

A blurred, teal-tinted photograph of a crowd of people walking, serving as the background for the cover.

IESP

Annual Report 2016

cïberesp

Centro de Investigación Biomédica en Red
Epidemiología y Salud Pública

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Miguel Delgado Rodríguez, Scientific Director

Scientific Director's Presentation

As you already know we have seven research programmes and one training programme. In the chronic disease programme, we should stress the MCC sub-programme, with almost 10,000 subjects. 14 articles have been published in journals with large circulations. The results stress the influence of xenoestrogens in the risk of breast cancer, trihalomethanes in colorectal cancer and the confirmation of the relationship between the consumption of red meats and cold meats with colon cancer. Working on night shifts has been related with stomach cancer and chronic lymphatic leukaemia. Thanks to the financing received this year studying the prognosis of different tumours is also being considered.

In the PREVICET programme, the whooping cough sub-programme has been changed to influenza and it has shown evidence for the drop in effectiveness of vaccination against A-H3N2. 39 articles have been published and it continues with the projects financed by the European Center of Disease Control on whooping cough and anti-pneumococcal vaccination.

In programme nº.3, DAPET, the MEISI multicentre project on immigrant and vulnerable populations and their health risk was completed. It continues with the coordinated project on work, immigration and health in a cohort of immigrants. It has taken part in the Work Package on "Access of the migrant population to HIV diagnosis and care"; EURO-EDAT Project.

As part of the programme of social determinants there is the sub-programme, on the "effect of the crisis and socio-economic inequalities on mortality". An analysis of the evolution of inequalities in suicide and on inequalities in the main causes of mortality in several of Spain's Autonomous Communities has been carried out. There are repercussions on the health system: an increase in the consumption of psychotropic drugs and on suicide rates through the crisis.

The environmental determinants programme, contains the INMA sub-programme with 52 new publications this year, in which follow-up already extends to the ages of 11-13. They are working in cooperation with other European cohorts and included in such projects as CHICOS and the EGG and EAGLE genetic studies. The main discoveries of the INMA Project refer to the role of environmental agents (DDE, BPA, phthalates, etc.) on obesity and asthma and the epigenetic markers of xenoestrogens in childhood.

The healthcare service programme contains the sub-programme entitled "Social Burden of chronic diseases" in which the cohort of persons paying into the Social Security system from 2004/2013, 1022779 persons, was reconstructed. It has shown that flexible employment careers (with a large number of temporary contracts), if these are secure (continuity of contracts, unemployment periods with cover), undergo a risk of dying similar to those who have had stable employment careers (few and permanent contracts). In BiblioPRO 2300 new users were registered and 400 new instruments are being incorporated.

Programme 7 on clinical epidemiology, is working on the study of the clinical healthcare process (MAPAC) in which results that change healthcare practice have been obtained, and which continues with the Dianasalud digital platform (www.dianasalud.com). The effectiveness of vena cava filters in recurrent thromboembolisms was published in the JACC.

Lastly, four short stays abroad have been financed in the Training Programme. The Excellence Encounter was held at the Escuela de Verano de Salud Pública de Menorca and 10 awards were financed for the best papers presented at the Reunión Científica de la Sociedad Española de Epidemiología (SEE).



The background of the slide features a grayscale image of a grid pattern, likely a microscope slide, with several circular glass lenses or coverslips scattered across it. A large, semi-transparent teal rectangle is overlaid on the right side of the image, serving as a background for the title and chapter number.

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Organisation

Organisational Structure

CIBERESP is one of the thematic areas forming the Centro de Investigación Biomédica en Red (CIBER), a Spanish research consortium in the field of biomedical research with great scientific capacity, under the Instituto de Salud Carlos III (ISCIII) – Ministry of the Economy and Competitiveness. In 2016, it was made up of 8 thematic areas, which were extended to 11 in 2017.

The Epidemiology and Public Health Area has 49 research groups and one associated group, retaining its independence as regards its scientific management. Its organisational structure is based on the research groups belonging to this and its work revolves around the Research Programmes and Transversal Programmes, with a coordinator for each Programme belonging to the Steering Committee. Scientific decisions are made by the Scientific Director, advised by the Steering Committee and the External Scientific Advisory Committee.

The senior administrative bodies of the CIBERESP are the Governing Board and the Permanent Commission, common for all the CIBER research areas. The Governing Board is made up of three representatives of the ISCIII and one institutional representative of each of the centres in the consortium. It is presided over by the Director of the ISCIII and meets every six months. The Permanent Commission is an executive committee made up of the ISCIII and 8 members of the Governing Board, who can be renewed annually. Both the operation and the purposes of the governing, support and advisory bodies are established in the statutes of the CIBER.

The Steering Committee is presided over by the Scientific Director and made up of the coordinators of the programmes and the CIBER manager.

Steering Committee Members

Name	Post
Miguel Delgado Rodríguez	Scientific Director
Ángela Domínguez García	Scientific Assistant Director
Fernando Rodríguez Artalejo	P1. Epidemiology and chronic disease prevention
Joan Cayla Buqueras	P2. Communicable disease prevention, surveillance and control (PREVICET)
Jordi Casabona Barbara	P3. Biological, behavioural and structural determinants in the contraction and spread of communicable diseases in vulnerable populations (DAPET Programme)
Antonio Daponte Codina	P4. Social determinants of health
Adonina Tardón García	P5. Epidemiology and prevention of environmental and occupational-origin diseases
Jordi Alonso Caballero	P6. Health service evaluation
José Ignacio Pijoán Zubizarreta	P7. Clinical epidemiology
Beatriz Pérez Gómez	Training Programme
Manuel Sánchez Delgado	Manager

Attached to Scientific Director: Isabel Hervás

Contact: <http://www.ciberesp.es/en/about-us/contact>

External Scientific Advisory Committee

The CIBERESP has an External Scientific Advisory Committee as a body for scientific support and assessment, made up of internationally significant relevant researchers in the field of health sciences who are prominent for their professional or scientific careers, in line with the centre's objectives.

President	
Prof. Henrique Barros	University of Oporto. President of the International Epidemiological Association
Vocals	
Dr. José Becerra	CDC of Atlanta (U.S.A.)
Prof. Javier Nieto	Universidad de Wisconsin (U.S.A.)
Prof. Stanley Presser	University of Maryland (U.S.A.)
Prof. Eric Van Ganse	University of Lyon (France)

Technical Unit

Head Office: <http://www.ciberesp.es/en/about-us/structure/head-office>

Directory of groups and institutions

Group Leader	Institution	Centre	Region
Abilleira Castells, Sonia	Agència de Qualitat i Avaluació Sanitàries de Catalunya (AQuAS)	Agència de Qualitat Avaluació Sanitàries de Catalunya	Barcelona
Alonso Caballero, Jordi	Consorci Mar Parc Salut de Barcelona	Consorci Mar Parc Salut de Barcelona	Barcelona
Amo Valero, Julia Del *	Instituto de Salud Carlos III	Centro Nacional de Epidemiología	Madrid
Ballester Díez, Ferrán	Fundación para la Investigación Sanitaria y Biomédica de la Comunidad Valenciana (FISABIO)	Fundación para la Investigación Sanitaria y Biomédica de la Comunidad Valenciana (FISABIO)	Valencia
Baquero Mochales, Fernando	Servicio Madrileño de Salud	Hospital Ramón y Cajal	Madrid
Bolumar Montrull, Francisco	Universidad de Alcalá	Facultad de Medicina	Madrid
Bonfill Cosp, Xavier	Instituto de Investigación del Hospital de la Santa Creu i Sant Pau	Inst.de Investigación del Hospital de la Santa Creu i Sant Pau	Barcelona
Borrell Thio, Carme	Agencia de Salud Pública de Barcelona	Agencia de Salud Pública de Barcelona	Barcelona
Bueno Cavanillas, Aurora	Universidad de Granada	Universidad de Granada	Granada
Calderón Sandubete, Enrique José	Fundación Pública Andaluza para la Gestión de la Investigación en Salud de Sevilla	Hospital Virgen del Rocío	Sevilla
Casabona Barbara, Jordi	Fundación Instituto de Investigación Germans Trias i Pujol	C. de estudios epidemiológicos sobre las infecciones de transm. sexual y SIDA de Cataluña	Barcelona
Castilla Catalán, Jesús	Instituto de Salud Pública de Navarra	Instituto de Salud Pública de Navarra	Navarra
Cayla Buqueras, Joan Artur	Agencia de Salud Pública de Barcelona	Agencia de Salud Pública de Barcelona	Barcelona
Daponte Codina, Antonio	Escuela Andaluza de Salud Pública	Escuela Andaluza de Salud Pública	Granada
Delgado Rodríguez, Miguel	Universidad de Jaén	Facultad de Ciencias de la Salud	Jaén
Domínguez García, Ángela	Universidad de Barcelona	Facultad de Medicina	Barcelona

Group Leader	Institution	Centre	Region
Echevarría Mayo, Juan Emilio	Instituto de Salud Carlos III	Centro Nacional de Microbiología	Madrid
Empananza Knörr, José Ignacio	Asociación Instituto Biodonostia	Hospital Donostia	Guipúzcoa
Estivill Palleja, Xavier	Fundación Centro de Regulación Genómica	Centro de Regulación Genómica	Barcelona
Ferreira González, Ignacio	Fundación Hospital Universitario Vall d' Hebron - Institut de Recerca (VHIR)	Hospital Vall d'Hebron	Barcelona
Figuerola Borrás, Jordi	Agencia Estatal Consejo Superior de Investigaciones Científicas	Estacion Biológica de Doñana	Sevilla
Fuente Hoz, Luis De La	Instituto de Salud Carlos III	Centro Nacional de Epidemiología	Madrid
García Benavides, Fernando	Universidad Pompeu Fabra	Universidad Pompeu Fabra	Barcelona
Gestal Otero, Juan Jesús	Universidad de Santiago de Compostela	Facultad de Medicina	Coruña, A
Gómez de la Cámara, Agustín	Servicio Madrileño de Salud	Hospital Universitario 12 de Octubre	Madrid
Hernández Aguado, Ildefonso	Universidad Miguel Hernández	Universidad Miguel Hernández	Alicante
Ibarluzea Maurologoitia, Jesús	Asociación Instituto Biodonostia	Subdirección de Salud Pública de Guipuzkoa	Guipúzcoa
Kogevinas, Emmanouil	Fundación Privada Instituto de Salud Global Barcelona (ISGlobal)	Centre de Recerca en Epidemiologia Ambiental (CREAL)	Barcelona
Larrauri Cámara, Amparo	Instituto de Salud Carlos III	Centro Nacional de Epidemiología	Madrid
López Medina, María José	Agencia de Salud Pública de Barcelona	Agencia de Salud Pública de Barcelona	Barcelona
Marcos Dauder, Ricardo	Universidad Autónoma de Barcelona	Universidad Autónoma de Barcelona	Barcelona
Menéndez Santos, Clara	Hospital Clínic de Barcelona	Hospital Clínic de Barcelona	Barcelona
Morales Suárez-Varela, María Manuela	Universidad de Valencia	Facultad de Medicina	Valencia
Moreno Aguado, Víctor	Instituto Catalán de Oncología	Instituto Catalán de Oncología	Barcelona
Moya Simarro, Andrés	Universidad de Valencia	Facultad de Medicina	Valencia
Muñoz Almagro, María Carmen	Fundación para la Investigación y Docencia Sant Joan de Deu	Hospital Sant Joan de Deu	Barcelona
Navarro Sánchez, Carmen	Fundación para la Formación e Investigación Sanitarias de la Región de Murcia (FFIS)	Dirección general de Salud Pública de Murcia	Murcia
Olea Serrano, Nicolás	Fundación para la Investigación Biosanitaria en Andalucía Oriental (FIBAO)	Hospital Clínico San Cecilio	Granada
Pollán Santamaría, Marina	Instituto de Salud Carlos III	Centro Nacional de Epidemiología	Madrid
Porta Serra, Miquel	Consorci Mar Parc Salut de Barcelona	Consorci Mar Parc Salut de Barcelona	Barcelona
Rodríguez Artalejo, Fernando	Universidad Autónoma de Madrid	Universidad Autónoma de Madrid	Madrid
Rodríguez Farre, Eduard	Agencia Estatal Consejo Superior de Investigaciones Científicas	Instituto de Investigaciones Biomédicas de Barcelona	Barcelona
Ruiz Pérez, Isabel	Escuela Andaluza de Salud Pública	Escuela Andaluza de Salud Pública	Granada
Sáez Zafra, Marc	Universidad de Gerona	Universidad de Gerona	Girona
Sánchez Pérez, María José	Escuela Andaluza de Salud Pública	Escuela Andaluza de Salud Pública	Granada
Sanjosé Llongueras, Sílvia De	Instituto Catalán de Oncología	Instituto Catalán de Oncología	Barcelona
Schröder, Helmut	Consorci Mar Parc Salut de Barcelona	Consorci Mar Parc Salut de Barcelona	Barcelona
Sunyer Deu, Jordi	Fundación Privada Instituto de Salud Global Barcelona (ISGlobal)	Centre de Recerca en Epidemiologia Ambiental (CREAL)	Barcelona
Tardón García, Adonina	Universidad de Oviedo	Facultad de Medicina	Asturias
Zamora Romero, Javier	Servicio Madrileño de Salud	Hospital Ramón y Cajal	Madrid

*Associated group of CIBERESP

Budget

INCOME					
ISCIII TRANSFER GRANTS	PROJECTS	SERVICES RENDERED	OTHER INCOME	CARRYOVERS	TOTAL
2.916.660,00	297.039,73	1.487,60	144.208,68	391.447,37	3.750.843,38

EXPENSES				
Project	Inventory	Supplies and other activity expenses	Personnel	TOTAL
Scientific Direction, Scientific Secretary, Communication	363,00	29.323,95	33.532,90	63.219,85
Groups	213.069,88	874.685,23	1.715.219,05	2.802.974,22
Training	0,00	33.694,56	0,00	33.694,56
Programmes	2.484,01	150.050,88	218.327,73	370.862,62
External Projects	8.526,11	109.502,91	340.370,34	458.399,44
Intramural Projects	0,00	21.692,69	0,00	21.692,69
TOTAL	224.443,00	1.218.950,22	2.307.450,02	3.750.843,38

Personnel

Personnel contracted during the year as of 31 December itemised by categories:

	MEN	WOMEN	Overall total
Diploma holders	1	10	11
Doctor	7	9	16
Graduates	16	34	50
Technical staff	1	4	5
TOTAL	25	57	82

Significant activities

Projects

NATIONAL

Financing agency: Instituto de Salud Carlos III

Differential effect of the socio-economic position and geographical area on the impact of road safety policies in mortality through traffic accidents in Spain (PI14/00050).

Evaluation of preventive and therapeutic interventions against infection by hepatitis C virus (EIPT-VHC).

Early metabolic factors and cardiovascular disease in the absence of classic risk factors in national and international studies (PI14/00009).

Integration of climatic information for improvement of surveillance of communicable diseases (PI15/01398).

Energy poverty and health from multiple perspectives: individual, geographical and temporal analysis (PI15/02006).

The syndrome of fragility and psychosocial factors in healthy ageing processes: a community cohort of elderly adults in Spain.

INTERNATIONAL UE

Operational knowledge to improve HIV early diagnosis and treatment among vulnerable groups in Europe.

Joint Action on HIV and Co-infection Prevention and Harm Reduction (HA-REACT) "Operational knowledge to improve HIV early diagnosis and treatment among vulnerable groups in Europe".

The JPI HDHL DEDIPAC Knowledge Hub on Determinants of Diet and Physical Activity" (DEDIPAC KH).

Improvement of HIV and co-infection prevention and treatment in priority regions and priority groups in the European Union.

Transfer

One of the CIBER's main aims is the transfer of the knowledge generated by its researchers, so that its research results can be developed in protocols, services and products for improving clinical practice and people's quality of life. To this end the CIBER Technology Transfer department acts as a liaison between our researchers and companies, private institutions, public research centres and other innovation agents to make cooperation with them more effective and ensure that the results of research are actually applied. Work is done in several lines in order to achieve this aim:

- Ongoing contact with our researchers to monitor their results and train them in innovation management.
In this respect, on 29 and 30 November 2016 a Technology Transfer Session was organised as part of the 30th anniversary of ISCIII. At this event experts in different areas shared their knowledge on industrial property, company creation, licencing processes, venture capital, grants for internationalisation, etc.
- Protection of the results of research and management of cooperation with other agents, as displayed by the application for patents and signing licence contracts, amongst other agreements.
In 2016 eleven new patent applications and a registration of software were thus submitted at the CIBER. Seven inventions are also in the patentability study and one in the drafting stage, and these are expected to be submitted in early 2017.
- Apart from this, eight licence contracts have been signed. In 2016 different negotiations expected to end successfully in the first quarter of 2017 were also got under way.
- The presentation of the results of research and technological capacities of our groups in technology transfer sessions. Among many other measures, and just as an example of this, CIBER had a stand and institutional presence at BIOSPAIN 2016 (28-30 September, Bilbao).

- Support for technology-based company creation stemming from CIBER groups.
- Other activities connected with innovation, public-private cooperation and industrial and intellectual property

Dissemination

In 2016 the CIBER'S Communication Department performed different measures for dissemination and disclosure in order to raise awareness of the Centre, as well as to spread knowledge about the research work done by the groups in its eight thematic areas.

