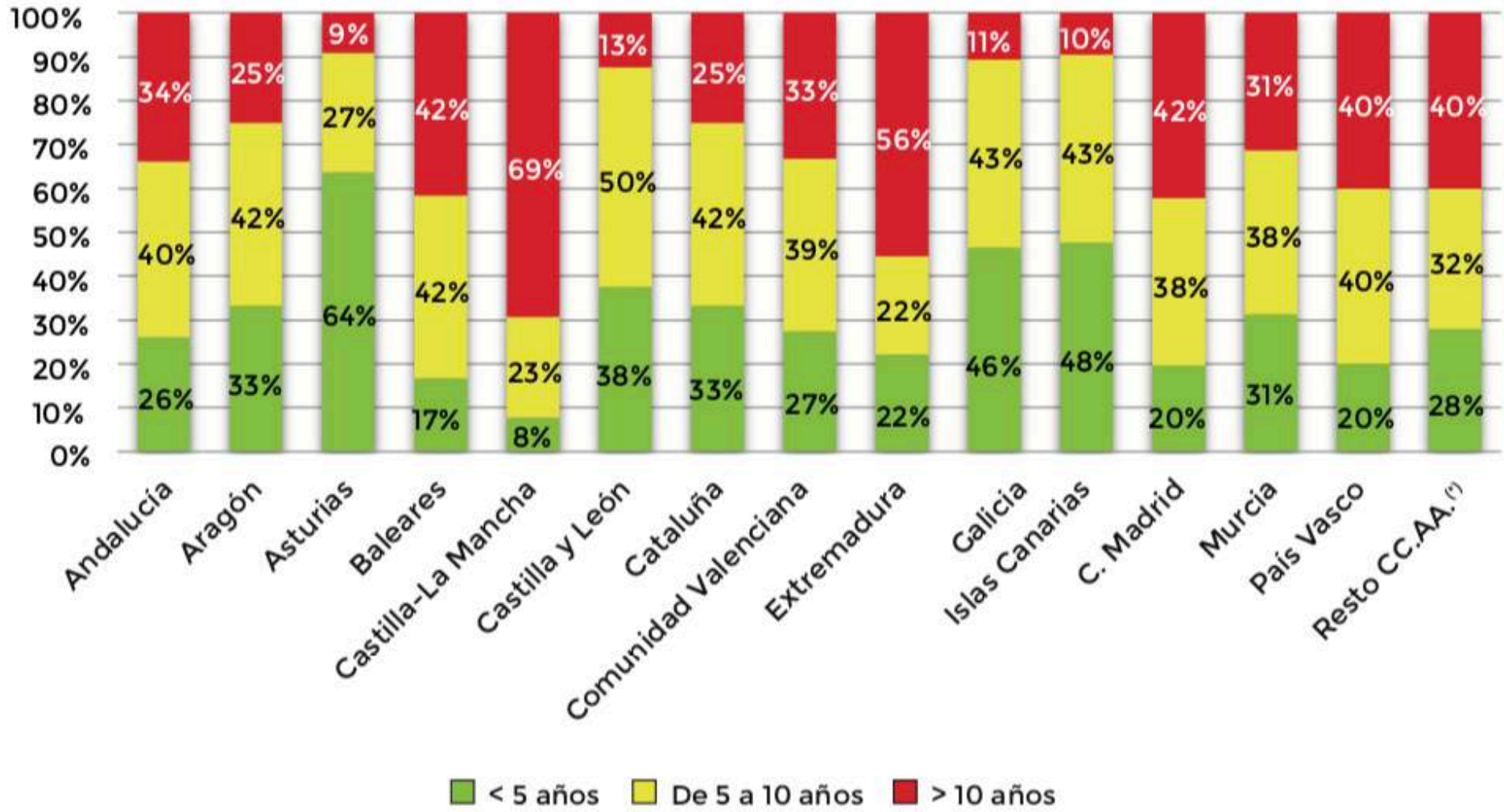
A) GRÁFICAS TOMOGRAFÍA COMPUTARIZADA (TC)