The main highlights of the Communication work done by CIBERESP in 2016 are as follows:

- **The CIBERESP in the media:**

67 CIBER press releases were issued over this period, 7 of these from CIBERESP and one in cooperation between several CIBER areas.

Date	Holder	Researcher/es
17/02/2016	Investigadores del CIBERESP generan evidencia sobre cómo reducir las desigualdades de salud en Europa	Carme Borrell
15/03/2016	El portal DianaSalud integra las recomendaciones existentes para la adopción de las mejores decisiones clínicas	Xavier Bonfill
27/04/2016	Relacionan el uso de la anestesia durante el parto con un aumento de la mortalidad materna en países pobres	Javier Zamora
21/07/2016	Presentan un método sistemático y transparente para tomar decisiones sanitarias bien informadas	Pablo Alonso
07/09/2016	Los embarazos gemelares deben adelantar el parto a la semana 37 de gestación para reducir al mínimo los riesgos de muerte intrauterina	Javier Zamora / David Arroyo
24/11/2016	Proponen una serie de recomendaciones para mejorar la salud de los inmigrantes en España	Jordi Casabona, Elena Ronda e investigadores del SIS-CIBERESP
22/12/2016	Un marcador precoz identifica nuevos mecanismos en la aparición del síndrome metabólico	Martín Laclaustra
16/11/2016	El CIBER acerca su investigación a la sociedad de la mano de la improvisación teatral en #ImproCiencia	Various CIBER

659 appearances in the media were also recorded:

2016	News	Audience
CIBERESP	659	55.419.100

- **CIBER Newsletter**

This year 5 CIBER newsletters were published and disseminated, including relevant content about the CIBERESP and other thematic areas. The digital newsletters were sent to around 4.000 subscribers.

<http://www.ciberisciii.es/en/press/newsletter>

- **CIBERESP Newsletter**

In 2016 the CIBERESP newsletter was started up as a new tool for communication in this area. Every month, the newsletter contains an interview of a researcher and gives the news on the CIBERESP for that period <http://www.ciberesp.es/en/press/ciberesp-newsletter>. At present the newsletters are sent via e-mail to all the members of the area.

- **CIBERESP Web Page**

During 2016 in the CIBERESP website has been published 73 news and 38 events in the agenda.

Statistics on visits on the web page 2016							
	No. of visits to page	Sessions*	Users	Pages/session	Average duration of session	% rebound**	% new session
CIBERESP	67.092	28.010	16.435	2,40	1:58	66,08	57,84

(*) Sessions: a session is a set of interactions taking place on this website in a certain period. For example, a single session may involve several pages being viewed.

(**) Rebound: the rebound percentage is the percentage of sessions of a single page, i.e. the sessions in which the user has left the site on the entry page without interacting with this.

- **Social Networks**

Main indicators of the presence of CIBERESP on Twitter:

	Followers		Updates		Klout (Influence)	
	January	December	January	December	January	December
CIBERESP	620	1087	350	562	44	44

- **CIBERESP Annual Report**

The CIBER Communication area, in cooperation with the CIBERESP, coordinated the content of the CIBERESP Report 2015 in Spanish/English, drawing up and disseminating 2 reports in interactive (flipbook) format and pdf. These reports have been distributed over the web page and through the Twitter account: <http://www.ciberisciii.es/en/press/annual-report>

- **CIBER Science Week #ImproCiencia**

The #ImproCiencia dissemination event, held on 16 November in Madrid, combined science and theatre improvisation to give a light-hearted explanation of the biomedical research work done by the CIBER in its eight thematic areas. Dr. Adonina Tardón from CIBERESP explained how part of the research is focussed on weight gain during pregnancy and its influence on the transmission of contaminants to the foetus.

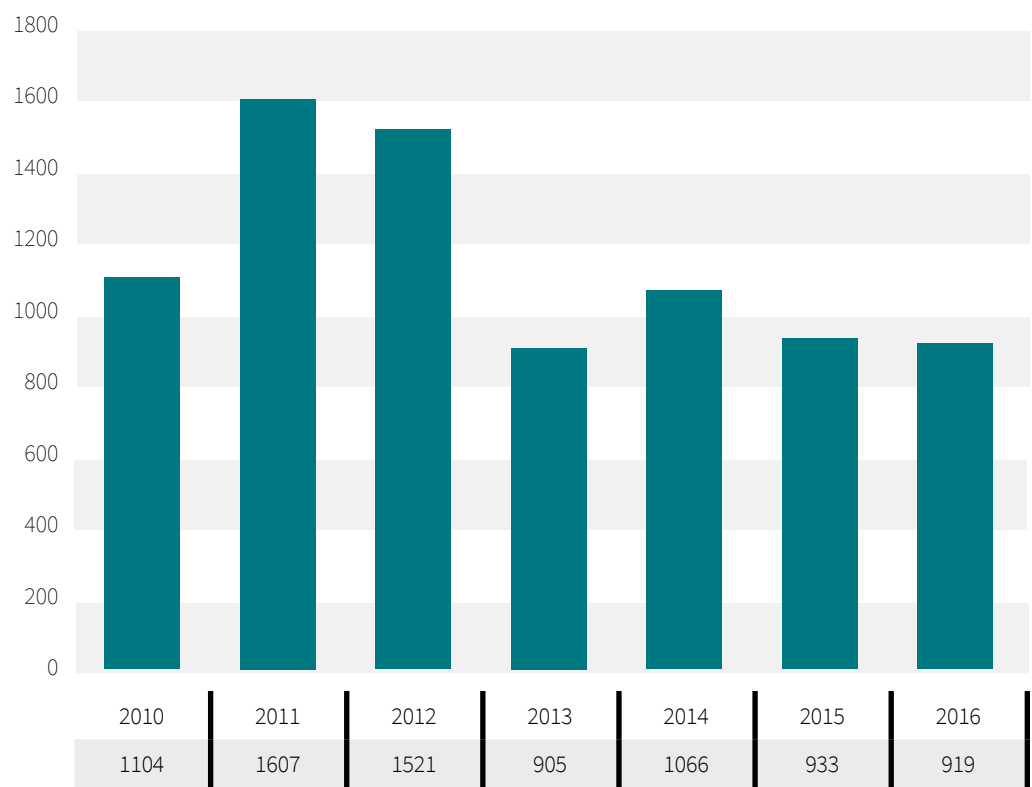
At the CIBERESP Scientific Session held last 13 September at the Medicine Faculty of the Universidad de Sevilla, our researchers described the progress made in the centre's Scientific Programmes.

Scientific Production

No. of affiliated publications

No. of affiliated publications	2015	2016
Q1	538	556
D1	251	269
Total Publications	933	919

EVOLUTION OF PUBLICATIONS 2010-2016



Most relevant publications of the CIBERESP in 2016 according to Impact Factor

Publication	Impact Factor
Regidor E., Vallejo F., Granados J.A.T., Viciano-Fernandez F.J., de la Fuente L., Barrio G.. Mortality decrease according to socioeconomic groups during the economic crisis in Spain: a cohort study of 36 million people. The Lancet. 2016;388(10060):2642-2652.	44,0020
Horikoshi M., Beaumont R.N., Day F.R., Warrington N.M., Kooijman M.N., Fernandez-Tajes J. et al. Genome-wide associations for birth weight and correlations with adult disease. Nature. 2016;538(7624):248-252.	38,1380
Lotta L.A., Sharp S.J., Burgess S., Perry J.R.B., Stewart I.D., Willems S.M. et al. Association between low-density lipoprotein cholesterol-lowering genetic variants and risk of type 2 diabetes: A meta-analysis. JAMA - Journal of the American Medical Association. 2016;316(13):1383-1391.	37,6840
Comas I.. Legionella effectors reflect strength in diversity. Nature Genetics. 2016;48(2):115-116.	31,6160
Lesseur C., Diergaarde B., Olshan A.F., Wunsch-Filho V., Ness A.R., Liu G. et al. Genome-wide association analyses identify new susceptibility loci for oral cavity and pharyngeal cancer. Nature Genetics. 2016;48(12):1544-1550.	31,6160
Gregson J., Tang M., Ndembu N., Hamers R.L., Marconi V.C., Brooks K. et al. Global epidemiology of drug resistance after failure of WHO recommended first-line regimens for adult HIV-1 infection: A multicentre retrospective cohort study. The Lancet Infectious Diseases. 2016;16(5):565-575.	21,3720
Jimenez D., De Miguel-Diez J., Guijarro R., Trujillo-Santos J., Otero R., Barba R. et al. Trends in the Management and Outcomes of Acute Pulmonary Embolism Analysis from the RIETE Registry. Journal of the American College of Cardiology. 2016;67(2):162-170.	17,7590
Laclaustra M., Casasnovas J.A., Fernandez-Ortiz A., Fuster V., Leon-Latre M., Jimenez-Borreguero L.J. et al. Femoral and carotid subclinical atherosclerosis association with risk factors and coronary calcium: The AWHs study. Journal of the American College of Cardiology. 2016;67(11):1263-1274.	17,7590
Chang Y, Ryu S, Choi Y, Zhang Y, Cho J, Kwon MJ et al. Metabolically Healthy Obesity and Development of Chronic Kidney Disease: A Cohort Study. Annals of internal medicine. 2016;-.	16,4400
Azman A.S., Parker L.A., Rumunu J., Tadesse F., Grandesso F., Deng L.L. et al. Effectiveness of one dose of oral cholera vaccine in response to an outbreak: a case-cohort study. The Lancet Global Health. 2016;4(11):e856-e863.	14,7220

No. of publications per group 2016

Group leader	Total Publication	Q1	D1
Sonia Abilleira Castells	12	5	1
Jordi Alonso Caballero	25	17	10
Ferrán Ballester Díaz	46	31	18
Fernando Baquero Mochales	20	15	3
Francisco Bolumar Montrull	35	25	17
Xavier Bonfill Cosp	46	35	28
Carme Borrel Thio	57	16	5
Aurora Bueno Cavanillas	17	10	3
Enrique Calderón Sandubete	8	4	1
Jordi Casabona Barbarà	20	8	2
Jesús Castilla Catalán	90	52	23

Group leader	Total Publication	Q1	D1
Joan Cayla Buqueras	38	14	3
Antonio Daponte Codina	10	1	1
Miguel Delgado Rodríguez	41	19	4
Ángela Domínguez García	30	10	4
Juan Emilio Echevarría Mayo	9	4	0
José Ignacio Emparanza Knörr	9	7	4
Xavier Estivill Palleja	4	4	3
Luis de la Fuente Hoz	29	12	4
Ignacio Ferreira González	12	9	4
Jordi Figuerola Borrás	14	10	2
Fernando García Benavides	28	14	6
Juan Jesús Gestal Otero	29	13	6
Agustín Gómez de la Cámara	18	10	6
Ildefonso Hernández Aguado	11	7	2
Jesús Ibarluezea Maurologoitia	84	59	31
Emmanouil Kogevinas	102	80	39
Amparo Larrauri Cámara	22	11	6
María José López Medina	26	9	2
Ricard Marcos Dauder	9	7	5
Clara Menéndez Santos	6	5	3
María Manuela Morales Suárez-Varela	18	9	1
Víctor Moreno Aguado	21	13	2
Andrés Moya Simarro	31	17	4
María Carmen Muñoz Almagro	11	6	1
Carmen Navarro Sánchez	84	59	32
Nicolás Olea Serrano	19	12	5
Marina Pollán Santamaría	43	32	12
Miquel Porta Serra	21	18	9
Fernando Rodríguez Artalejo	48	37	17
Eduard Rodríguez Farré	2	1	0
Isabel Ruiz Pérez	14	6	1
Marc Sáez Zafra	17	10	3
María José Sánchez Pérez	66	40	19
Silvia Sanjosé Llongueras	39	31	18
Helmut Schroder	13	4	1
Jordi Sunyer Deu	109	87	57
Adonina Tardón García	37	26	12
Javier Zamora Romero	32	25	17

COLLABORATION WORK

Collaborations	2015	2016
IntraCiber publications	275	300
IntraCiber publications	125	140



3

Scientific
programmes

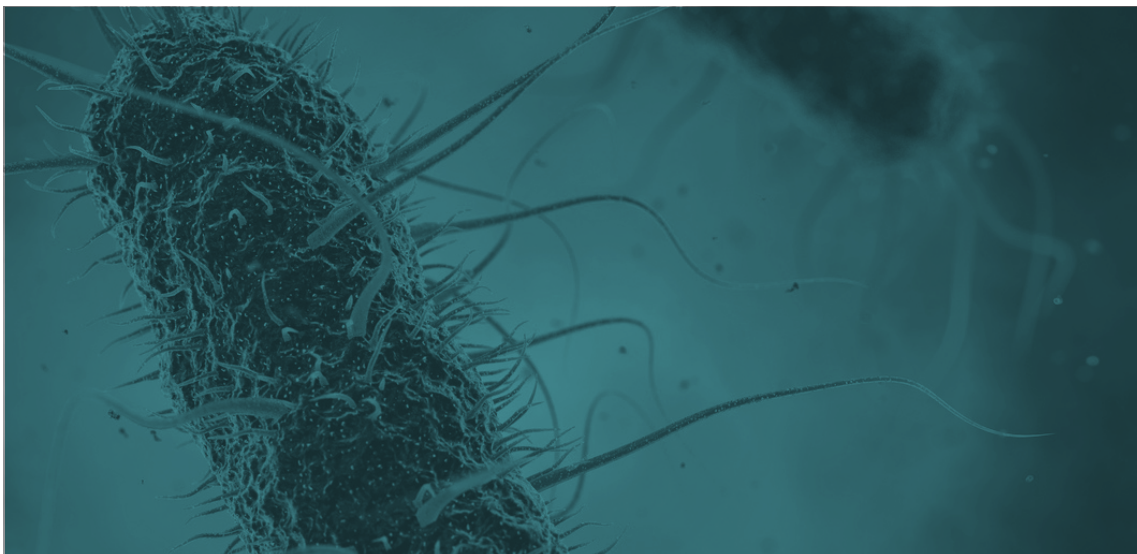
PROGRAMME 1. Epidemiology and control of chronic diseases

Coordinator: **Fernando Rodríguez Artalejo**

During this year, the programme 1 scientific activity has continued in the strategic subprogram MCC-Spain, which is described in detail below. The foundations have also been laid for undertaking another sub-programme intended for genetic screening of the main chronic diseases, for prevention purposes. Lastly, the activities in the other sub-programmes have continued, including the EPIC and its scientific extensions: ENRICA, on mammographic density and breast cancer, DARIOS, FRESCO, POIBC, on the morbidity-mortality of traffic injuries in older drivers and the platform for records of cancer in the population.

MCC-Spain

In 2016, the MCC study published 14 articles, most of these in first quartile and first decile journals. Some of the more noteworthy results of the study that were disclosed this year are the increase in risk meant by xenoestrogens present in serum in the risk of breast cancer, the relationship between trihalomethanes and colon cancer, the intake of nitrates and breast and colorectal tumours, the confirmation of the increase in the risk of colorectal cancer associated with the consumption of red meat and cold cuts, the differences in this risk associated with methods and degrees of cooking and the influence of neonatal characteristics and childhood in several of the tumours included. We have examined the effect that working night shifts has on tumours seldom studied in this context, such as stomach cancer and chronic lymphatic leukaemias, the possible association between the consumption of anti-hypertensive medications and breast cancer and infection by streptococcus gallolyticus with colorectal cancer. Thanks to a multicentre project granted in the last Strategic Health Action, the cases recruited in MCC will be followed up in order to investigate the prognostic role of many of the exposures analysed. At the annual meeting, held in San Sebastián, gave an update on metabolomics and cancer (lecture by Isabel Romieu; IARC, Lyon, France) and new methodological approaches for integrating omic data (lecture by Juan Ramón González; ISGlobal, Barcelona). Lastly, we prepared a brochure with some of the most interesting results of the study that will be sent from each of the nodes to the participants.





PROGRAMME 2. Communicable Disease Prevention, Surveillance and Control (PREVICET)

Coordinator: **Joan Artur Cayla Buqueras**

In 2016 Programme 2 (PREVICET) changed the whooping cough sub-programme for that of influenza, after achieving its intended objectives, and got under way the sub-programme of infections by vectors / climate change. It incorporated two new groups (Dr Jordi Figuerola Borrás and Dr María Carmen Muñoz-Almagro).

In 2016 39 articles were published in indexed journals, signed by researchers from at least two different groups of PREVICET or 2 different CIBERs: 6 articles on factors associated with the 2009-2010 influenza pandemic, 5 on whooping cough, 5 on TB, 3 on outbreaks of norovirus, 3 on HIV, 2 on outbreaks of hepatitis A, 2 on invasive pneumococcal disease in children, 3 on Zika, 1 on legionellosis, 3 on the effectiveness of the anti-influenza vaccine, 3 on influenza, 2 on rabies and one on measles in vaccinated persons.

Projects

The projects entitled “Effectiveness of the vaccine against whooping cough in women in their third month of pregnancy to prevent whooping cough: a case and control study in Catalonia and Navarre” (FIS-PI15/01348), and “Epidemiological and virological analysis of viral agents included in triple viral vaccine” (PI15CIII/00023) were started.

Participation in the European projects “Setting up a sentinel system to assess the burden of whooping cough in EU/EEA” and “Assessing the impact of conjugate vaccines on pneumococcal disease in Europe” financed by the ECDC, was renewed.

Work was done on the dissemination of the results obtained in the project “Effectiveness of anti-influenza vaccine and 23-valent pneumococcal polysaccharide in persons of 65 years of age and older” (FIS-PI12/02079). Financing was obtained for the project “Factors associated with outbreaks of acute gastroenteritis by norovirus in closed and semi-closed institutions” (FIS-PI16/02005).

The project “Implementation of a sustainable strategy for evaluation of a general public health intervention: anti-influenza vaccination in Spain” (AES2013/02123) has displayed a drop in the effectiveness of anti-influenza vaccine (EVA) against virus A(H3N2). In European project I-MOVE a contribution was made to the characterisation of the variation in EAV over time from vaccination and to the study of different aspects of vaccine protection. The optimisation of systems for supervising influenza was continued, as an essential framework in the research on impact and EAV.

We participated in FIS A15CIII/00020 “Research into enterovirus and parechovirus infections causing serious neurological and systemic pathologies in the child population”, and MINECO SAF2013-47194-P “Search for and characterisation of viruses potentially emerging in Iberian bats”.

Thesis

A thesis with international mention was read on the “Epidemiology of whooping cough based on its study in different levels of healthcare” co-directed by 2 researchers from different groups in the Programme.

New sub-programme on vector-borne/climate change infections

Work has started on imported cases of Zika and on environmental factors of influence on the distribution of mosquitos in urban and rural zones. All the groups in the programme take part in the development of spatial-temporal models for studying the risk of acquiring and developing arbovirosis.

PROGRAMME 3. Biological, Behavioural and Structural Determinants in the Contraction and Spread of Communicable Diseases in Vulnerable Populations (DA PET Programme)

Coordinator: **Jordi Casabona Barbara**

In 2016, the DAPET programme consolidated its transversal and collaborative work between CIBERESP groups. The currently active Immigration and Health Sub-Programme (SIS) was consolidated and reached its greatest scientific production in the framework of the DAPET Programme.

Most relevant results of the SIS

Research projects:

- Completion of the coordinated FIS Project (P13/01962) “Multiple evidence on health, healthcare, immigration and vulnerable populations (MEISI Project)” consisting of three sub-projects (MEISI I, IP: ML. Vázquez; MEISI II, IP: J Casabona; MEISI III, IP: JP Millet).
- Performance of coordinated FIS Project (PI14/01146). This consists of two sub-projects: Work, immigration and health on a cohort of immigrant population in Spain (Principal Investigator E. Ronda); Relationship between teenagers’ psychosocial environment and their mental health (R.E.P.A.S.A.M.E.) (Principal Investigator: F. Collazos).
- Performance of the Project- Platform for Longitudinal Studies on Immigrant Families (PELFI):
 - Carrying out the 1st /2nd follow-up of the sub-cohorts in Badalona, Barcelona and Alicante.
 - 6 theses under way.
 - Participation in the Work Package on “Access of the migrant population to HIV diagnosis and care” as part of the EURO-EDAT Project: *The European HIV Early Diagnosis and Access to Treatment* (DG SANCO 2014-2017) (Principal Investigator: J Casabona).

Scientific production: 1 report (Available on: http://www.ciberesp.es/media/658201/informe-resultats-fase_i_diagn%C3%B2stic-de-situacio_vf.pdf); 8 papers at 2 international congresses -(9th European Public Health Conference; 6th European Conference on Migrant and Ethnic Minority Health); 6 papers/1 spontaneous table at a national congress (XXXIV Reunion Científica de la SEE).

Political incidence: Publication of the “*Policy Report - Informing Policies and Programs to Support Immigrant Health in Spanish*”.

Press releases: 1 press release on “*Policy Report - Informing Policies and Programs to Support Immigrant Health in Spanish*” (24/11/2016).

Participation in international initiatives:

- Session entitled *Project Development Event on Migration and Social Inclusion* with the aim of discussing proposals for research and ideas to set up a consortium for new projects (23/5/2016).
- Jordi Casabona took part in the Conference entitled “Migration and Health Actions financed by the EU Health Programme” (18/5/2016).

Coordination of national activities with other members of the CIBERESP:

- National session on “Immigration, global health and communicable diseases: challenges and opportunities”, Madrid 5 April 2016.
- Spontaneous table at the XXXIV Reunión de la SEE “Challenges and opportunities for research on the health of immigrant population in Spain”.

Other activities in the framework of DAPET:

- Completion of the project GLD14-00274 (HepCdetect I) “Improvement of the early diagnosis of sexually transmitted Hepatitis C in vulnerable groups in a community centre of voluntary screening in Catalonia” (IP: E. Martró).
- Performance of projects GLD16-00135 and PI15/00284 (HepCdetect II) (IP: E. Martró).
- Performance of the study entitled “Screening for parenterally-transmitted virus with clinical relevance in drug users attending the largest damage reduction centre in Catalonia” (coord.: E. Martró).
- Performance of the study entitled “Coverage and intervals for screening cancer of the neck of the womb in Catalonia in immigrant women and women born in Spain.” (coord.: S. Sanjosé).



PROGRAMME 4. Social determinants of health

Coordinator: **Antonio Daponte Codina**

The **crisis and health sub-programme**, which has the aim of studying the impact of the crisis on health in Spain, has reached the stage of drafting the results, with some articles already having been published and others in the publication process. As an indicator we could point out manuscripts published on contextual indicators for evaluating the social determinants of health and the Spanish economic crisis, the effect of the crisis on consumption of psychotropic drugs, European evidence on economic crisis and inequalities in health, the crisis in intra-urban inequalities in mortality, differences between men and women in the consumption of substances and the role of the education level and employment, and the manuscript with the work protocol of the mortality sub-project. There are also several articles being reviewed, including one on the evolution of mortality through suicides, and another on the mortality directly attributable to alcohol during the crisis in accordance with the employment conditions. We should lastly mention the participation in a special monograph on the “economic crisis” in the *International Journal for Equity in Health*.

As part of the **energy poverty and health** sub-programme, which has the main aim of analysing energy poverty (EP) in Spain’s “Autonomous Communities” and its relationship with health, as well as to appraise an intervention addressing people in an energy poverty situation, work has started on the following aspects: in the field of analysing association between EP and health a conceptual framework of the factors and processes (determinants) causing EP and their effects on health and inequalities in health has been drawn up, and was published in the *International Journal of Health Services*.

With regard to the appraisal of the intervention addressing people in an EP situation, the final protocol on qualitative evaluation has been written and phase 1 of the study has been completed, consisting in holding in-depth interviews with key agents in the intervention. Information was compiled from the interviews on the process of implementing the intervention, identifying barriers, facilitators, positive and negative aspects of the intervention and its potential effects.

Other general measures as part of the programme on **Social Determinants and Health** include the application of several groups in the call issued by the Instituto de Salud Carlos III for the MEDEA 3 project, “Socio-economic and environmental inequalities in mortality in small areas of cities in Spain”, which has been partially granted and which is currently starting to be developed. A project on “Interventions to promote active and healthy ageing at work centres based on the model for action in employment capacity” has also been got under way.

In the European sphere, we are continuing to work on the GENCAD project, and to cooperate in the EUGENMED (*European Gender Medicine Network*), from which several scientific publications have resulted. Furthermore, several members of the programme will take part in the European project entitled “*European human biomonitoring initiative* (hbm4eu)” granted to start in 2017; and lastly, several doctoral theses within the scope of the programme have been successfully completed.

PROGRAMME 5. Epidemiology and prevention in connection with environmental and occupational health

Coordinator: **Adonina Tardón García**

In 2016, we should highlight the scientific work done in the INMA Project Sub-programme, which has obtained excellent results.

INMA Project

This year we have published 52 scientific articles (38 published plus 14 in the press) of a total number of 355, 50% in journals of the first decile (D1) and 77% in first quartile journals (Q1), and we have 91 proposals for joint articles being developed.

We have agreed on and drawn up the protocols, the operating procedures and questionnaires for the 11-13 years visit of the INMA Project, and we have carried out follow-up visits at INMA-Minorca (18 years), INMA-Valencia (11-12 years), INMA-Sabadell (11-12 years), INMA-Asturias (9.5-10.5 years) and INMA-Gipuzkoa (8 years).

In parallel we have continued to direct doctoral theses (3 have been defended) and carry out measures for dissemination of our results among both the general public and to bodies or public institutions in charge of implementing healthcare policies.

As part of the INMA Project, we have 25 active research projects, plus 10 new competitive projects awarded for 2016: *ELFES-Étude Longitudinale à radioFréquences Et problèmes du Sommeil chez les enfants* (ANSES); *Exposure to non-persistent pesticides and reproductive function in male adolescents, a new follow-up of the INMA-Granada cohort* (MS/ISCIII); *OMEGA BRAIN-Fatty acids, atmospheric pollution and neuropsychological development* (FIS/ISCIII); *Windows of prenatal and postnatal vulnerability in neurodevelopment associated with air particle contamination* (FIS/ISCIII); *ENDOLUNG-Endocrine disruptors and childhood lung function and asthma* (MS/ISCIII); *LIFECYCLE-Early-life stressors and LifeCycle health - Horizon 2020* (European Commission); *EHMBI-European Human Biomonitoring Initiative - Horizon 2020* (European Commission); *ECHOCAT-Urban environment and childhood obesity in Catalonia* (Fundació la Marató de TV3); *Dietary patterns in weight gain and obesity incidence in children at the ages of 4 and 7 years in a birth cohort in Spain* (Fundació la Marató de TV3); *Prenatal exposure to inorganic arsenic and effects on foetal and neuropsychological development in children participating in the INMA cohort* (FIS/ISCIII).

We are also taking part in 14 European projects (MeDALL, ESCAPE, CHICOS, DENAMIC, CONTAMED, EGG/EAGLE, BREATHE, EARNEST, EUCCONET, HiWATE, HITEA, HELIX, GERONIMO, EUTHYROID), and through the INMA External Cooperation policy we have got 4 new cooperation schemes under way with foreign institutions.

The 8 work groups: Biomarkers, Air contamination, Neuro development, Nutrition, Obesity and Postnatal growth, Protocols for coming follow-up visits, CEM Radiations and Pubertal development and hormonal disorders, which have been carrying out their tasks on planning and scientific debate in 2016.

At the 13th INMA Scientific Sessions 2016 held in Sabadell (Barcelona) 92 persons were enrolled. This was attended by Dr. Tony Fletcher, who gave a talk on “*Perfluorinated compounds, birth outcomes and the exposome - how reliable is serum concentration for assessing exposure*” and this was a perfect venue for having meetings of the 8 work groups in the project and a meeting of the project’s Management Committee. Two new cohorts in Murcia and Granada were presented at this encounter.

On the web page (www.proyectoinma.org) we uploaded a news item each month in order to disclose the content of the scientific articles which we publish in specialised journals.

PROGRAMME 6. Health Service Evaluation

Coordinator: **Jordi Alonso Caballero**

CONTINUOUS COHORT OF WORKING LIVES: the EBiSa project (FIS PI14/00057), after reconstructing the cohort of 1,022,779 affiliates from 2004 to 2013, has described the employment lives using **Latent Class Growth Modeling**; and the project *Employment over the life course as a determinant of health: evidence from the Spanish WORKing life Social Security (WORKss) cohort study based on the Continuous Working Life Sample*, has shown that **flexible employment lives** (a large number of temporary contracts), if these are secure (continuity in the contracts, periods of unemployment with cover) undergo a risk of death similar to those who have had stable working lives (few and permanent contracts).

BIBLIOPRO: 2300 new users were registered (9820 accumulated users). Roughly 400 new PROs (*Patient-Reported Outcomes*) questionnaires were identified, which will be added to the 1340 instruments. Members of the scientific committee performed the webinar “Development and Use of the EMPRO: a tool for standardised evaluation of PRO measures PRO” in English and in Spanish with the **International Society of Quality of Life** (ISOQOL). A FIS research project was carried out on “Application of PRO instruments in Spain”.

Researchers of the Jordi Alonso (IMIM) group completed an extensive systematic review on the risk factors of suicidal conduct in adolescents and young adults. The Universal Study (Universidad y Salud Mental) has started its 3rd year of follow-up of over 2000 Spanish university students. Researchers from this group are taking part as coordinators in Spain of the first international study financed by **Movember Foundation**, “Prostate Cancer Outcomes- Compare and Reduce Variation” (PCO-CRV), in which over 5000 patients from eleven countries will be taking part over 3 years [<https://es.movember.com/programs/prostate-cancer>].

Researchers from Fernando García Benavides’s group (CISAL-UPF), along with the Centro Nacional de Salud Ocupacional y Protección del Ambiente para la Salud (CENSOPAS), the Sociedad Peruana de Salud Ocupacional (SOPESAR) and the Universidad Peruana Cayetano Heredia, organised the III **Latin-American Encounter on Surveys of Employment Conditions and Health in Lima** (Peru) on 17- 18/3/2016.

The aim of the encounter was to draw up the User Manual of the Basic Questionnaire on **Working conditions, Employment and Health in Latin America and the Caribbean** (CTESLAC) and to establish the indicators for supervision of occupational health in Latin America, the Caribbean and Europe, with a proposal for a standard questionnaire for the whole of Latin America and the Caribbean having been published (Cad Saude Publica. 2016;32(9):e00210715).

Researchers from Sonia Abilleira’s group (AQuAS) are taking part in 3 projects financed by the European Commission (*EUnetHTA Joint Action 3, ACT at scale and Joint Action Dementia 2*) and in a further 14 evaluation projects in the framework of the Red Española de Agencias de Evaluación de Tecnologías Sanitarias.

They have contributed to drawing up a **Manual for methodological quality and good practice in healthcare evaluations** and have completed 6 technical reports and guides (including the report on the Proposal for indicators for the evaluation of care for chronicity at the National Health System). The group has published 11 articles/editorials in national journals and 2 international articles (the most relevant as regards impact in the journal *Stroke*).

PROGRAMME 7. Clinical Epidemiology

Coordinator: **José Ignacio Pijoán Zubizarreta**

Study of clinical healthcare procedure and of the results observed (MAPAC)

A joint presentation article from the Dianasalud Platform (www.dianasalud.com), containing over 3500 recommendations on the proper use of interventions, diagnostic tests, screening tools, etc. produced by different international initiatives and by MAPAC work itself (*DianaHealth.com, an On-Line Database Containing Appraisals of the Clinical Value and Appropriateness of Healthcare Interventions: Database Development and Retrospective Analysis. PLoS ONE 11(2): e0147943. doi:10.1371/journal.pone.0147943*).

Creation of the MAPAC Commission of the Hospital Universitario Vall D´ Hebron, led by a researcher from Group 8. This raises the possibilities of undertaking MAPAC projects and of carrying out translation and transfer activities in coordination with other MAPAC Commissions active at public healthcare centres.

Start of the coordinated project (over 20 hospitals) to evaluate different professionals' degree of awareness of, and agreement with, recommendations contained in Dianasalud digital repository.

Study of the determinants of efficiency and safety of healthcare interventions

Publication in a high-impact journal of a piece of work (cooperation agreement with RIETE international group) assessing the effectiveness of inferior vena cava filters in patients with thromboembolic disease recurrence during anticoagulant treatment. The work has been carried out by researchers from two groups of the Programme (*Outcomes Associated With Inferior Vena Cava Filters Among Patients With Thromboembolic Recurrence During Anticoagulant Therapy. JACC Cardiovascular Interventions 2016;23(9):2440-8*).

As part of the network known as European Innovation Partnership on Active and Healthy Ageing: Prescription and adherence to treatment. European Commission, completion of the study entitled 'Observational study of adherence to angiotensin II receptor blockers (ARBs) in patients in a community pharmacy', where the parameters influencing the appropriateness of treatment given to patients receiving antihypertensive treatment were investigated and the results were published (*Impact of changes in pill appearance in the adherence to Angiotensin Receptor Blockers and in blood pressure levels: a retrospective cohort study. BMJ Open in press*).

Study of the validity and usefulness of diagnostic tests

Presentations at the Preventing Overdiagnosis World Congress 2016 on the appropriateness of the use of PSA and rationalisation in the demand for the serum protein electrophoresis test.

Scientific production of projects: "Design of a procedure for communicating the radiological risk/benefit prioritising the participation of doctor and patient" in which there were interviews of professionals and general public, apart from assessing the appropriateness of the application at two hospitals. "Predictive value of pulmonary nodules in chest radiology and its determinants". Both led to publications in first quartile journals (*Evaluation of clinicians' knowledge and practices regarding medical radiological exposure: findings from a mixed-methods investigation (survey and qualitative study). BMJ Open 2016;6:e012361*) (*Updated effective doses in radiology. J Radiol Prot 2016;36:975-990*).

Methodology, clinical records and scientific dissemination

Completion of the DRECE VI study, incorporating phenotype-genotype associations and genetic markers in cardiovascular risk equations.

Methodological article (*Features of the area under the receiver operating characteristic (ROC) curve. A good practice The Stata Journal. Volume 16 Number 1: pp. 185-196*) on good practice in the description of diagnostic and prognostic information.

Dr. Pablo Alonso Coello, (Group 43) has been included in the list of the most cited scientists in the world for 2016 published by Clarivate Analytics.



4

Transversal programmes

Training programme

Coordinator: **Beatriz Pérez-Gómez**

This year the Training Programme has reinforced its two lines of action: mobility and further training.