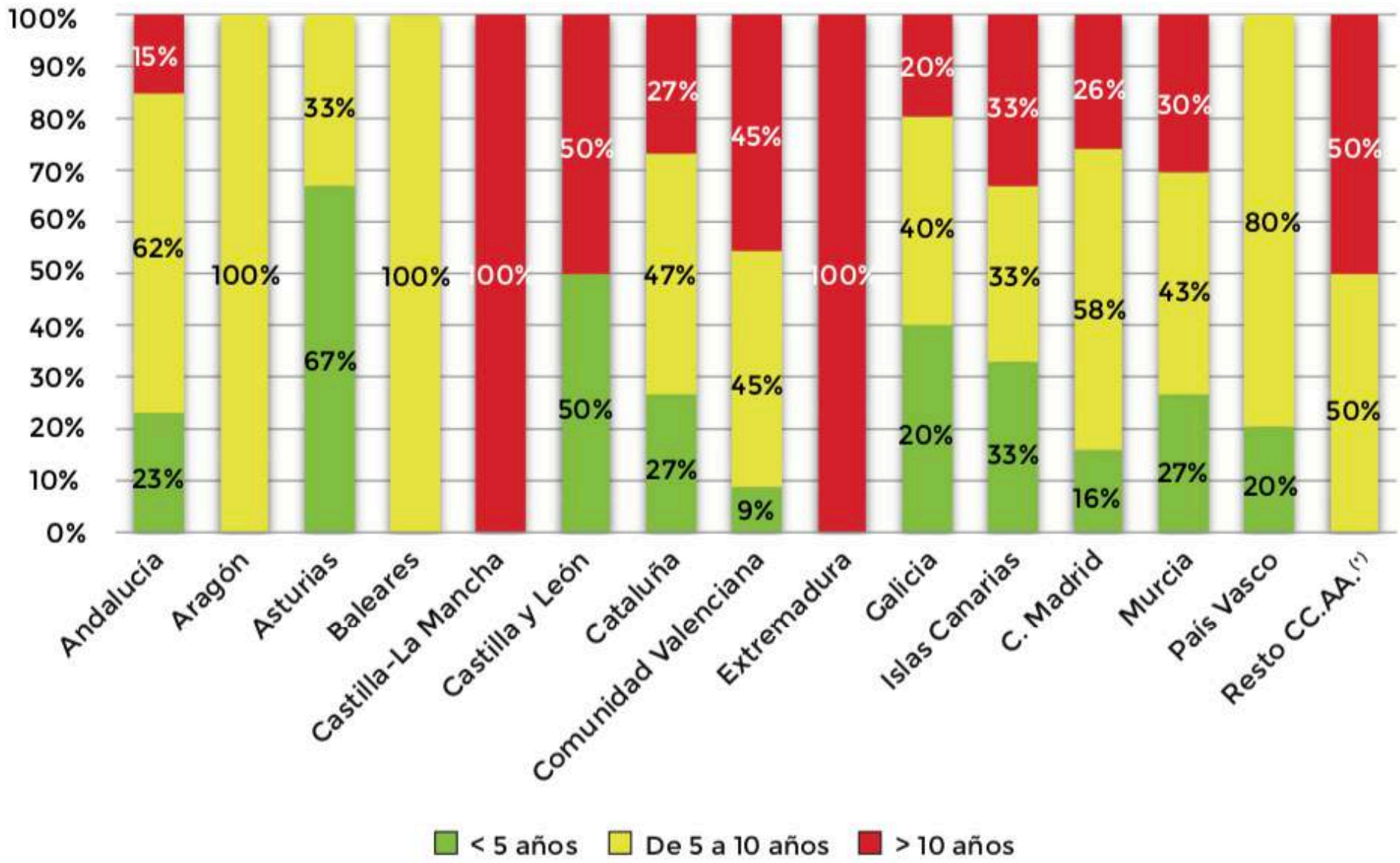
B) GRÁFICAS RESONANCIA MAGNÉTICA (RM)



GENERAL ASD/HEM POR CC.AA.



PET POR CC.AA.


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
15%
62%
23%
100%
33%
67%
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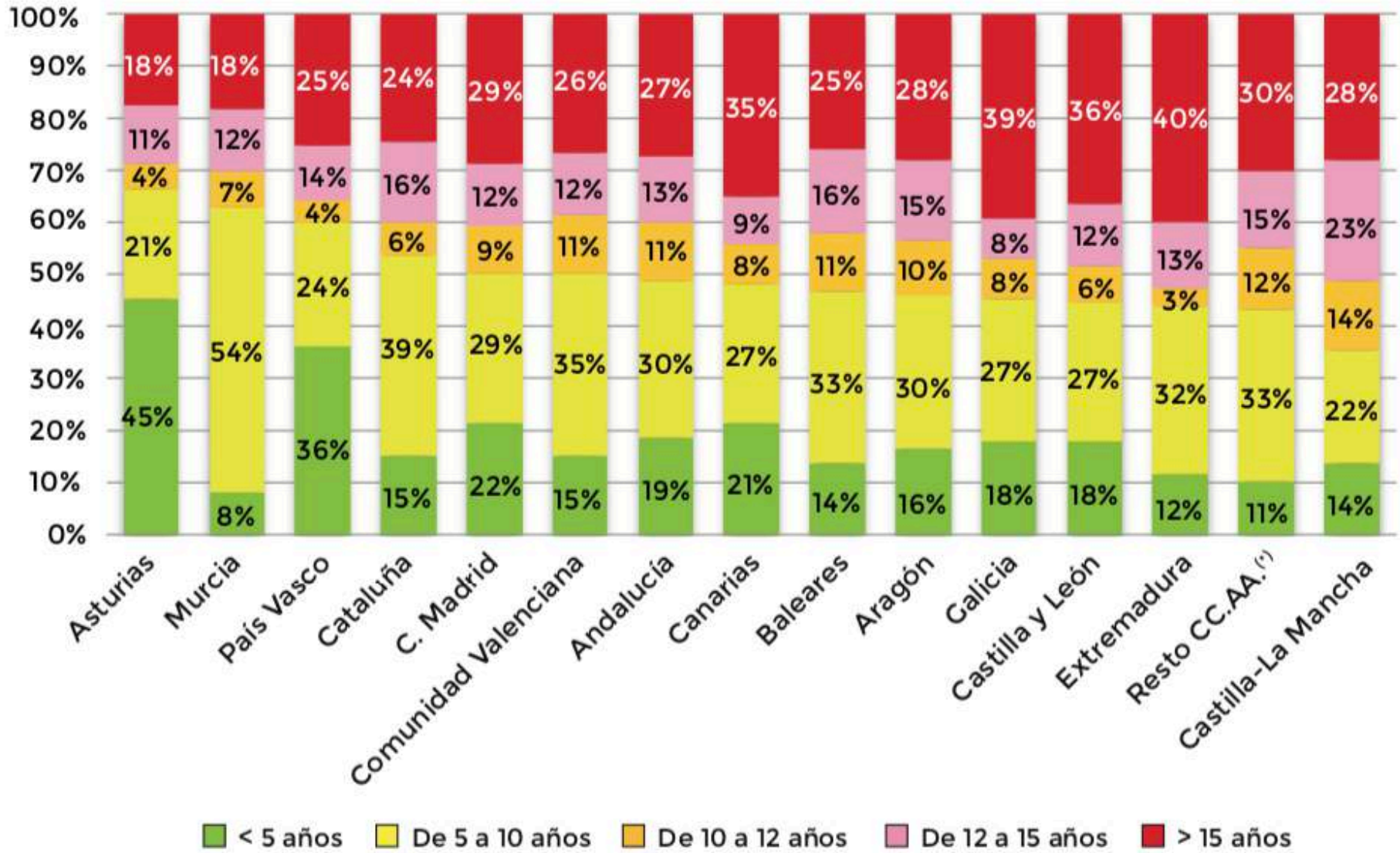
26%
58%
16%
30%
43%
27%
80%
20%
50%
50%
Andalucía
Aragón
Asturias
Baleares
Castilla-La Mancha
Castilla y León
Cataluña
Comunidad Valenciana
Extremadura
Galicia
Islas Canarias
C. Madrid
Murcia
País Vasco
Resto CC.AA.(*)
< 5 años
De 5 a 10 años
> 10 años