In 2016 the **mobility grants** were restructured and diversified, by creating new calls for furthering the cooperation of CIBERESP researchers both internally and with other groups. These grants are intramural, meaning that they are intended only for personnel contracted by or attached to CIBERESP. Three calls have been issued nationwide, offering a total number of 18 grants for short stays between CIBERESP groups, and a new category has been added, with a call consisting of 8 grants for short stays at other national research groups not from CIBERESP. **International mobility** has also been promoted. On one hand, the 3 grants for 3 months which CIBERESP traditionally calls to enable its doctorate students to obtain international mention have been maintained. A call for aid for international stays has also been set up in order to promote the professional development of its own staff taken on by CIBERESP, including post-doctoral researchers, higher qualification-holders and mid-level technical staff.

The **grants for further training** are extramural, meaning that these are open to researchers from outside CIBERESP, and seek to promote quality research in Public Health. They are also a useful tool for boosting cooperation with other CIBER Areas. In 2016 an agreement with CIBEROBN was established to cooperate in the **Excellence Encounter in Public Health** which is traditionally arranged by CIBERESP. This Encounter is intended to give young trainee scientists in Epidemiology and Public Health the chance to directly discuss and swap ideas on their Doctoral Thesis projects in an informal setting with accredited Public Health scientists. By means of this agreement, apart from the 9 CIBERESP grants, this year the area of Physiopathology of Obesity and Nutrition (CIBEROBN) has financed two attendance grants specifically intended for doctorands in its field. The cooperation experience has been highly satisfactory, and the agreement will thus be maintained for 2017, and will very probably be extended to include a further 2 grant beneficiaries from another of the CIBER Areas (CIBERDEM).

Apart from this CIBERESP also continues to finance the **Prizes for the best 10 papers** presented by young research staff at the Reunión Científica Anual SEE, held jointly with the Congress of the Portuguese Epidemiology Association, or at the Latin-American Congress on Epidemiology and Public Health SESPAS/SEE. In its present format, this award includes a diploma and covers the cost of enrolling the winner for the following year's meeting. The Training programme has also continued to promote training or scientific activities carried out to establish special, more favourable conditions, for CIBERESP members.

5

Platforms



BIBLIOPRO

BiblioPRO can highlight the following achievements in 2016:

USERS

2300 new users were registered (9820 accumulated users), with an average of 5000 visits a month.

SUBLICENCES: 407 applications for sublicences were received. 70% of the applicants are researchers (students and universities), 23% were public administrations and 7% were from private companies.

NEW INSTRUMENTS: The information on the almost 400 new PROs identified in the systematic review for 2013-2014 started to be processed. These new PROs will be uploaded onto the web site in April 2017.

SYSTEMATIC REVIEW 2015: the review of 2418 titles, 1515 abstracts and 911 articles was completed. In 2017 the data extraction will be concluded.

NEW CONTENT: The data on the technical datasheets of roughly 20 instruments was verified and completed with the authors' cooperation.

III SCIENTIFIC SESSION (23 February 2017): its preparation over 2016 included obtaining the accreditation by the CCFPCS (0.6 credits), the search for sponsors (to date MSD and CHIESI have contributed), and the invitation to take part at the conference of international experts such as Professor Nick Black from the University of London and experts in PROs Javier Rejas from Pfizer and Chris Gibbons from the University of Cambridge. The Scientific Committee selected 58 talks for different formats: oral papers at plenary sessions (10), oral papers for parallel sessions (22) and poster presentation (26).

RESEARCH: A research project on "Application of PRO instruments in Spain: systematic review and recommendations based on evidence" was obtained, in which researchers from the Scientific Committee are taking part (PI16/00130-ISCIII/FEDER).

EMPRO ASSESSMENT: The comparison of the metric properties of all the PROs in infant oral health was got under way.

Cooperation in the **BIBLIOINDICA** project, in which it is intended to develop a library of healthcare indicators. Joint initiative of CIBERESP and REDISSEC.

TRAINING ACTIVITIES: The process for accreditation of the new edition of the blended course (15-22 February 2017) "Development and use of EMPRO: a tool for standardised assessment of PRO measures". Teaching staff consisting of investigators from the BiblioPRO scientific committee.

2 WEBINARS were given (in English and in Spanish: 20/06/2016 and 19/07/2016, respectively) entitled "Standardised assessments of Patient-Reported Outcomes (PRO): EMPRO method" in the setting of the Latin-American SIG of the *International Society for Quality of Life* (ISOQOL).

PUBLICATIONS:

Ferrer M, Alonso J. *The measurement of health outcomes from the perspective of the patient*. In: Juan del Llano. Monograph. *Patient-Reported Outcome (PROs)*. (in press).

Observatory of Health Inequality

INDICATORS AND RESULTS

In 2016, we partly continued with the management, communication and content dissemination of the web portal of the Health Inequality Observatory (ODS); the activity nevertheless dropped considerably in the second and third quarter due to cancellation of the Project manager's contract. Furthermore, in 2016 a manuscript was drawn up based on the result of the ODS performed and presented in the 2015 report to the international *Journal of Medical Informatics* and is now being reviewed.

WEB UPLOADS

The ODS has 3166 scientific resources in health inequalities available (reports, articles, statistics, manuals, programmes, web pages, etc.). Over the first quarter of 2016 36 new resources were published.

WEB ANALYSIS

In 2016 17 new subscribers were analysed, now reaching a figure of 318 subscribers including scientific-academic staff, students and different institutions.

686 visits have been recorded and 1158 pages have been viewed, according to Google Analytics data.

Roughly 54% of the visits stem from referrals, 36% of the visits were made through search engines such as Google (organic traffic), around 10% of the visits came from social networks and under 1% by typing in the full domain name (direct traffic).

From knowledge of the geographical origin available (17% are unknown), in 2016 the source of the visits to the ODS was mainly from outside Spain (over 99%). Most of the visits come from Russia (22%), United Kingdom (19%) and the United States (16%), on the other hand the visits from Latin-American countries dropped, mainly coming from Brazil and Chile.

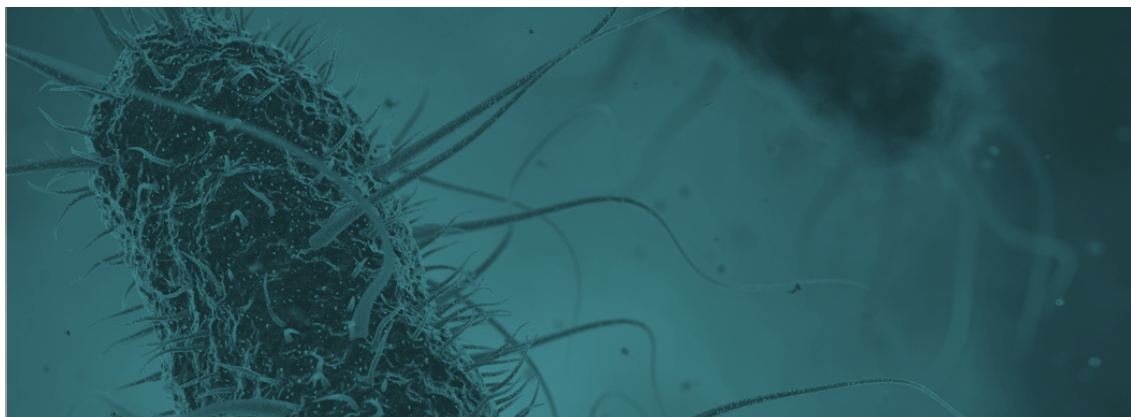
SOCIAL WEB PAGE

In the first quarter of 2016 the ODS continued to be active on the social networks. On Twitter, this has 742 followers, representing an increase of 22 followers in respect of 2015. On Facebook, the number of fans of the ODS page went from 747 fans in 2015 to 758 in 2016.

PRESENCE OF THE ODS IN CONGRESSES AND SCIENTIFIC COMMUNICATION EVENTS.

Over 2016 the ODS has presented papers at the following events:

September 2016: Presentation of a poster paper at the XXXIV Reunión Científica de la Sociedad Española de Epidemiología (SEE), entitled 'Assessment of the CIBERESP health inequality observatory based on a web page and social networks.'



The background of the entire page is a grayscale photograph of laboratory equipment, including several glass vials with white caps and a multi-well plate. A large, semi-transparent teal rectangle is overlaid on the right side of the image, serving as a background for the page's header and title.

6

Research Groups



LEAD RESEARCHER

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PROGRAMME Health Service Evaluation



GROUP MEMBERS

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Contributors: Martí Coma, Magda

Main lines of research

- **HEALTH TECHNOLOGY ASSESSMENT (HTA).**

To evaluate the efficacy, safety, effectiveness, efficiency, appropriateness and economic implications, organizational, legal, ethical and social issues of medical technologies, whether preventive, diagnostic, therapeutic, rehabilitative, organizational, etc. primarily through the review and synthesis of scientific knowledge (published data).

The technologies that most often are subject to evaluation:

Pharmaceuticals / Medical devices and procedures / Diagnostic Techniques / Information and Communication Technologies (ICT) for health

- **QUALITY OF HEALTHCARE ASSESSMENT.**

Evaluation of the safety, effectiveness and efficiency of health interventions and development of instruments for measuring and for improving the quality of health care to improve access, utilization and appropriateness of health services by unpublished data (primary or secondary).

Sub-lines of research:

Quality Measures: Development and adaptation of indicators, instruments and measurement techniques of processes and outcomes of care. Development and adaptation of instruments for

measuring Health Related Quality of Life (HRQOL) and Patient Reported Outcomes (PROM). Development of improvement strategies through tools / interventions to support clinical practice and health management to promote and ensure equity in access to and utilization of health services. Clinical effectiveness: designing strategies for monitoring quality in the provision of healthcare services by means of studies on medical practice variations, effectiveness, safety and efficiency of clinical practice.

- **ASSESSMENT OF THE SOCIAL IMPACT OF CLINICAL AND HEALTH SERVICES RESEARCH.**

Ex-post assessment of extramural research (projects, groups, centres, programs or plans), ie, research return to society by:

The impact or return (primary, secondary and final) of the research carried out in a given area.

Investment and outcomes (knowledge, publications, patent, applications, training of human resources, benefits for clinical practice and for health) of research in health sciences.

Most relevant scientific articles

- RAJMIL L., BEL J., CLOFENT R., CABEZAS C., CASTELL C., ESPALLARGUES M. Clinical interventions in overweight and obesity: A systematic literature review 2009-2014. An Pediatr (Barc). 2016; pii: S1695-4033(16)30150-3.
- PONS J.M.V. The expert bias. Med Clin (Barc). 2016; 147:205-6.
- PÉREZ DE LA OSSA N., ABILLEIRA S., DORADO L., URRÁ X., RIBO M., CARDONA P. ET AL. Access to Endovascular Treatment in Remote Areas: Analysis of the Reperfusion Treatment Registry of Catalonia. Stroke. 2016; 47(5):1381-4.
- ESPALLARGUES M, SERRA-SUTTON V, SOLANS-DOMÈNECH M, TORRENTE E, MOHARRA M, BENÍTEZ D ET AL. Development of a Conceptual Framework for the Assessment of Chronic Care in the Spanish National Health System. Rev Esp Salud Pública. 2016;90:e1-e16.

Highlights

During 2016, the AQuAS research group linked to CIBERESP highlights the start of 3 projects funded by the European Commission (EUnetHTA Joint Action 3, ACT at Scale and Joint Action Dementia 2) in collaboration with public bodies at European level, as well as 14 evaluation projects in the framework of the Spanish Network of Health Technology Assessment Agencies. It is worth mentioning the collaboration in a Manual of methodological quality and good practices in health technology assessment. The group has also continued on transfer products such as the Catalan Arthroplasty Registry, the Shared Decisions project, the Observatory of Results of Research and Integrated Care Assessment. Within the Strategic Plan for cerebrovascular diseases, the implementation of the Registry of reperfusion treatments in patients with stroke and the Registry of Ictus Codes of Catalonia have continued. AQuAS has participated in the organization of 5 relevant events such as the Preventing Overdiagnosis International Conference linked to the ESSENTIAL project, the International Conference on Integrated Care, the Ibero-American Congress of Qualitative Health Research, the International Network for Research on Inequalities in Child Health and The International School on Research Impact Assessment, where researchers from the group have participated as speakers. In addition, these products have been made visible through AQuAS Blog, with more than 5,000 accesses to posts written by researchers of the CIBERESP group. Six technical reports and guidelines have been finalized (including the report on Proposed indicators for the evaluation of care for chronicity within the Spanish National Health System and the update of the Clinical Practice Guidelines Methodology Manual). Finally, 11 articles and editorials have been published in national journals and 2 international articles (the most relevant in terms of impact in Stroke journal).



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PROGRAMME Health Service Evaluation



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Contributors: Barbas López, Puri

Main lines of research

- **Health-Related Quality of Life (HRQL) Measurements.** Development and evaluation of HRQL instruments: health services, public health and clinical research. We have adapted and validated more than 40 HRQL instruments, developing a standard guide for evaluating the quality of these instruments (EMPRO), and we have developed a “Method and system for evaluating an individual’s Health-Related Quality of Life” (patent application No. P200600211). Collaboration in several European Union-funded projects: International Quality of Life Outcomes Database (IQOD), Measuring Health and Disability in Europe (MHADIE) and the KIDSCREEN project. Active participation with the PROMIS (Patient-Reported Outcomes Measurement Information System) initiative funded by the USA NIH. J Alonso is a member of the Board of Directors of the **PROMIS** Health Organization (PHO). We lead the technology platform BiblioPRO, a virtual library of HRQL questionnaires in Spanish.
- **Estimation of the burden of mental disease.** Research on frequency, risk factors, disabilities, and economic and social costs related to the most common mental disorders. Research performed in collaboration with World Mental Health (WMH) Surveys Consortium [<http://www.hcp.med.harvard.edu/wmh/>] in 29 countries, coordinated by Harvard University and WHO. Our group leads the 10 European. Assessment of the burden of mental health problems in Europe and estimates on care needs. It also includes studies on specific populations (such as university students) carried out in several countries simultaneously. WMH Consortium’s contributions are relevant to improve the knowledge on health

care needs and are a more solid basis for decision-making and for developing and evaluating health policies.

- **Evaluation of health services efficiency and effectiveness.** Application of **Health-Related Quality of Life (HRQL)** measuring instruments as outcomes in the evaluation of the efficacy, effectiveness and efficiency of medical procedures or health programs, specially psychometric or econometric tools to measure HRQL, respectively) for the economic evaluation of health services. Research findings are relevant for clinicians' and regulators' s decision-making and, therefore, they should contribute to quality improvement and efficiency of the national health system.

Most relevant scientific articles

- AUERBACH RP, ALONSO J, AXINN WG, CUIJPERS P, EBERT DD, GREEN JG, ET AL.. Mental disorders among college students in the World Health Organization World Mental Health Surveys. *Psychol Med* 2016; 46(14):2955-2970.
- MONLEON S, FERRER M, TEJERO M, PONT A, PIQUERAS M, BELMONTE R*. Shoulder strength changes one year after axillary lymph node dissection or sentinel lymph node biopsy in breast cancer patients. *Arch Phys Med Rehabil* 2016; 97(6):953-963.
- PAVASINI R*, GUARALNIK J, BROWN JC, MAURO DB, CESARI M, LANDI F, ET AL. Short Physical Performance Battery and all-cause Mortality: Systematic Review and Meta-analysis. *BMC Med* 2016; 14(1):215-223.
- SCOTT KM*, LIM C, AL-HAMZAWI A, ALONSO J, BRUFFAERTS R, CALDAS-DE-ALMEIDA JM, ET AL.. Association of Mental Disorders with Subsequent Chronic Physical Conditions: World Mental Health Surveys from 17 countries. *JAMA Psychiatry* 2016; 73(2):150-158.
- VILAGUT G, FORERO CG*, BARBAGLIA G, ALONSO J*. Screening for Depression in the General Population with the Center.

Highlights

During 2016 the Group published 19 articles: 18 international ones (61% in their 1st quartile). Dr. J Alonso has been included in the exclusive list of the world's most highly cited researchers in the 2004-2014 period (2016-HighlyCitedResearchers). Three predoctoral contracts were achieved: Rio Hortega-MJ.Blasco (FIS-CM14/00125;2015-2016), Rio Hortega-M.Martí (FIS-CM15/00167;2016-2017), FPU- L. Ballester (FPU15/05728).

Patient-Reported Outcomes (PRO) are increasingly relevant in research and clinical practice. Our group leads and participates in several initiatives and projects aiming to incorporate the patient's perspective into all aspects. Among them, the PRO Information System (PROMIS), through Mental Health instruments validation studies (ISCIII-FIS-I13/00506FEDER.PI:G.Vilagut) and through presence in the PHO's board of directors; the EuroQol questionnaire, through the coordinated project named SPANIEQ 5D, which evaluates the new Spanish versions (ISCIII-FIS-PI12/00772FEDER-IP/Coordinator: M.Ferrer); and BiblioPRO, the virtual library of PRO instruments in Spanish, lead together with other researchers from CIBER and Retics, with a high transfer activity.

Mental Health burden. The WHO-World Mental Health Surveys consortium, whose regional coordinator for Europe is Dr. J Alonso, continues producing evidence based on population data from 29 countries throughout the world. The group is currently developing studies on university population, such as the project UNIVERSAL-Suicidal Ideation and Behaviour in Spanish University Students (ISCIII-FIS-PI13/00343FEDER and PNSD/Exp.2015/015;PI:J.Alonso,2016-18).