SOPORTE VITAL POR CC.AA.
Ordenado por % inferior a 10 años



PERFIL TECNOLÓGICO HOSPITALARIO

Y PROPUESTAS PARA LA RENOVACIÓN DE TECNOLOGÍAS SANITARIAS

2019 INFORME

2018 Datos actualizados

federación española de empresas de TECNOLOGÍA SANITARIA

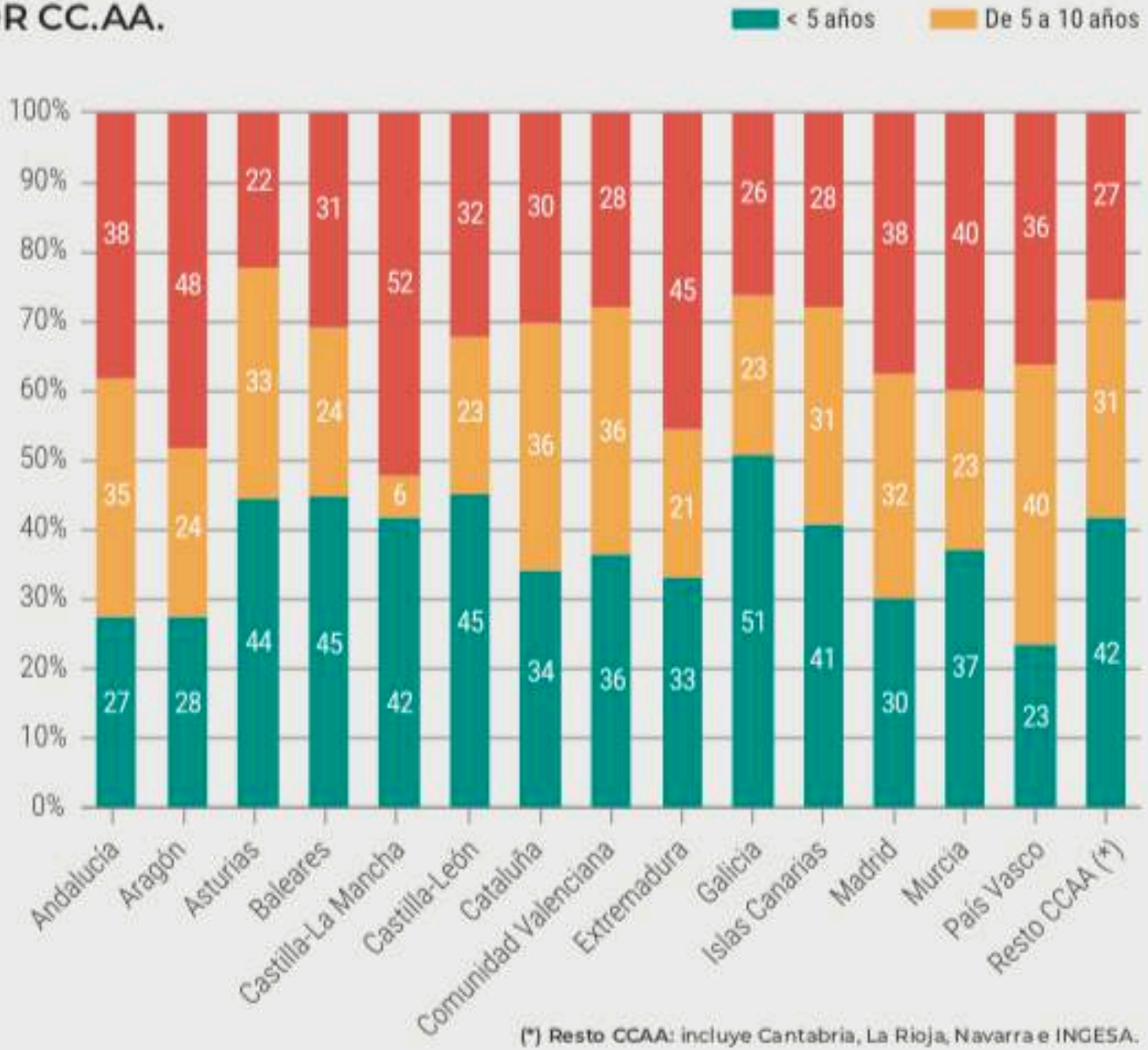
www.fenin.es

Tomografía Computarizada (TC)

EVOLUCIÓN GENERAL TC ESPAÑA

Fuente: Datos agregados Fenin 31 dic 2018

TC POR CC.AA.