Observational studies on Effectivity. They allow to reflect real usage patterns (duration, adherence), in samples with a lower selection and during longer follow-ups. The European study ASTROLAB (CE-HEALTH-F5-2011-282593.PI:M. Ferrer) has allowed to confirm the safety of long-lasting Beta agonists with inhaled corticoids, in adult patients with asthma. The same hypotheses are being contrasted in a cohort of children with asthma which is being created in Spain (ISCIII-FIS-PI15/00449;2016-18;PI:M.Ferrer).



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PROGRAMME

**Epidemiology and Prevention of Environmental
and Occupational Diseases**



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Main lines of research

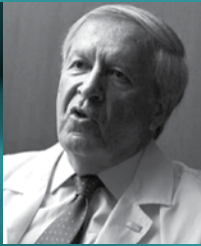
- Children and Environmental Health
- Air pollution, climatic factors and health
- Public Health Surveillance
- Epidemiology of infectious diseases
- Mechanisms of development of asthma and allergic diseases
- Inequalities in health
- Rare diseases
- Clinical epidemiology
- Statistical methods for analysis of epidemiological and environmental data
- Women's Health.
- Environmental health impact assessment
- Assessment of exposure to toxic compounds. Biomonitoring
- Preventive Medicine
- Outbreaks' investigation

Most relevant scientific articles

- LÓPEZ-ESPINOSA M.-J., MURCIA M., ÍÑIGUEZ C., VIZCAINO E., COSTA O., FERNÁNDEZ-SOMOANO A. ET AL. Organochlorine compounds and ultrasound measurements of fetal growth in the INMA cohort (Spain). *Environmental Health Perspectives*. 2016;124(1):157-163.
- ÍÑIGUEZ C., ESPLUGUES A., SUNYER J., BASTERRECHEA M., FERNÁNDEZ-SOMOANO A., COSTA O. ET AL. Prenatal exposure to NO₂ and ultrasound measures of fetal growth in the Spanish INMA cohort. *Environmental Health Perspectives*. 2016;124(2):235-242.
- LLOP S, BALLESTER F, MURCIA M, FORNS J, TARDÓN A, ANDIARENA A ET AL. Prenatal exposure to mercury and neuropsychological development in young children: the role of fish consumption. *International journal of epidemiology*. 2016;.
- COSTA O, LÓPEZ-ESPINOSA MJ, VIZCAINO E, MURCIA M, ÍÑIGUEZ C, NAVARRETE-MUÑOZ EM ET AL. Dietary and Household Sources of Prenatal Exposure to Polybrominated Diphenyl Ethers (PBDEs) in the INMA Birth Cohort (Spain). *Environmental science & technology*. 2016;.
- SÁEZ C, ZURRIAGA O, PÉREZ-PANADÉS J, MELCHOR I, ROBLES M, GARCÍA-GÓMEZ JM. Applying probabilistic temporal and multisite data quality control methods to a public health mortality registry in Spain: a systematic approach to quality control of repositories. *Journal of the American Medical Informatics Association* : JAMIA. 2016.

Highlights

From the line of Environment and Children's Health the visit of 10-11 years of the INMA project in Valencia has been completed. The INMA project has continued to participate in several European research projects: DENAMIC, CHICOS, GERONIMO, REMBRANDT, HELIX, ESCAPE and GEN-Hg. A collaboration with the University of Texas has begun to study the relationship between maternal particle exposure during pregnancy and neurological development in childhood. In the line of climate and health, a collaboration with the School of Public Health of London has been initiated to study the association between changes (moderate and extreme) in environmental temperature and mortality from respiratory and circulatory causes in Spain, for which daily data collected in the 51 most populous Spanish provincial capitals will be used in the period 1990-2010. In the line of Inequalities in Health, coordinated from the Research Area of the same name of FISABIO, the approval and implementation of the MEDEA3 project, financed by the ISCIII, is outstanding. The coordination of this third phase of the MEDEA project will be assumed by the Area of Inequalities of FISABIO. Among research projects in the line of Rare Diseases, the H2020 EUROLINKCAT project was awarded with the aim of establishing a European network of standardized data with information on children with congenital anomalies born in the period 1995-2014. From the line of research in epidemic outbreaks an intense activity, especially in the investigation of outbreaks of Salmonella, pertussis, influenza and rotavirus has been developed. Finally, from the line of clinical epidemiology, progress has been made in the development of a European multicenter research project on eosinophilic esophagitis.



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PROGRAMME DAPET Programme



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Main lines of research

- Epidemiology and ecology of bacterial antibiotic resistance, in relation with antibiotic use, risk groups, and environmental changes.
- Research on mechanisms and dynamics of colonization and transmission of microorganisms among humans, and from animals to humans.
- Research on epidemiology of transmissible diseases, particularly HIV, HCV, LGV, respiratory and neurotropic viruses.
- Epidemiology of non-B HIV-1 subtypes in immigrant and pediatric populations.
- Analysis of the evolution of plasmid-mediated antibiotic resistance in bacteria.

Most relevant scientific articles

- ROLAIN J.M., BAQUERO F. The refusal of the Society to accept antibiotic toxicity: Missing opportunities for therapy of severe infections. *Clinical Microbiology and Infection*. 2016;22(5):423-427.
- DELICADO T.L., TORRECILLA E., HOLGUIN A. Deep analysis of HIV-1 natural variability across HIV-1 variants at residues associated with integrase inhibitor (INI) resistance in INI-naïve individuals. *Journal of Antimicrobial Chemotherapy*. 2016;71(2):362-366.
- FREITAS AR, TEDIM AP, FRANCIA MV, JENSEN LB, NOVAIS C, PEIXE L ET AL. Multilevel population genetic analysis of vanA and vanB *Enterococcus faecium* causing nosocomial outbreaks in 27 countries (1986-2012). *The Journal of antimicrobial chemotherapy*. 2016;71(12):3351-3366.
- CHUECA N., RIVADULLA I., LOVATTI R., REINA G., BLANCO A., FERNÁNDEZ-CABALLERO J.A. ET AL. Using NS5B sequencing for hepatitis C virus genotyping reveals discordances with commercial platforms. *PLoS ONE*. 2016;11(4).
- GUZMÁN PRIETO A.M., VAN SCHAIK W., ROGERS M.R.C., COQUE T.M., BAQUERO F., CORANDER J. ET AL. Global emergence and dissemination of enterococci as nosocomial pathogens: Attack of the clones? *Frontiers in Microbiology*. 2016;7(MAY).

Highlights

Our G33 CIBERESP Group became integrated, as an academic group, in the 8th-Call Innovative-Medicines Initiative, ENABLE-115583 Program and MEDINA, TRN, HELPERBY and OXFORD Sub-Projects, looking for new antibiotics to limit the antibiotic resistance problem in Public Health. Different health research projects still active at ISCIII (PI12-01581; PI12-00567; PI12-00240; PI15-01307; PI15-00818; PI15/01005; CP15-00012); and in the Community of Madrid (PROMPT-S2010/BMD-2414). New projects have been financed: two H2020 Projects of Joint Action-International JPI-EC-AMR JTC 2016 and two FIS-ISCIII projects.

The Group participates in International Committee as Joint Programming Initiative on Antimicrobial Resistance (Dra. Coque), Infect-ERA (Dr. Baquero and Dra. Coque), ERA-NET (Dr. Baquero).

Dr. Val Fdez-Lanza was awarded with a “Scholarship Award” of the European Society of Microbiology (ESCMID) in Amsterdam.

A new platform to capture resistant genes to antibiotic, heavy metals, biocides and resistance plasmid vectors has been developed and presented. This platform allows the investigation of 85,000 resistance genes spread in humans, animals, effluents and food (ResCapv01).

The Group has published more than 20 peer review publications, plenty of scientific and guest communications as “Sources and progenitors of antibiotic resistance genes” (American Society of Microbiology, Boston) and “Antibiotic Resistance; Overview of the Threat” (NIH(USA)-Nordic Symposium, Stockholm) by Dr. Baquero and “Metals and Biocides in the Selection of Antibiotic Resistant Bacteria” (Academy of Sweden) by Dra. Coque. Organization CIBERESP Conference titled “Immigration, Global Health and Communicable Diseases: Challenges and Opportunities” at Hospital Universitario Ramón y Cajal (Dr. Baquero and Dr. Galán).

Different alliances with other CIBERESP groups, centres, diagnostic companies and SMEs, have been established. Significant activity has been developed to create barriers against microbial transmission and antibiotic resistance, molecular epidemiology of respiratory infections, sexually transmitted infections and HIV, specifically in populations of developing countries.



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PROGRAMME

**Epidemiology and Prevention of
Environmental and Occupational Diseases**



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Main lines of research

- Analyze the effect of pre and postnatal exposure to environmental pollutants and diet on neurodevelopment, lung function, allergy, and respiratory health in the INMA cohort study. (www.proyectoinma.org)
- Identify associated factors in relation to overweight and obesity in adult and children of the INMA study. (www.proyectoinma.org; www.bibliodieta.es)
- Evaluate the effect of diet on non-communicable diseases such as cancer, age-related macular degeneration and other metabolic diseases.
- Evaluate the effect on the incidence of T2DM of an intensive weight loss intervention based on a traditional hypocaloric Mediterranean Diet, physical activity and behavioral therapy, as compared to dietary advice based on a MedDiet in the context of usual health care

Most relevant scientific articles

- GUXENS M., GHASSABIAN A., GONG T., GARCÍA-ESTEBAN R., PORTA D., GIORGIS-ALLEMAND L. ET AL. Air pollution exposure during pregnancy and childhood autistic traits in four European population-based cohort studies: The ESCAPE project. *Environmental Health Perspectives*. 2016;124(1):133-140.
- DI CESARE M., BENTHAM J., STEVENS G.A., ZHOU B., DANAEI G., LU Y. ET AL. Trends in adult body-mass index in 200 countries from 1975 to 2014: A pooled analysis of 1698 population-based measurement studies with 19.2 million participants. *The Lancet*. 2016;387(10026):1377-1396.
- PORTA M., BOLUMAR F. Caution: work in progress: While the methodological “revolution” deserves in-depth study, clinical researchers and senior epidemiologists should not be disenfranchised. *European Journal of Epidemiology*. 2016;31(6):535-539.
- VIOQUE J., GIMÉNEZ-MONZO D., NAVARRETE-MUNOZ E.M., GARCÍA-DE-LA-HERA M., GONZÁLEZ-PALACIOS S., REBAGLIATO M. ET AL. Reproducibility and validity of a food frequency questionnaire designed to assess diet in children aged 4-5 years. *PLoS ONE*. 2016;11(11).
- LLOP S., BALLESTER F., MURCIA M., FORNS J., TARDÓN A., ANDIARENA A ET AL. Prenatal exposure to mercury and neuropsychological development in young children: the role of fish consumption. *International journal of epidemiology*. 2016.

Highlights

In parallel with the objectives established for 2016, we have:

- Continued with the follow-up of the children of the INMA Study in Valencia, exploring the effect of pollutants and dietary factors on the child neurodevelopment. We have validated two Food Frequency Questionnaires to assess the diet of the children 4-5 year and 7-8 years old.
- Collaborated and published several articles related to the European study to investigate factors related to the age-related macular disease, the EUREYE Study. In addition, we have participated in two international Consortium of case-control studies on Stomach Cancer (StoP Project) and Pancreas Cancer (PANC4) and the EPIC study.
- Participated in two Global initiatives, The Global Burden of Disease and Risk Factors coauthoring three publications, two in *Lancet* and one in *eLife*.
- Participated in the European Joint Initiative Programming Action, DEDIPAC, “a Healthy Diet for a Healthy Life”
- Collaborated with several groups investigating on Breast cancer (GEICAM Study), fertility and diabetes
- Worked on methodological papers on causal models and the study of reproductive factors on HIV positive people.



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PROGRAMME
Clinical Epidemiology



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Contributors: Girós Boixadós, Meritxell

Main lines of research

- Evidence-based Medicine: Systematic reviews, clinical practice guidelines and clinical trials.
- Health service evaluations.
- Methodological research.

Most relevant scientific articles

- ALONSO-COELLO P, SCHÜNEMANN HJ, MOBERG J, BRIGNARDELLO-PETERSEN R, AKL EA, DAVOLI M ET AL. GRADE Evidence to Decision (EtD) frameworks: a systematic and transparent approach to making well informed healthcare choices. 1: Introduction. BMJ (Clinical research ed.). 2016;353:i2016.
- ALONSO-COELLO P, OXMAN AD, MOBERG J, BRIGNARDELLO-PETERSEN R, AKL EA, DAVOLI M ET AL. GRADE Evidence to Decision (EtD) frameworks: a systematic and transparent approach to making well informed healthcare choices. 2: Clinical practice guidelines. BMJ (Clinical research ed.). 2016;353:i2089.
- MARTÍNEZ-ZAPATA M.J., MARTI-CARVAJAL A.J., SOLA I., EXPÓSITO J.A., BOLIBAR I., RODRÍGUEZ L. ET AL. Autologous platelet-rich plasma for treating chronic wounds. Cochrane Database of Systematic Reviews. 2016;2016(5).
- MADRID E., URRUTIA G., ROQUE I FIGULS M., PARDO-HERNÁNDEZ H., CAMPOS J.M., PANIAGUA P. ET AL. Active body surface warming systems for preventing complications caused by inadvertent perioperative hypothermia in adults. Cochrane Database of Systematic Reviews. 2016;2016(4).
- BONFILL X., OSORIO D., SOLA I., PIJOAN J.I., BALASSO V., QUINTANA M.J. ET AL. DianaHealth.com, an on-line database containing appraisals of the clinical value and appropriateness of healthcare interventions: Database development and retrospective analysis. PLoS ONE. 2016;11(2).

Highlights

- Promoting research and dissemination of knowledge initiatives in the field of practice and procedure assessment, including the expansion of the website DianaHealth (www.dianahealth.com) of Dissemination of Initiatives to Analyse Appropriateness in Healthcare –with 3.000 new recommendations about low value interventions in healthcare.
- Methodological support for the development of evidence-based recommendations on breast cancer and evaluation of the quality of existing evidence-based breast cancer guidelines commissioned by the European Commission.
- Active involvement in many international non-commercial clinical trials and studies in collaboration with other leading global research academic institutions –in which the group has acted as national coordinator and promoter in several of them, especially in the field of perioperative medicine–, several of which have obtained competitive public funding and have generated high-impact publications.
- Creation of the first GRADE center (Grading of Recommendations Assessment, Development and Evaluation - <http://www.gradeworkinggroup.org/>) in Spain: Barcelona GRADE Center.
- Continued involvement in collaborative workgroups and networks (Cochrane Collaboration, GRADE Working Group, Guíasalud, LatinCLEN, Guidelines International Network G-I-N), which implied attending several international meetings during 2016, such as the 13th International Conference G-I-N (Philadelphia), the annual meeting of the Iberoamerican Cochrane Network (Quito), or the 24rd Cochrane Colloquium (Seoul).
- Dr. Pablo Alonso Coello is on the list of the world's most cited researchers of the year 2016 published by Clarivate Analytics, a former branch of the Thomson Reuters agency dedicated to intellectual property and science.



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PROGRAMME

Social Determinants of Health

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Contributors: Altimira, Patricia

Main lines of research

- Inequalities in health by social class, gender, immigration and geographical area.
- Development of theoretical frameworks and methodologies for the study of the intersections of social class, gender and country of origin on health inequalities.
- The social and political determinants of health and their effect on the construction of policies and interventions
- Study of national and transnational influences on policies affecting health.

Most relevant scientific articles

- DADVAND P., BARTOLL X., BASAGANA X., DALMAU-BUENO A., MARTÍNEZ D., AMBROS A. ET AL. Green spaces and General Health: Roles of mental health status, social support, and physical activity. *Environment International*. 2016;91:161-167.
- VIVES-CASES C., GOICOLEA I., HERNÁNDEZ A., SANZ-BARBER B., GILL A.K., BALDRY A.C. ET AL. Expert opinions on improving femicide data collection across Europe: A concept mapping study. *PLoS ONE*. 2016;11(2).
- MACIAS F., MALMUSI D., OLABARRIA M., BORRELL C. Cardiometabolic risk inequalities in Colombia. *International Journal of Cardiology*. 2016;202:156-158.
- ARTAZCOZ L., CORTES I., BENAVIDES F.G., ESCRIBA-AGUIR V., BARTOLL X., VARGAS H. ET AL. Long working hours and health in Europe: Gender and welfare state differences in a context of economic crisis. *Health and Place*. 2016;40:161-168.
- ABAJO M., RODRÍGUEZ-SANZ M., MALMUSI D., SALVADOR M., BORRELL C. Gender and socio-economic inequalities in health and living conditions among co-resident informal caregivers: A nationwide survey in Spain. *Journal of Advanced Nursing*. 2016.

Highlights

During 2016 the group has maintained its contributions nationally and internationally. The Barcelona subgroup has continued to work on existing European projects such as Eurohealthy. On the other hand, we have started a new project, the PULSE project of which we lead a work package. In addition, funding has been obtained from a coordinated project of the Carlos III Health Institute, the MEDEA 3 project. We are still working on the Observatory of Inequalities in Health, which has a new coordinator. The energy poverty subprogram continues to advance in its studies. The principal investigator has obtained a medal from the Generalitat de Catalunya (Josep Trueta Medal).