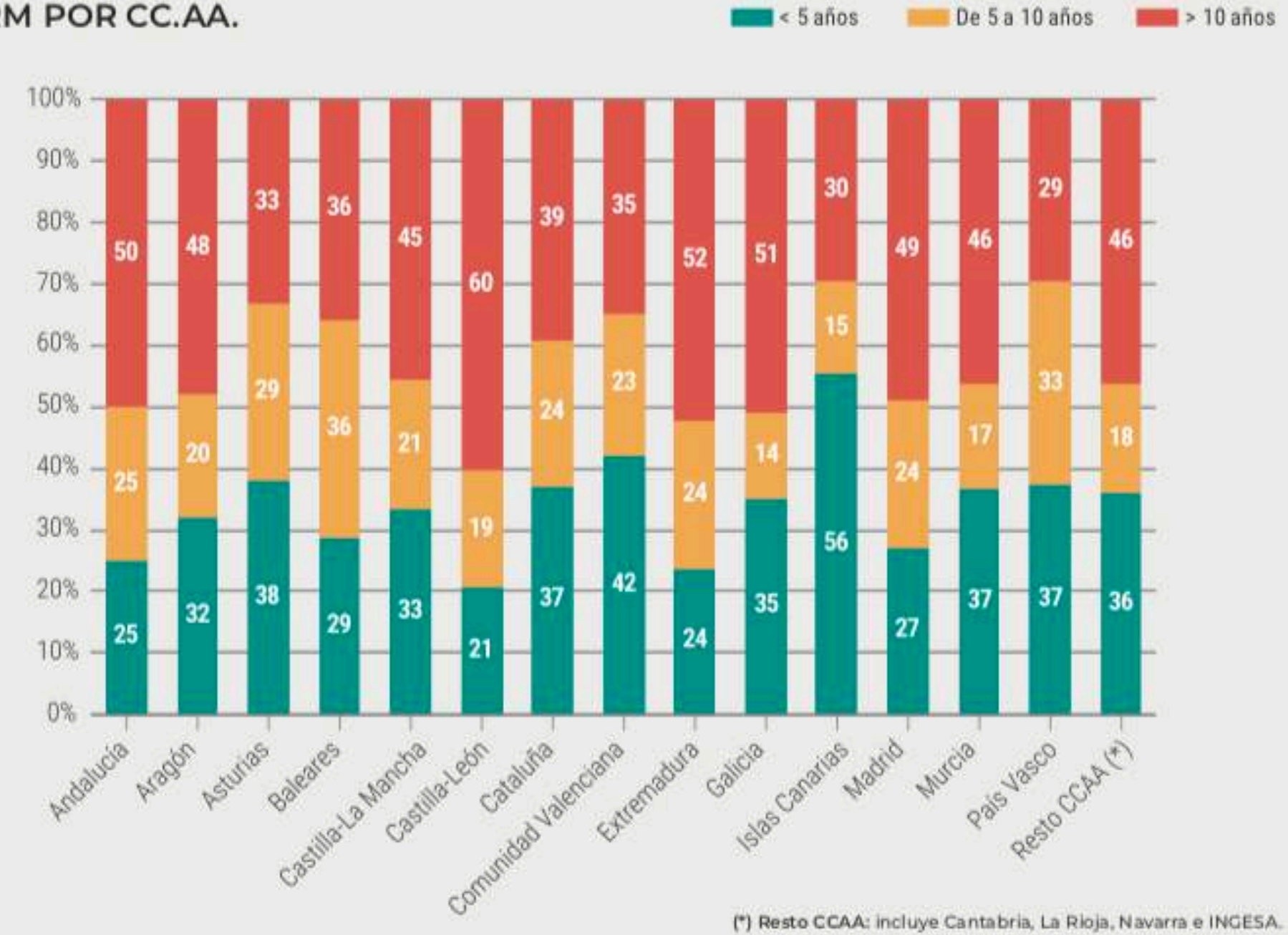
(*) **Resto CCAA:** incluye Cantabria, La Rioja, Navarra e INGESA.

Resonancia Magnética (RM)

EVOLUCIÓN GENERAL RM ESPAÑA

Fuente: Datos agregados Ferrin 31 dic 2018.

RM POR CC.AA.



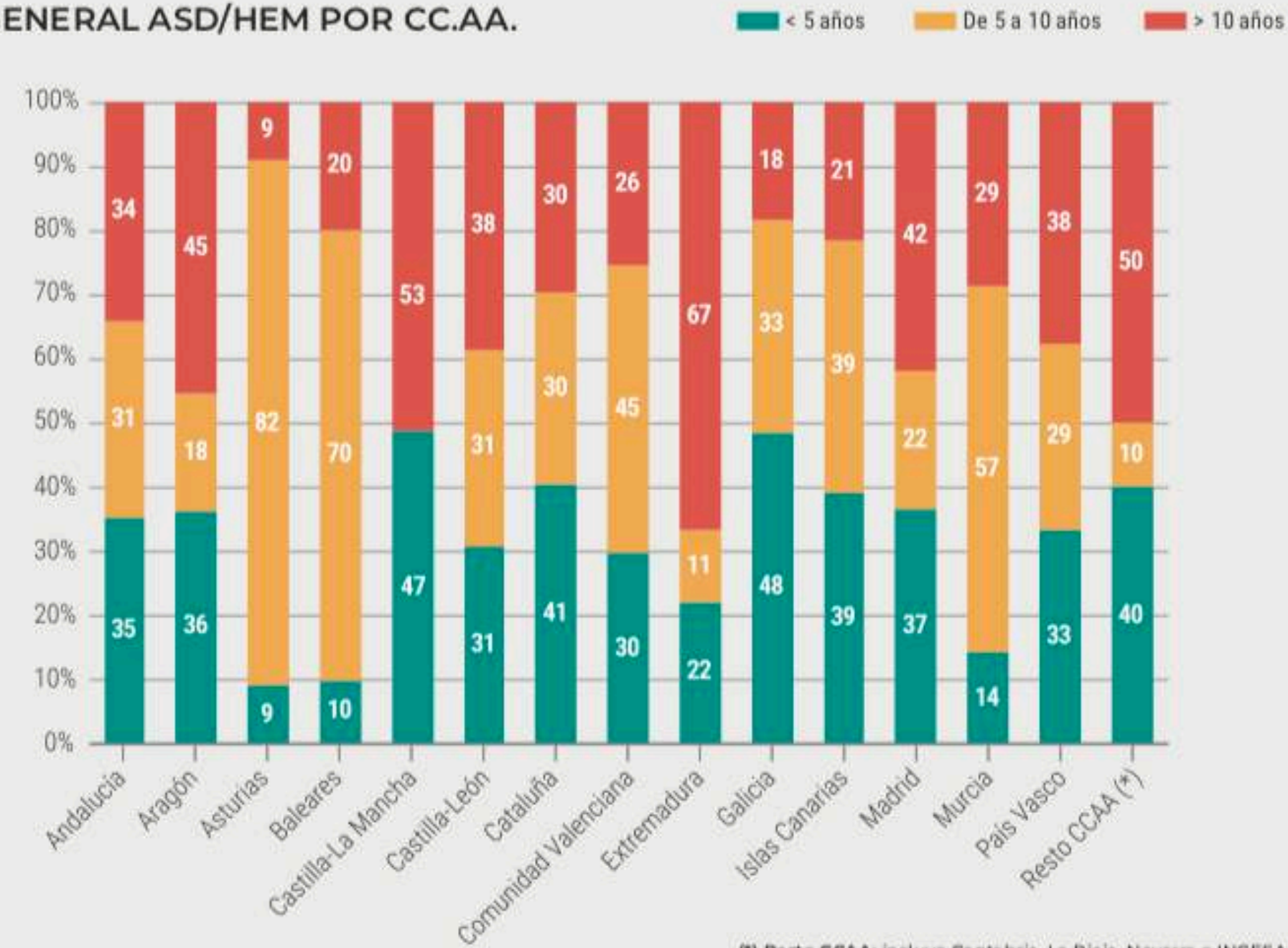
(*) **Resto CCAA:** incluye Cantabria, La Rioja, Navarra e INGESA.

EVOLUCIÓN GENERAL ASD/HEM ESPAÑA

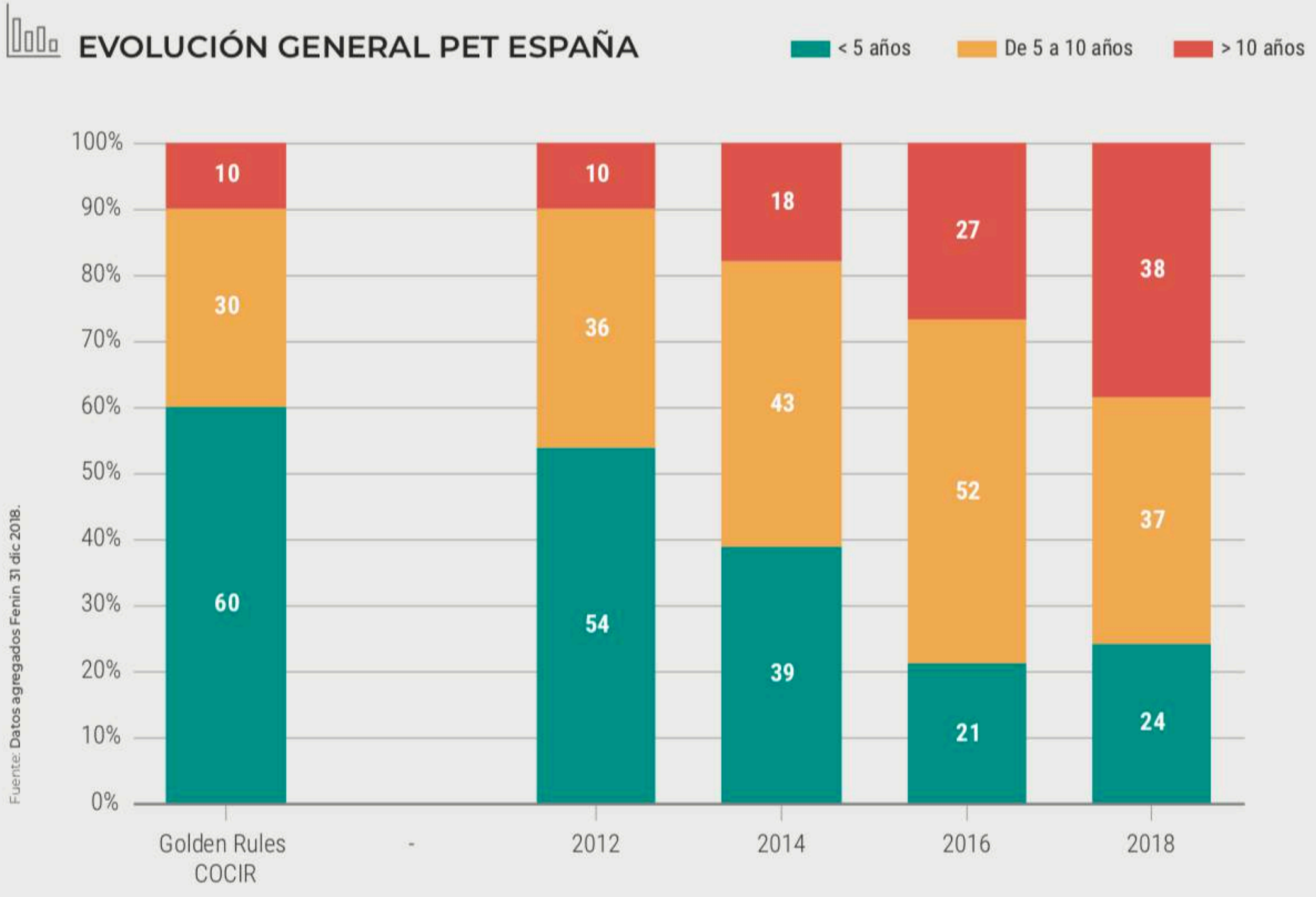
Fuente: Datos agregados Fenin 31 dic 2018.

(*): Sistemas de Intervencionismo (Vascular y Hemodinámica)

GENERAL ASD/HEM POR CC.AA.