Regarding the subgroup of Alicante, one of the researchers was elected president of the SEE, and another obtained the direction of Gaceta Sanitaria. It was conducted the National Survey of Health to Gypsy Population 2014, available in the Ministry of Health, Social Services and Equality. Has maintained collaboration with the doctorate and master program with more internationalization, receiving students from Brazil and the Netherlands and started a line of collaboration with the University of Miami financed by the NIH, work continues on the European project CANCON (cancer control).



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PROGRAMME

**Epidemiology and Prevention
of Chronic Diseases**



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Main lines of research

- Prevalent health problems
- Epidemiology of road crash injuries
- Health Services
- Lifestyles before and during pregnancy
- Environmental risk factors

Most relevant scientific articles

- JIMÉNEZ-MEJÍAS E., MARTÍNEZ-RUIZ V., AMEZCUA-PRIETO C., OLMEDO-REQUENA R., LUNA-DEL-CASTILLO J.D.D., LARDELLI-CLARET P. Pedestrian- and driver-related factors associated with the risk of causing collisions involving pedestrians in Spain. *Accident Analysis and Prevention*. 2016;92:211-218.
- MOLINA-LEYVA A., MOLINA-LEYVA I., ALMODÓVAR-REAL A., RUIZ-CARRASCOSA J.C., NARANJO-SINTES R., JIMÉNEZ-MOLEÓN J.J.. Prevalence and Associated Factors of Erectile Dysfunction in Patients With Moderate to Severe Psoriasis and Healthy Population: A Comparative Study Considering Physical and Psychological Factors. *Archives of Sexual Behavior*. 2016;1-9.
- LEWIS-MIKHAEL A.-M., BUENO-CAVANILLAS A., GUIRÓN T.O., OLMEDO-REQUENA R., DELGADO-RODRIGUEZ M., JIMÉNEZ-MOLEÓN J.J. Occupational exposure to pesticides and prostate cancer: A systematic review and meta-analysis. *Occupational and Environmental Medicine*. 2016;73(2):134-144.
- ARIZA-VEGA P., LOZANO-LOZANO M., OLMEDO-REQUENA R., MARTÍN-MARTÍN L., JIMÉNEZ-MOLEÓN J.J. Influence of Cognitive Impairment on Mobility Recovery of Patients With Hip Fracture. *American Journal of Physical Medicine and Rehabilitation*. 2016.
- COSTAS L., BENAVENTE Y., OLMEDO-REQUENA R., CASABONNE D., ROBLES C., GONZÁLEZ-BARCA E.-M. ET AL. Night shift work and chronic lymphocytic leukemia in the MCC-Spain case-control study. *International Journal of Cancer*. 2016.

Highlights

The research team is multidisciplinary composed of doctors, nurses, pharmacists, biologists and psychologists, all of them dedicated to epidemiology, public health and preventive medicine. They have broad experience in several research areas: prevalent health problems, lifestyles during pregnancy, epidemiology of road crash injuries, environmental risk factors and health services.

The research team provides 98 scientific articles in the last 5 years, 18 of them in the year 2016. Overall, 10 out of the 18 articles published in the last year are placed in quartile 1, and 3 in decile 1. During this period 20 doctoral theses have been defended 3 of them during the academic year 2015-16.

At the moment, we are actively participating in Predimed Plus study in collaboration with groups from CIBEROBN and CIBERESP. Recruiting phase is already finished and we are still working in the intervention and follow-up of the participants; we hope it will reflect on significant bibliometric impact from 2017 onwards. Also, we continue collaborating actively in MCC-Spain study, now in data analysis phase and scientific articles redaction. This project is currently generating a significant number of collaborative publications in high impact journals (5 in 2016 in collaboration with our group; we hope this number increases in 2017).

During the year 2016 we have obtained funding for four projects that are currently active, three with public and one with private funding (ISCIII, DGT, Junta of Andalusia and University of Granada). In addition, one of the members of the group, Professor Jiménez-Moleón is Deputy Scientific Director Institute of Biosanitary Research of Granada. Another member, Professor Lardelli-Claret, is Director of research group CTS-137 (Andalusian Research Plan).



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PROGRAMME
**Clinical Epidemiology
DAPET Programme**



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Main lines of research

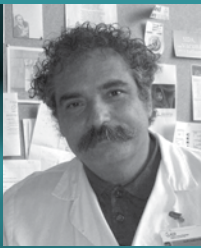
- Epidemiology and physiopathology of the infection by *Pneumocystis jirovecii*
- Role of infectious agents as determinants of noncommunicable chronic diseases
- Development of methods for evaluation and improvement of clinical practice

Most relevant scientific articles

- ZARCOS-PEDRINACI I, FERNÁNDEZ-LÓPEZ A, TÉLLEZ T, RIVAS-RUIZ F, RUEDA A A, SUAREZ-VARELA MM ET AL. Factors that influence treatment delay in patients with colorectal cancer. *Oncotarget*. 2016.
- JESÚS S, HUERTAS I, BERNAL-BERNAL I, BONILLA-TORIBIO M, CÁCERES-REDONDO MT, VARGAS-GONZÁLEZ L ET AL. GBA Variants Influence Motor and Non-Motor Features of Parkinson's Disease. *PloS one*. 2016;11(12):e0167749.
- QUINTANA J.M., GONZÁLEZ N., ANTÓN-LADISLAO A., REDONDO M., BARE M., FERNÁNDEZ DE LARREA N. ET AL. Colorectal cancer health services research study protocol: The CCR-CARESS observational prospective cohort project. *BMC Cancer*. 2016;16(1).
- TORNER N, IZQUIERDO C, SOLDEVILA N, TOLEDO D, CHAMORRO J, ESPEJO E ET AL. Factors associated with 30-day mortality in elderly inpatients with community acquired pneumonia during 2 influenza seasons. *Human vaccines & immunotherapeutics*. 2016;1-6.
- TORNER N, NAVAS E, SOLDEVILA N, TOLEDO D, NAVARRO G, MORILLO A ET AL. Costs associated with influenza-related hospitalization in the elderly. *Human vaccines & immunotherapeutics*. 2016;1-5.

Highlights


- Project "Recognition of the primary infection by *Pneumocystis* in infants: a silent threat to public health"
- ERANet-LAC [ELAC2014/HID0254]
- Institute of Health Carlos III (Spanish Ministry of Economy, Industry and Competitiveness) [AC15/00042]



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PROGRAMME DAPET Programme



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Main lines of research

- Description of the natural history of HIV, patterns of use and effectiveness of cART and build HIV continuum of care in Catalonia.
- Modeling and new methods of monitoring HIV epidemics and sexually transmitted infections (STIs) and their determinants.
- Evaluation of HIV and STI preventive interventions and prevention and control measures.
- Implementation studies and operational research on early diagnosis of HIV.
- Study of biological, behavioral and structural determinants in the acquisition and propagation of communicable diseases in the immigrant population.
- Global Health. Design of multi-level preventive interventions and monitoring of social metrics and networks applied to the study of the HIV and STI epidemic.
- Development and validation of new molecular techniques for STI diagnosis.
- Design and validation of new strategies and diagnostic tools to improve the diagnosis of active HCV infection in populations at high risk of infection and difficult access in the community, and update epidemiological data in Spain.
- Study of the genetic variability of HCV in relation to: i) personalized medicine (resistance to antiviral treatment and prediction of progression of liver fibrosis), ii) characterization of the molecular epidemiology of the virus, and iii) improvement of commercial genotyping techniques.

Most relevant scientific articles

- FERNÁNDEZ-LÓPEZ L., REYES-URUENA J., AGUSTÍ C., KUSTEC T., KLAVS I., CASABONA C. The COBATEST network: a platform to perform monitoring and evaluation of HIV community-based testing practices in Europe and conduct operational research. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*. 2016;1-5.
- SALUDES V., QUER J., GREGORI J., BASCUNANA E., GARCÍA-CEHIC D., ESTEBAN J.I. ET AL. Identification of hepatitis C virus genotype 3 by a commercial assay challenged by natural polymorphisms detected in Spain from patients with diverse origins. *Journal of Clinical Virology*. 2016;78:14-19.
- FERNÁNDEZ-LÓPEZ L., FOLCH C., MAJO X., GASULLA L., CASABONA J. Implementation of rapid HIV and HCV testing within harm reduction programmes for people who inject drugs: a pilot study. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*. 2016;1-5.
- FERRER L., FOLCH C., FERNÁNDEZ-DAVILA P., GARCÍA A., MORALES A., BELDA J. ET AL. Awareness of Pre-exposure Prophylaxis for HIV, Willingness to Use It and Potential Barriers or Facilitators to Uptake Among Men Who Have Sex with Men in Spain. *AIDS and Behavior*. 2016;1-11.
- JORDANA-LLUCH E, RIVAYA B, MARCÓ C, GIMÉNEZ M, QUESADA MD, ESCOBEDO A ET AL. Molecular diagnosis of bloodstream infections in onco-haematology patients with PCR/ESI-MS technology. *The Journal of infection*. 2016.

Highlights

The group was invited to an experts meeting organized by the University of Wolverhampton to identify collaborations focused on vulnerable populations and / or migration. In addition, the Policy Brief “Migration and Health in Spain” was published, which proposes recommendations for improvement in areas such as occupational health, infectious diseases, mental health, and access to health care and sexual and reproductive health.

The results of the project led by the Fundació Sida i Societat with the collaboration of UNwomen and the ACCD were presented in an event that counted with the participation of the Chief of the UN Trust Fund to End Violence against Women.


At European level, the call for tenders of CHAFAE titled ESTICOM started, CEEISCAT leads Objective 2. CEEISCAT was nominated by the Ministry of Health, Social Services and Equality as a member of the Joint Action Link2Care funded by CHAFAE. The results of the first economic evaluation of community-based HIV screening centers for MSM were published.


The ECDC invited Dr. Casabona to an experts meeting to present the DEVO and COBATEST networks as examples of the integration of data collected in community screening centers into the surveillance system. The ECDC funded a project to improve the collection of information in the COBATEST Network, which in turn has received funding from Gilead Sciences Europe Ltd for its consolidation.

The HepCdetect line of research on new screening tools for active HCV infection has been consolidated (GLD14-00274, PI15 / 00284, GLD16-00135). For the first time in Spain, community screening of key groups in the control of this infection (PWIDS, MSM, sex workers) has been carried out by the RNA-HCV assay in dry blood.

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PROGRAMME

**Epidemiology and Prevention of
Chronic Diseases**

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Main lines of research

- Epidemiology of chronic diseases, by participation in multicenter cohort studies and in population-based registers of cancer and acute myocardial infarction.
 - Cohort EPIC and associated projects EPIC-Heart, InterAct and Neuro-EPIC.
 - Multicase-Control Study MCC-Spain
 - Spanish Network of Population-based Cancer Registries REDECAN.
 - Cardiovascular diseases and participation in the study FRESCO.
 - Analysis of mortality, trends and analysis of socioeconomic inequalities (MEDEA).
 - Studies on lifestyles and health.
 - Rare Diseases Registry.
- Evaluation of screening programmes.
 - Impact of breast cancer screening programmes.
 - Analysis of the probability of false-positive results in screening mammography.
 - Relationship among false-positive, true positive and adherence to the screening programmes.
 - Mammographic breast density in Spanish women coming to breast cancer screening programmes (DDM-Spain) and association with reproductive & lifestyle factors & genetic determinants (Var-DDM).
- Epidemiological research on infectious diseases and evaluation of the effectiveness and impact of the vaccines:
 - Effectiveness and impact of vaccines: influenza, pneumococcal, varicella, rotavirus, mumps, whooping cough, meningococcal, etc.
 - Investigation of infectious diseases outbreaks.
 - Evaluation of preventive interventions against HIV, tuberculosis, etc.
 - Evaluation of the National Strategic Program against Hepatitis C infection.

Most relevant scientific articles

- CASADO I., DOMÍNGUEZ A., TOLEDO D., CHAMORRO J., FORCE L., SOLDEVILA N. ET AL. Effect of influenza vaccination on the prognosis of hospitalized influenza patients. *Expert Review of Vaccines*. 2016;1-8.
- CASTILLA J., NAVASCUES A., FERNÁNDEZ-ALONSO M., REINA G., POZO F., CASADO I. ET AL. Effectiveness of subunit influenza vaccination in the 2014-2015 season and residual effect of split vaccination in previous seasons. *Vaccine*. 2016;34(11):1350-1357.
- GUEVARA M., BARRICARTE A., TORROBA L., HERRANZ M., GIL-SETAS A., GIL F. ET AL. Direct, indirect and total effects of 13-valent pneumococcal conjugate vaccination on invasive pneumococcal disease in children in Navarra, Spain, 2001 to 2014: Cohort and case-control study. *Eurosurveillance*. 2016;21(14).
- CASTILLA J., NAVASCUES A., FERNÁNDEZ-ALONSO M., REINA G., ALBÉNIZ E., POZO F. ET AL. Effects of previous episodes of influenza and vaccination in preventing laboratory-confirmed influenza in Navarra, Spain, 2013/14 season. *Eurosurveillance*. 2016;21(22):1-10.
- GODOY P., GARCÍA-CENOZ M., TOLEDO D., CARMONA G., CAYLA J.A., ALSEDA M. ET AL. Factors influencing the spread of pertussis in households: A prospective study, catalonia and navarre, Spain, 2012 to 2013. *Eurosurveillance*. 2016;21(45):24-33.

Highlights

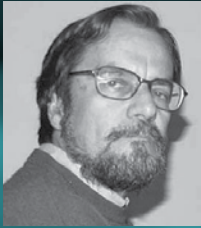
During 2016 we have contributed notably to the CIBERESP activity. We have improved in the four projects funded by FIS and three projects with European funds.

In chronic diseases, we have advanced in the projects on the effects of bisfenol in the incidence of cancer, and on the effect of inflammation in the incidence of diabetes and Crohn disease (Inflames), both projects are based on the EPIC cohort. We have received started a new FIS project to evaluate the effect of chrono-diet on the incidence of cancer in the same EPIC cohort study.

In infectious and vaccine, preventable diseases we continue working on the I-MOVE-plus study, which is funded by the Horizon 2020 program. This study aims to evaluate the effectiveness and impact of pneumococcal and influenza vaccines on elderly people. This study adds to a previous FIS project, which evaluates the influenza vaccine effectiveness against laboratory confirmed influenza since 2009. We also participated in multicenter studies funded by the ECDC, which aim to evaluate the effectiveness and impact of pneumococcal vaccine (SpIDNet), influenza vaccine (I-move) and Pertussis vaccine (Pertinent). We have demonstrated high indirect effect of conjugate pneumococcal vaccination in children and its important impact on unvaccinated population. We have also demonstrated high impact of the influenza vaccine in preventing deaths, and we have detected interferences between influenza vaccines in the current and previous seasons.

In 2016 we have advanced in the project funded by the National Strategic Plan of Hepatitis C with the aim of evaluating the effect on preventive and therapeutic interventions against this infection.

A researcher of our team defended has directed a PhD thesis which have received the highest qualifications.



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PROGRAMME

**Communicable Disease Surveillance,
Prevention and Control**



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Contributors: Asensio, Joan

Main lines of research

- Tuberculosis:
 - New technologies for tuberculosis (TB) conytol: web side of the Barcelona TB Research Unit to improve control, diagnosis, treatment and prevention of TB.
 - Role of diabetes in different clinical presentation and evolution of TB.
 - Cohort study of TB infected contacts to determine the disease incidence at 2 and 5 years.
 - TB clinical trials: to) TB Trials Consortium network of the CDCs, researching new patterns to shorten the latent Tuberculosis infection (LTBI) and TB therapy; (b) collaboration with Statens Serum Institut in a new diagnostic test for the LTBI.
- Sexually transmitted infections (STI)/ VIH:
 - Use of information and communication technologies for the prevention and control of STI/HIV:
 - a) Creation of Apps to promote sexual health both in HIV positive and HIV negative men.
 - b) Use of Apps to offer rapid tests outside the sanitary circuit
 - Study of HIV contacts to determine the incidence among them.

- Community health workers (CHW) for communicable diseases control: with the immigration increase we have incorporated CHW that aid in the prevention and control of these diseases. They act as mediators and translators.
- Incidence studies of mumps, whooping cough and STIs, as well as the influence of the crisis on some communicable diseases such as TB and hepatitis. Study of factors influencing the transmission of pertussis in homes as well as the effectiveness of immunization and chemoprophylaxis.
- Outbreaks: investigation of the causes and implementation of control measures as in the case of different outbreaks by norovirus (Arinsal waters).

Most relevant scientific articles

- GODOY P., BRONER S., MANZANARES-LAYA S., MARTÍNEZ A., PARRÓN I., PLANAS C. ET AL. Outbreaks of hepatitis A associated with immigrants travelling to visit friends and relatives. *Journal of Infection*. 2016;72(1):112-115.
- OSPINA J.E., ORCAU A., MILLET J.-P., ROS M., GIL S., CAYLA J.A. Epidemiology of tuberculosis in immigrants in a large city with large-scale immigration (1991-2013). *PLoS ONE*. 2016;11(10).
- RODRIGO T., CASALS M., CAMINERO J.A., GARCÍA-GARCÍA J.M., JIMÉNEZ-FUENTES M.A., MEDINA J.F. ET AL. Factors associated with fatality during the intensive phase of anti-tuberculosis treatment. *PLoS ONE*. 2016;11(8).
- SOLANO R., MASA-CALLES J., GARIB Z., GRULLÓN P., SANTIAGO S.L., BRACHE A. ET AL. Epidemiology of pertussis in two Ibero-American countries with different vaccination policies: Lessons derived from different surveillance systems. *BMC Public Health*. 2016;16(1).
- GODOY P., GARCÍA-CENOZ M., TOLEDO D., CARMONA G., CAYLA J.A., ALSEDA M. ET AL. Factors influencing the spread of pertussis in households: A prospective study, catalonia and navarre, Spain, 2012 to 2013. *Eurosurveillance*. 2016;21(45):24-33.