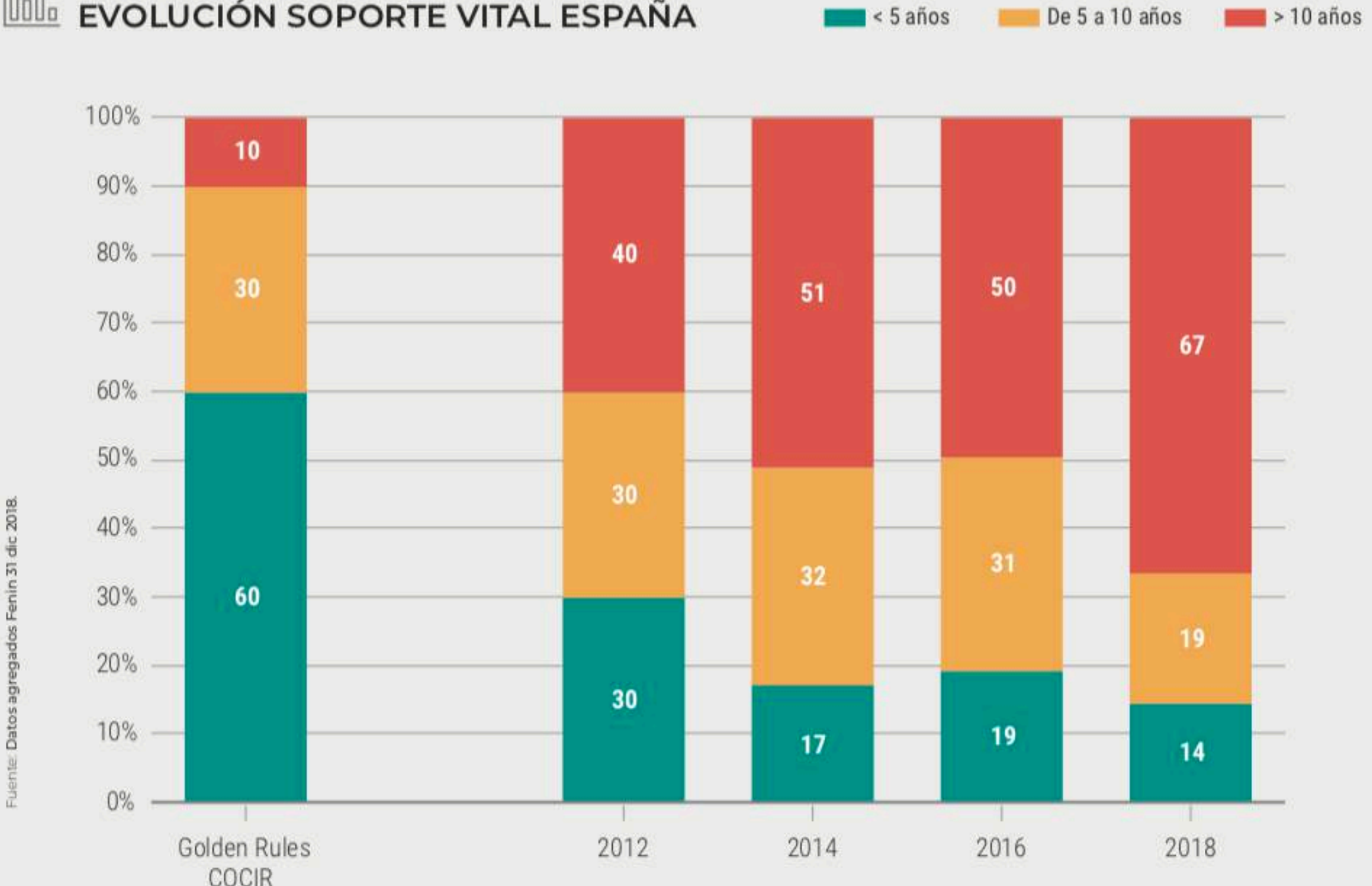
(*) **Resto CCAA:** incluye Cantabria, La Rioja, Navarra e INGESA.


EVOLUCIÓN GENERAL PET ESPAÑA
< 5 años
De 5 a 10 años
> 10 años
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
10
30
60
10
36
54
18
43
39
27
52
21
38
37
24
Golden Rules
COCIR
-
2012
2014
2016
2018
Fuente: Datos agregados Fenin 31 dic 2018.

PET POR CC.AA.

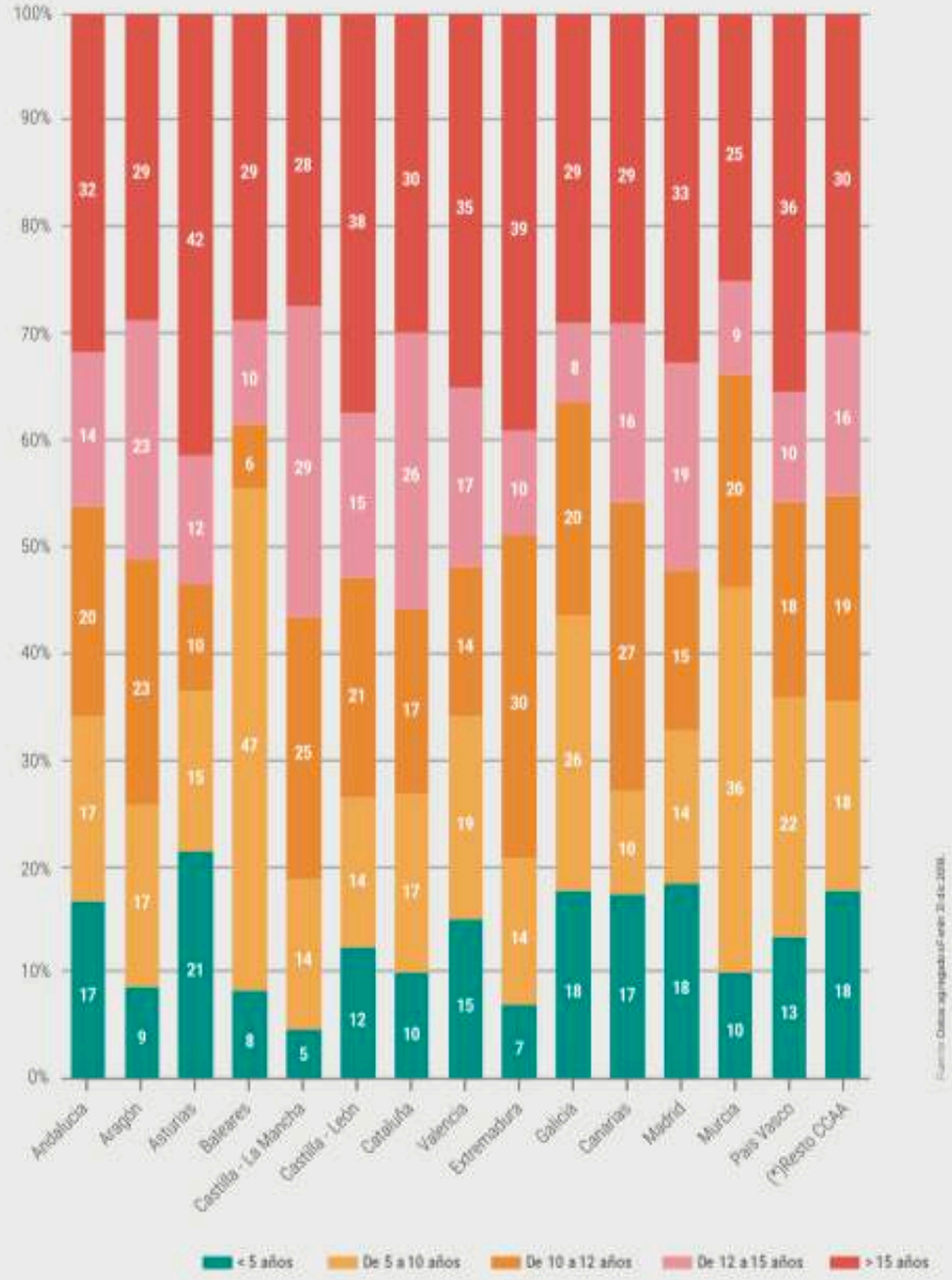
(*) Resto CCAA: incluye Cantabria, La Rioja, Navarra e INGESA

EVOLUCIÓN SOPORTE VITAL ESPAÑA



Fuente: Datos agregados Fenin 31 dic 2018.

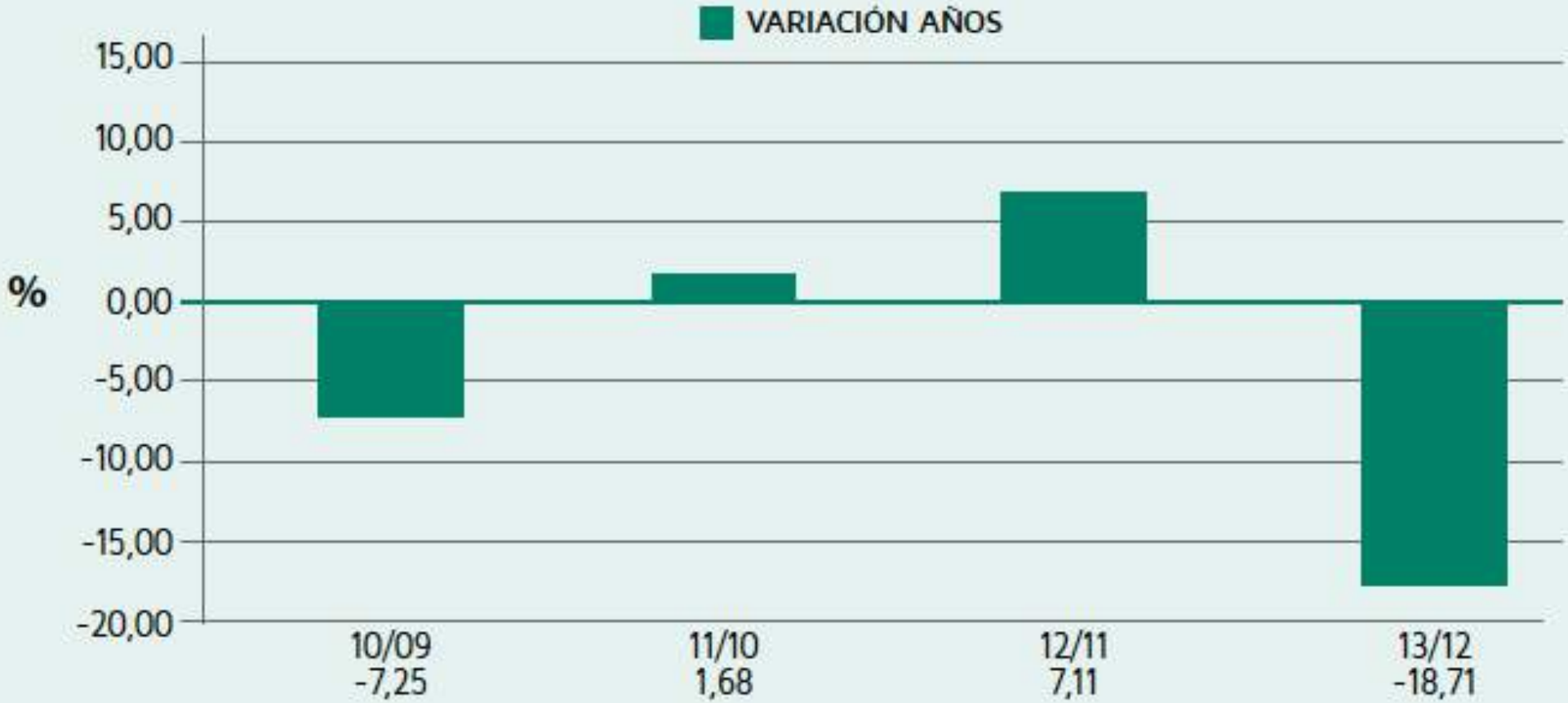
SOPORTE VITAL POR CC.AA.