Highlights

- The study of STIs and HIV are a very important part of the research group. Recently the group has been involved in the development of new technologies such as the creation of profiles in the Apps of social-sexual contacts to offer the STI and HIV tests and the creation of an App to promote sexual health. Contact tracing also is an important part of the surveillance of these diseases and in the rest of the communicable diseases.
- The TB program, with its 30 years of existence, has been able to reduce the incidence of TB to below 20/100000. Screening and treatment of latent infection (LTBI) will be a priority line to reduce the number of future cases of TB.
- The importance of diabetes as a risk factor for developing TB will be explored by our group through the approval of an FIS project that will begin to develop this year.
- Clinical trials with CDC and SSI will allow to shorten TB and LTBI treatments, as well as improve the diagnostic of LTBI with a more specific skin test, especially in countries with high TB burden and low economic resources.
- The surveillance and control of vaccine-preventable diseases continues, with re-emergent diseases such as mumps, pertussis and measles.
- The study of epidemic outbreaks will continue to be one of the group's top priority, with important examples such as the norovirus outbreak transmitted by bottled water or enterovirus that caused severe neurological clinical manifestations.
- The FIS project about the influence of the economic crisis on disease continues in spite of significant restrictions on funding. TB, pertussis and viral hepatitis have also been studied.



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PROGRAMME

Social Determinants of Health



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Main lines of research

- Environment and Health:
 - Air-pollution and health
 - Exposure assessment and biomonitoring
 - Planning and Health
 - Working conditions and health
- Patients, Citizenship and Health Services:
 - Citizen Expectations
 - Excluded and social exclusion: drugs and social exclusion.
 - Immigration and health
 - Information needs of citizens
- Social Inequalities in Health:
 - Evictions, energy poverty, and health
 - Gender inequalities in health
 - Gender and informal care
 - Social and gender inequalities in cardiovascular health
 - Productive-work, gender and health
 - Interventions to reduce social and gender inequalities in health

Most relevant scientific articles

- MARI-DELL'OLMO M., GOTSSENS M., PALENCIA L., RODRÍGUEZ-SANZ M., MARTÍNEZ-BENEITO M.A., BALLESTA M. ET AL. Trends in socioeconomic inequalities in mortality in small areas of 33 Spanish cities. BMC Public Health. 2016;16(1).
- DAPONTE CODINA A., MATEO RODRÍGUEZ I., VASQUEZ-VERA H. Evictions and health, a response from the public health in Spain is needed. Gaceta Sanitaria. 2016;30(4):239-241.
- CABRERA-LEON A., DAPONTE CODINA A., MATEO I., ARROYO-BORRELL E., BARTOLL X., BRAVO M.J. ET AL. Contextual indicators to assess social determinants of health and the Spanish economic recession. Gaceta Sanitaria. 2016.
- DAPONTE-CODINA A., BOLÍVAR-MUNOZ J., SANCHEZ-CANTALEJO E., MATEO-RODRÍGUEZ I., BABIO G., ROMO-AVILÉS N. ET AL. Factors associated with prehospital delay in men and women with acute coronary syndrome. Anales del Sistema Sanitario de Navarra. 2016;39(1):47-58.
- NUÑO-SOLINÍS R, HERRERA MOLINA E, LIBRADA FLORES S, ORUETA MENDÍA JF, CABRERA-LEÓN A. [Care costs and activity in the last three months of life of cancer patients who died in the Basque Country (Spain)]. Gaceta sanitaria. 2016.

Highlights

In health and environment, we are developing the project “The impact of urban environments on health in Andalusia”, financed by the Andalusian Ministry of Health, and the coordinated FIS project “Energy poverty and health in Spain before and during the economic crisis”.

In health inequalities, the FIS project “Socioeconomic and environmental inequalities in the geographical distribution of mortality in Andalusia (MEDEA3)” has been achieved, part of a coordinated project. In the GenCAD (Gender specific mechanisms in coronary artery disease in Europe) project, a general population survey was completed in 6 European countries on the extent of knowledge on gender inequalities in coronary artery diseases, and a questionnaire was developed for health professionals. Finally, we keep working on the completion of an information system and its corresponding database, based on indicators of social, economic and environmental context of the Spanish Autonomous Communities, within the subprogram of CIBERESP “crisis and health”,

In the line of patients and health services, the MINECO project “efraile” has been obtained, - ehealth and Frailty, a longer Life Expectancy: Design of a model of eHealth care and self-management for multimorbidity patients based on the support of fragility, and impact measurement of Wearables and Domotic technologies. In addition, it participates in the European Project Sparks “rethinking innovation together”. In terms of transfer activities, the Andalusian Health and Environment Observatory (OSMAN) has developed several population guides, and participated in various local initiatives. In addition, the group has developed the report: the future of hospitals. In addition, more than 20 workshops have been organized, including a Clinical Day, Health and Emotions, and the Patient School Congress.



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PROGRAMME

**Epidemiology and Prevention of
Chronic Diseases**



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Main lines of research

- Epidemiological methods
- Reproductive health epidemiology
- Cancer epidemiology
- Clinical epidemiology on rheumatic diseases

Most relevant scientific articles

- LEWIS-MIKHAEL A.-M., BUENO-CAVANILLAS A., GUIRON T.O., OLMEDO-REQUENA R., DELGADO-RODRÍGUEZ M., JIMÉNEZ-MOLEON J.J. Occupational exposure to pesticides and prostate cancer: A systematic review and meta-analysis. *Occupational and Environmental Medicine*. 2016;73(2):134-144.
- GONZÁLEZ-GAY M.A., LLORCA J. Clinical guidelines: Best practices and uncertainties in the management of PMR. *Nature Reviews Rheumatology*. 2016;12(1):3-4.
- LOPE V., DE LARREA N.F., PÉREZ-GÓMEZ B., MARTÍN V., MORENO V., COSTAS L. ET AL. Menstrual and reproductive factors and risk of gastric and colorectal cancer in Spain. *PLoS ONE*. 2016;11(10).
- PASTOR-BARRIUSO R., FERNÁNDEZ M.F., CASTANO-VINYALS G., WHELAN D., PÉREZ-GÓMEZ B., LLORCA J. ET AL. Total effective xenoestrogen burden in serum samples and risk for breast cancer in a population-based multicase-control study in Spain. *Environmental Health Perspectives*. 2016;124(10):1575-1582.
- LÓPEZ-MEJÍAS R., CASTANEDA S., GONZÁLEZ-JUANATEY C., CORRALES A., FERRAZ-AMARO I., GENRE F. ET AL. Cardiovascular risk assessment in patients with rheumatoid arthritis: The relevance of clinical, genetic and serological markers. *Autoimmunity Reviews*. 2016;15(11):1013-1030.

Highlights

Our group in three main projects: MCC-Spain, PREDIMED-PLUS and UNIHCOs. MCC-Spain is a multicenter case-control study with more than 10000 subjects included, cases of cancer from different sites (breast, colorectal, stomach, prostate, and leukemia). In the MCC-Spain, our group has developed the project "Genetic variants and pathways related to cancer of breast and prostate and their interaction with exposure to endogenous and exogenous sexual hormones (PI: Javier Llorca), funded by the ISCIII (PI12/00715) and also carry out the project "Integration of both genetic and clinical data: survival of breast cancer in the MCC-Spain" (IP: Javier Llorca, funded by the ISCIII; PI15/00069). The group is member of the consortium PRACTICAL (Prostate Cancer Association Group to Investigate Cancer Associated Alterations in the Genome), funded by the US NIH and the 7th EU research program.

PREDIMED-PLUS is a multicenter randomized clinical trial on the effect of Mediterranean diet plus physical activity on the incidence of cardiovascular events, diabetes mellitus, and neurodegenerative diseases. It is funded by the ISCIII (IP: Miguel Delgado, PI14/01471). The trial has enrolled 6700 subjects in 22 centers of Spain. UNIHCOs is multicenter cohort study on students from 5 Spanish universities about the risk factors for addiction. It is funded by the National Plan against Addictions of the Ministry of Health.

Our group collaborates with other research teams of the CIBER-OBN (Obesity and Nutrition), in the projects SUN (a cohort study) and the above mentioned PREDIMED-PLUS trial, groups of the Research Network on Inflammation and Rheumatic Diseases (RIER) on the clinical epidemiology of rheumatic diseases.

During 2016 seven PhD theses, have been presented: drug abuse in several Spanish universities, ocular diseases in the ataxia-telangiectasia syndrome, tobacco use, cardiovascular risk in patients with rheumatoid arthritis and spondyloarthritis, prognosis of severe injury in elderly, and communicational profile of general practitioners in Andalusia.



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PROGRAMME

**Communicable Disease Surveillance,
Prevention and Control**



GROUP MEMBERS

Staff members: Romero Tamarit, Arantxa | Soldevila Pidemunt, Nuria | Toledo Zavaleta, Diana Isabel

Associated members: Borrás López, Eva | Cardeñosa Marín, Nieves | Ciruela Navas, María Pilar | Godoy García, Pere | Jané I Checa, Mireia | Jansa Vallado, Josep María | Martínez Mateo, Ana | Muñoz García, Pilar | Plans Rubio, Pedro | Salleras Sanmarti, Luis | Torner Gracia, Nuria

Main lines of research

- Preventable diseases of viral etiology (measles, mumps and rubella) or bacterial etiology (pertussis, pneumococcal disease, meningococcal disease).
- Epidemic outbreaks of communicable diseases.
- Influenza.
- Viral hepatitis.
- Effectiveness and efficiency of vaccination programs.

Most relevant scientific articles

- CASADO I., DOMÍNGUEZ A., TOLEDO D., CHAMORRO J., FORCE L., SOLDEVILA N. ET AL. Effect of influenza vaccination on the prognosis of hospitalized influenza patients. *Expert Review of Vaccines*. 2016;1-8.
- DOMÍNGUEZ A., GODOY P., TORNER N. The Effectiveness of Influenza Vaccination in Different Groups. *Expert Review of Vaccines*. 2016;1-14.
- BROTONS P., DE PAZ H.D., TOLEDO D., VILLANOVA M., PLANS P., JORDAN I. ET AL. Differences in Bordetella pertussis DNA load according to clinical and epidemiological characteristics of patients with whooping cough. *Journal of Infection*. 2016.
- DOMÍNGUEZ A., SOLDEVILA N., TOLEDO D., GODOY P., CASTILLA J., FORCE L. ET AL. Factors associated with influenza vaccination of hospitalized elderly patients in Spain. *PLoS ONE*. 2016;11(1).
- GODOY P., GARCÍA-CENOZ M., TOLEDO D., CARMONA G., CAYLA J.A., ALSEDA M. ET AL. Factors influencing the spread of pertussis in households: A prospective study, catalonia and navarre, Spain, 2012 to 2013. *Eurosurveillance*. 2016;21(45):24-33.

Highlights

The project “Effectiveness of the pertussis vaccine in pregnant women in the third trimester in preventing pertussis: a case-control study in Catalonia and Navarre” (FIS PI15/01348) commenced on 1st January 2016, with the participation of CIBERESP groups 01, 11 and 12. The PI is Dr Godoy and the project will last until 2018.

During 2016, we have worked on the dissemination of the results of the project “Effectiveness of the influenza and 23-valent polysaccharide pneumococcal vaccines in persons aged = 65 years” (FIS PI12/02079), with the participation of CIBERESP groups 01, 04, 11, 12 and 17. Two lectures were presented at the Tenth World Congress on Vaccines, Immunisation and Immunotherapy in Switzerland and seven scientific articles have been published.

Financing was obtained from the Carlos III Health Institute convocation of Health Research Projects for the project “Factors associated with outbreaks of acute gastroenteritis due to norovirus in closed and semi-closed institutions” (PI16/02005). The PI is Dr Domínguez.

The Scientific Workshop entitled “Pertussis: an emerging disease?” took place on 17th October 2016, with 168 participants and 12 lecturers (8 from CIBERESP), including Dr Helen Campbell, a Public Health England expert on vaccine-preventable diseases.

Internationally, Dr. Domínguez participated as a member of the Viral Hepatitis Prevention Board, a platform for the dissemination of scientific information about hepatitis.

Dr. Domínguez was named a member of the Advisory Council of Public Health for 2016-2019. This is the consultative body on the technical and scientific aspects of public health in Catalonia.


In October 2016, Dr. Domínguez presented one lecture at the Scientific Workshop entitled “Influenza vaccination and healthcare workers: Practice and Ethics” for the Health Sciences Foundation in Madrid.


Dr. Domínguez was the Director of three doctoral theses, of which one was for an International Doctorate. All three received the qualification of Outstanding *Cum laude*.



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PROGRAMME

**Communicable Disease Surveillance,
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Main lines of research

- Vaccine preventable diseases
The group of the National Center of Microbiology is the national reference laboratory for measles and rubella as recognized in the corresponding national plans for elimination and accredited by the WHO. Moreover, diagnostic techniques for other vaccine preventable diseases (mumps, pertussis or chickenpox) were studied in the context of specific programs of microbiological surveillance. Additionally to this official activity, the group currently keeps research activity in the following aspects:
 - Development and evaluation of diagnostic methodologies for measles virus (MeV, mumps virus MuV) and Rubella virus (RuV), and Bordetella pertussis.
 - Sero-epidemiology of MeV, RV and MuV.
 - Molecular epidemiology of MeV, MuV and RV.
 - Sero-epidemiology of pertussis.
 - Sero-epidemiology of influenza.
- Rabies and another bat-associated viruses.
The group of the National Center of Microbiology is officially recognized as national reference laboratory for several zoonoses, including rabies in humans and suspected animals. Additionally to this

official activity, the group currently keeps research activity in the following aspects.

- Development and evaluation of diagnostic methodologies for rabies.
- Molecular Epidemiology of canine rabies in Ceuta and Melilla.
- Epidemiology and pathogenesis of bat rabies.
- Search of new potentially emergent viruses in bats.
- Efficiency of rabies vaccines.
- Neurological Diseases of viral etiology. Etiology of meningitis and encephalitis in Spain.
- Polyomavirus disease in the immune-compromised.

Most relevant scientific articles

- MARTÍNEZ-TORRES A.O., MOSQUERA M.M., DE ORY F., GONZÁLEZ-PRAETORIUS A., ECHEVARRÍA J.E. Genetic characterization of rubella virus strains detected in Spain, 1998-2014. PLoS ONE. 2016;11(9).
- SANZ J.C., RAMOS B., FERNÁNDEZ A., GARCÍA-COMAS L., ECHEVARRÍA J.E., DE ORY F. Serological diagnosis of mumps: Value of the titration of specific IgG. Enfermedades Infecciosas y Microbiología Clínica. 2016.
- RISCO-RISCO C., MASA-CALLES J., LÓPEZ-PERA N., ECHEVARRÍA J.E., RODRÍGUEZ-CARAVACA G. Epidemiology of measles in vaccinated people, Spain 2003-2014. Enfermedades Infecciosas y Microbiología Clínica. 2016.
- POZO F., JUSTE J., VÁZQUEZ-MORON S., AZNAR-LÓPEZ C., IBÁÑEZ C., GARIN I. ET AL. Identification of novel betaherpesviruses in iberian bats reveals parallel evolution. PLoS ONE. 2016;11(12).
- CAYLA J.A., DOMÍNGUEZ A., RODRÍGUEZ VALIN E., DE ORY F., VÁZQUEZ A., FORTUNY C. Zika virus infection: a new public health emergency with great media impact. Gaceta Sanitaria. 2016;30(6):468-471.

Highlights


- A total of 13th articles have been published. Two of them in the context of the project about MMR vaccine (FIS PI12/02006). Other ten are in preparation or ready to be submitted in brief. Another two publications are related with the research line about rabies and bat borne viruses and there are another 3 in preparation or ready to be sent in brief. The remaining nine are related with other collaborations.
- We have participated in the elaboration of the annual report of the National Plan for Measles and Rubella Elimination for the WHO, as well as in the annual meeting of the Spanish Independent Committee for the Verification of Measles and Rubella Elimination. Indeed, we have participated in the biannual meeting of the WHO net of measles and rubella reference laboratories, which took place in Buvda (Montenegro) on June 26, 27, 2016.
- We have participated in different national (seven communications) and international (two communications) meetings.
- A new research project funded by the Strategic Action in Health of the Spanish Government has been initiated, entitled EPIDEMIOLOGICAL AND VIROLOGICAL ANALYSIS OF THE VIRAL AGENTS INCLUDED IN THE MMR VACCINE: NEW CHALLENGES. In addition to the members of the research team of our CIBERSP group, we account with the participation of members of other CIBERESP groups, the Regional Public Health Laboratory of the Madrid Autonomous Community, the Service of Epidemiology of the Public Health Service of the Autonomous Community of Madrid, as well as with 27 primary attention pediatricians and one from hospital attention.
- We have participated in the workshop about Health and international population movements, which took place on february 2016 in Madrid, organised by the National Center of Epidemiology (ISCIII) and the program PREVICT (CIBERESP).