Artículo 5.2 "... estén correctamente instalados y mantenidos ...".

Artículo 5.5 "... deberán ser mantenidos adecuadamente ... ".

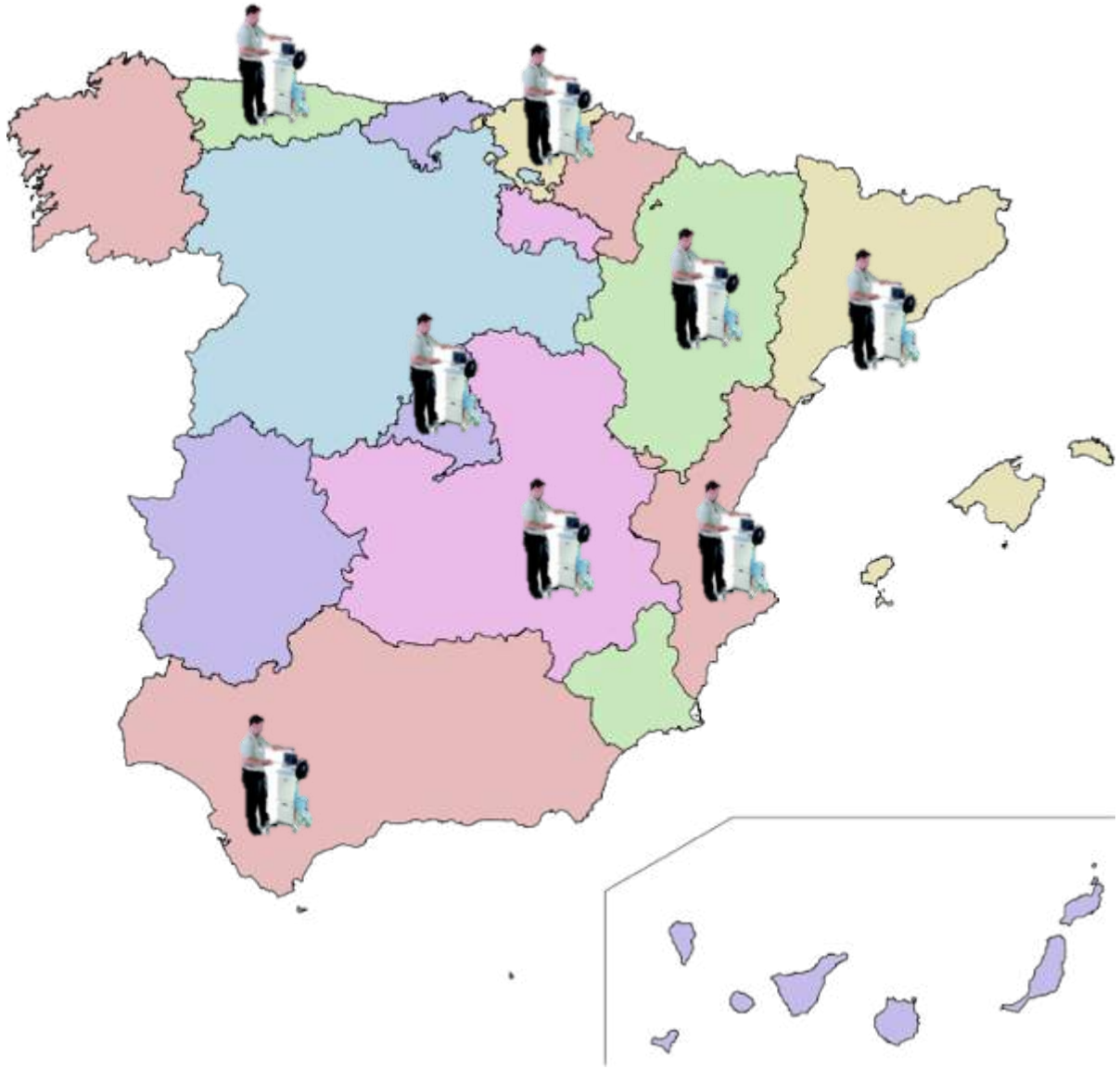
Tendencia Agregada del Artículo 21: Reparaciones, mantenimiento y conservación



Evolución temporal % CC. AA. Capítulo 2, Artículo 21 Mantenimiento, reparaciones y conservación (Actualización IPC)

Modalidad tecnológica	% con mantenimiento preventivo (julio de 2014)
Sistemas de monitorización	23%
Salas de intervencionismo	58%
TC	69%
Resonancia magnética	77%
Ecografía	21%
PET	86%
Soporte vital	40%
Terapias de calor	29%

Formación Profesional



Formación Universitaria

1. Planes de renovación de la tecnología sanitaria estructural incorporando el principio de Gestión del Ciclo de Vida.

2. Uso de criterios y referencias internacionales para el cálculo de obsolescencia.

3. Mantenimiento adecuado e incorporación de innovación incremental.

4. Explorar alternativas contempladas en la Ley de Contratos del Sector Público.

5. Plan de choque con financiación finalista específica.

6. Desarrollo de Bandas Tecnológicas para la dotación de equipamiento.

Vicerrectorado
de Cultura, Deporte
y Responsabilidad Social

Obsolescencia en tecnología sanitaria: los casos de Europa y España

Programa Universitario "José Saramago" *50 plus*

César Sánchez Meléndez

Vicerrector de Cultura, Deporte y Responsabilidad Social

Profesor Titular de la E. Politécnica Cuenca