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PROGRAMME

Clinical Epidemiology

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Main lines of research

- Evidence Based Medicine
- Diagnosis
- Clinical prediction rules
- Effectiveness and efficiency (RCT and SR)

Most relevant scientific articles

- BAN J.-W., EMPARANZA J.I., URRETA I., BURLS A. Design characteristics influence performance of clinical prediction rules in validation: A meta-epidemiological study. PLoS ONE. 2016;11(1).
- CABELLO J.B., BURLS A., EMPARANZA J.I., BAYLISS S.E., QUINN T. Oxygen therapy for acute myocardial infarction. Cochrane Database of Systematic Reviews. 2016;2016(12).
- MELLADO M., PIJOAN J.I., JIMÉNEZ D., MURIEL A., AUJESKY D., BERTOLETTI L. ET AL. Outcomes Associated With Inferior Vena Cava Filters Among Patients With Thromboembolic Recurrence During Anticoagulant Therapy. JACC: Cardiovascular Interventions. 2016;9(23):2440-2448.
- FERNÁNDEZ-TORRON R., GARCÍA-PUGA M., EMPARANZA J.-I., MANEIRO M., COBO A.-M., POZA J.-J. ET AL. Cancer risk in DM1 is sex-related and linked to miRNA-200/141 downregulation. Neurology. 2016;87(12):1250-1257.
- BONFILL X., OSORIO D., SOLA I., PIJOAN J.I., BALASSO V., QUINTANA M.J. ET AL. DianaHealth.com, an on-line database containing appraisals of the clinical value and appropriateness of healthcare interventions: Database development and retrospective analysis. PLoS ONE. 2016;11(2).

Highlights

Our leadership of the MAPAC project in our environment (OSI Donostialdea) is probably our most relevant activity. The acceptance by the clinicians on the one hand and the utility perceived by the Hospital managers (including CEO) on the other, make this initiative that aims to produce recommendations in the clinical field following a robust methodology, our most remarkable activity. These recommendations, developed within the framework of a commission created for this purpose, promote a change in clinical practice, which we also try monitor. In the last year, we have incorporated primary care clinicians to our team and increased the recommendations of application in primary care setting. We have worked during the last year with the Sant-Pau group in the elaboration of a procedure (and software) based on GRADE in order to systematize and, where possible, standardize the preparation and drafting of the recommendations that the different groups can elaborate.

In addition to this MAPAC work in the commission, we participated in multicenter projects with CIBERESP groups: Adequacy of blood transfusions, Evaluation of the pre-test probability of significant stenosis in patients with unstable angina in ER who undergo cardiac CT.

Another important activity has been the validation of the HOMR clinical prediction rule, of mortality at 1 year after hospital discharge. This rule has subsequently been used together with the socio-sanitary characteristics of the chronic patient and their environment to improve the relevance and appropriateness of the allocation of socio-health care resources following a stratification scheme that we are currently validating in our environment. In addition to the Clinical Epidemiology Unit, this project involves the Internal Medicine service, the Admissions service, Social Services of the Provincial Government and Home Hospitalization.



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PROGRAMME

Epidemiology and Prevention of Environmental and Occupational Diseases



GROUP MEMBERS

Staff members: Escaramis Babiano, Geórgia

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Contributors: Carbonell García, Rut | Ponisch, Stefan

Main lines of research

- Genetic variants and liability to common traits and complex disease
- Longitudinal and comprehensive analysis of mental diseases
- Profiles of non-coding RNAs in neurodegenerative disorders
- Environmental modulators of genetic factors in human disease

Most relevant scientific articles

- ABULI A., BOADA M., RODRÍGUEZ-SANTIAGO B., COROLEU B., VEIGA A., ARMENGOL L. ET AL. NGS-Based Assay for the Identification of Individuals Carrying Recessive Genetic Mutations in Reproductive Medicine. Human Mutation. 2016.
- PRASAD A., RABIONET R., ESPINET B., ZAPATA L., PUIGGROS A., MELERO C. ET AL. Identification of Gene Mutations and Fusion Genes in Patients with Sézary Syndrome. Journal of Investigative Dermatology. 2016;136(7):1490-1499.
- MARTI E. RNA toxicity induced by expanded CAG repeats in Huntington's disease. Brain Pathology. 2016;26(6):779-786.
- MORALES E., VILAHUR N., SALAS LA, MOTTA V, FERNÁNDEZ MF, MURCIA M ET AL. Genome-wide DNA methylation study in human placenta identifies novel loci associated with maternal smoking during pregnancy. International journal of epidemiology. 2016;45(5):1644-1655.
- BUSTAMANTE M, STANDL M, BASSAT Q, VILOR-TEJEDOR N, MEDINA-GÓMEZ C, BONILLA C ET AL. A genome-wide association meta-analysis of diarrhoeal disease in young children identifies FUT2 locus and provides plausible biological pathways. Human molecular genetics. 2016.

Highlights

During 2016 we continued our participation in the Early Growth Genetics (EGG, <http://egg-consortium.org/>) and The Early Genetics and Lifecourse Epidemiology Consortium (EAGLE, <http://www.wikigenes.org/e/art/E/348.html>) with the GWAS data from the INMA birth cohort (Childhood and Environment, <http://www.proyectoainma.org/>).

Gene expression and miRNA data were generated in whole blood from 1300 samples from the European HELIX project (<http://www.projecthelix.eu/>) and we coordinated the generation of methylation data and quality control.

We have collaborated with the Pan Cancer Analysis of Whole Genomes consortium and, as part of the PanCanRisk project, in the study of germline variants in 2800 patients with different cancers. In this study, we have applied rare variant association studies to identify genes and regulatory regions potentially involved in the risk to develop certain types of cancer. A study has been designed where the identified variants will be replicated the MCC-Spain cohort.

As a result of the collaboration in the Chronic Lymphocytic Leukemia Genome Project (LLC), we have analyzed the germline of 480 exomes of CLL patients and compared them to 780 exomes of cancer-free samples. We identified 43 genes that could potentially be involved in the susceptibility to the LLC.

The study of association of rare exonic variants with the risk of developing obsessive-compulsive disorder has identified potential candidate genes, and we have initiated functional studies for one of these genes.

Within the DecoD project, we have obtained a fecal and amygdala sample of 30 cases of obsessive-compulsive disorder on which a longitudinal study is being performed.

Finally, in the study of variants associated with stroke recovery, we have identified and replicated variants in two different regions associated with a better recovery, which will be further studied during 2017.



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PROGRAMME

**Communicable Disease Surveillance,
Prevention and Control**



GROUP MEMBERS

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Main lines of research

Ecology and evolution of emerging zoonoses with relevance in public health.

The scientific objectives of our research team is to study the ecology and evolution of emerging infectious zoonoses that can have an impact on public health and to provide the necessary basic information for risk assessment and management for these pathogens. The collaboration between the members of our research team started with the EVITAR network (2006-2009), funded by Fondo de Investigaciones Sanitarias. This collaboration has continued until nowadays thanks to different autonomic, national and european research projects and the funding by private companies. Our research group includes researchers from Estación Biológica de Doñana (CSIC), Centro Nacional de Microbiología (ISCIII), Centro de Investigación en Sanidad Animal (INIA) and Servicio de Control de Mosquitos from Diputación de Huelva.

The objectives of our current research are:

- Objective 1. Detection and characterization of virus with zoonotic potential in mosquitoes and bats.
- Objective 2. Molecular and antigenic description, and estimation of pathogenicity for new lineages and strains of zoonotic flavivirus like West Nile or Usutu virus using in vivo and ex vivo assays.
- Objective 3. Understand the impact of vector communities on the amplification and transmission risk of virus to humans and horses.

Objective 4. Characterize de areas with outbreaks of West Nile virus in Andalucía and analyze the temporal variation and environmental correlates of flavivirus and filovirus circulation.

Most relevant scientific articles

- FERRAGUTI M., LA PUENTE J.M.-D., SORIGUER R., LLORENTE F., JIMÉNEZ-CLAVERO M.A., FIGUEROLA J. West Nile virus-neutralizing antibodies in wild birds from southern Spain. *Epidemiology and Infection*. 2016;1-5.
- FERRAGUTI M., MARTÍNEZ-DE LA PUENTE J., ROIZ D., RUIZ S., SORIGUER R., FIGUEROLA J. Effects of landscape anthropization on mosquito community composition and abundance. *Scientific Reports*. 2016;6.
- VIANA D.S., SANTAMARIA L., FIGUEROLA J. Migratory Birds as Global Dispersal Vectors. *Trends in Ecology and Evolution*. 2016;31(10):763-775.
- ESCADAFAL C., GAAYEB L., RICCARDO F., PÉREZ-RAMÍREZ E., PICARD M., DENTE M.G. ET AL. Risk of Zika virus transmission in the Euro-Mediterranean area and the added value of building preparedness to arboviral threats from a One Health perspective. *BMC Public Health*. 2016;16(1).
- POZO F., JUSTE J., VÁZQUEZ-MORON S., AZNAR-LOPEZ C., IBÁÑEZ C., GARIN I. ET AL. Identification of novel betaherpesviruses in iberian bats reveals parallel evolution. *PLoS ONE*. 2016;11(12).


Highlights


In 2016 we have participated in seven research projects funded by Junta de Andalucía, Ministerio de Economía y Competitividad and the European Union. During this year, we have started a new research project to evaluate the consequences of the feeding preferences of different mosquito species on the transmission dynamics of vector-borne zoonotic pathogens. As part of this project, and in collaboration with the Department of Health of New York State we have studied the vectorial competence for Zika virus in different species of Spanish mosquitoes. In the European Project MEDILAB-Secure we have provided training to technicians from 17 countries at the borders of the European Union. Such training has focussed in the use of molecular and serological tools for the diagnosis of different zoonotic pathogens. We have also participated in the organization of the 10th Epizoone annual meeting held in Madrid.



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PROGRAMME

**Social Determinants of Health
DAPET Programme**



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Main lines of research

- Epidemiology and patterns of drug consumption and associated health problems, with especial attention to infectious diseases, psychiatric comorbidities, injuries and excessive mortality.
- Epidemiology of sexual risk behaviours and associated infections, especially the development of HIV diagnosis policies to promote the control of the epidemic and decrease delayed diagnosis.
- Study of the social determinants of behaviours, health related problems and mortality with especial attention to the socioeconomic position both contextual and individual.
- Impact of social, economic and health policies on health inequalities and the mortality risk by cause of death, with especial attention to the most socially vulnerable groups (migrants, drug consumers, sex workers etc.)

Most relevant scientific articles

- REGIDOR E., VALLEJO F., GRANADOS J.A.T., VICIANA-FERNÁNDEZ F.J., DE LA FUENTE L., BARRIO G. Mortality decrease according to socioeconomic groups during the economic crisis in Spain: a cohort study of 36 million people. *The Lancet*. 2016;388(10060):2642-2652.
- SANZ-BARBERO B., OTERO-GARCÍA L., BOIRA S., MARCUELLO C., VIVES CASES C. Femicide Across Europe COST Action, a transnational cooperation network for the study of and approach to femicide in Europe. *Gaceta Sanitaria*. 2016;30(5):393-396.
- BALBUENA S.F., HOYOS J., BELZA M.J., PUJOL F., ÁLVAREZ J., ZULAICA D. ET AL. HIV Rapid Testing Programs in Non-Clinical Settings have the Potential to Constitute a Major Diagnostic Option for MSM in Spain. *AIDS and Behavior*. 2016;1-9.
- BRUGAL M.T., MOLIST G., SARASA-RENEDO A., DE LA FUENTE L., ESPELT A., MESIAS B. ET AL. Assessing gender disparities in excess mortality of heroin or cocaine users compared to the general population. *International Journal of Drug Policy*. 2016;38:36-42.
- SORDO L., BARRIO G., BRAVO M.J., VILLALBI J.R., ESPELT A., NEIRA M. ET AL. Estimating average alcohol consumption in the population using multiple sources: The case of Spain. *Population Health Metrics*. 2016;14(1).

Highlights

In the international context, our group has been participating in projects integrated in the Seventh EU Framework Programme for Research and Innovation, a Joint Action and an Action Cost as well as projects of the Consumers, Health and Food executive Agency and national Institutes of Health (USA). We have been hired by the European Monitoring Center for Drugs and Drug Addiction (EMCDDA) and the European Centre for Disease Control and Prevention (ECDC) for the assessment and analysis of their epidemiological information.

In Spain, we have led several research projects of the Health Strategic Action, of the State Research, development and innovation Programme oriented to Society Challenges (2013-2016) and its previous versions, research projects-contracts of national public organisms (The Drug National Plan, The Ministry of health, The woman institute, General Traffic Directorate, etc.), public-private (Spanish Foundation for the Research on HIV(FIPSE)) and exclusively private (Mutua Madrileña, Spanish Association for the Fight against Cancer, Health Sciences Foundation etc.), among which the projects related to the Itinere cohort should be highlighted.

We contribute to the training of new researchers by receiving resident physicians, pre and post doc contracts etc.

We have been applying our experience and the findings of our epidemiology and public health research participating as experts in both international (EMCDDA) and national organisms (DGT, national and regional HIV and drug plans), for the development of methodological tools for data collection and for the training of professionals in this field. We have translated our experience, training and research results to the design of epidemiological data collection systems both national and regional (National health survey, The Spanish House-based survey on alcohol and drugs, State based survey on drug use in secondary education, Evolution of the health indicators in Spain, etc) as well as the national and regional prevention and assistential plans and guides.



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PROGRAMME Health Service Evaluation



GROUP MEMBERS

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Main lines of research

- **Occupational Health Problems**
In addition to work-related illnesses and workplace injuries, we are also interested in studying sickness absence, whether temporary or permanent, especially due to musculoskeletal and mental disorders, and the prognosis (duration) to return to work.
- **Occupational Safety and Health Policies**
The development of policies and programs in Occupational Safety and Health needs to be assessed systematically. The CiSAL is contributing to assess the quality of such policies and to evaluate their effectiveness.
- **Occupational Health information systems**
The targets of the CiSAL are to have better information, of higher quality and organized so that it can be used appropriately. Whom develop projects of methodological character to improve the utility of the **Work and Health Conditions Surveys**, as well as the creation of a useful **employment-exposition matrix** for the investigation of new risks and the labour risk prevention management.
- **Occupational Health inequalities**
The existence of the highest rates of temporary employment in the European Union, as an indicator of

precariousness, and the incorporation of a large number of workers born in countries outside the EU in the last 15 years, are research priorities at CISAL, in order to provide the best information available to help adopt more effective policies to protect the health of these workers.

Most relevant scientific articles

- VARGAS-PRADA S., COGGON D., NTANI G., WALKER-BONE K., PALMER K.T., FELLI V.E. ET AL. Descriptive Epidemiology of Somatising Tendency: Findings from the CUPID Study. PLoS ONE. 2016;11(4).
- UBALDE-LÓPEZ M., ARENDS I., ALMANSA J., DELCLOS G.L., GIMENO D., BULTMANN U. Beyond Return to Work: The Effect of Multimorbidity on Work Functioning Trajectories After Sick Leave due to Common Mental Disorders. Journal of Occupational Rehabilitation. 2016;1-8.
- BENAVIDES FG, MERINO-SALAZAR P, CORNELIO C, ASSUNÇÃO AA, AGUDELO-SUÁREZ AA, AMABLE M ET AL. [Basic questionnaire and methodological criteria for Surveys on Working Conditions, Employment, and Health in Latin America and the Caribbean]. Cadernos de saude publica. 2016;32(9):e00210715.
- COGGON D, NTANI G, WALKER-BONE K, PALMER KT, FELLI VE, HARARI R ET AL. Epidemiological Differences Between Localised and Non-localised Low Back Pain. Spine. 2016;.
- SERRA L, LÓPEZ GÓMEZ MA, SÁNCHEZ-NIUBO A, DELCLOS GL, BENAVIDES FG. Application of latent growth modeling to identify different working life trajectories: the case of the Spanish WORKss cohort. Scandinavian journal of work, environment & health. 2016.

Highlights

During this year researchers from CISAL-UPF (Group 47) have leaded 4 projects FIS related to the Continuous Working Life Sample Cohort (funded by the Institute of Health Carlos III), the Occupational Pathology Unit (funded by the Parc de Salut Mar), the project E-Capacit8 (funded by the European Commission), and the project Work-related Traffic Occupational Injury (funded by the DGT). Furthermore CISAL-UPF has been recognized for third consecutive time, by AGAUR-Catalonia for a new period 2014-2016.

Among other results, researchers from CISAL-UPF have published: 27 scientific papers, and 6 PhD Theses and 4 Master Thesis were defended, together with 20 communications in national and international meetings. Between the activities of transfer, we emphasize the organization of the III Meeting of the Network experts in Surveys of Conditions of Work and Health, in Lima (Peru, on March 17 and 18, 2016) and the first Report of Occupational Health of Portugal, elaborated by Saúde Pública's Institute (ISPUP) in collaboration with CISAL-UPF, that were presented at the University of Porto during the II Conference of Occupational Health (October 14th)



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PROGRAMME

Epidemiology and Prevention of Chronic Diseases



GROUP MEMBERS

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Main lines of research

- **Banal diseases.** This research line aims to analyze the role of environmental and genetic exposure factors, as well as the interaction of both the increased risk of disease or very frequent symptoms, without extreme gravity but with high impact on quality of life and economy. Among these pathologies are the common cold, aphthous stomatitis, headaches, allergic rhinitis, dysmenorrhea and premenstrual syndrome. The objective in the next years is to study the determinant of the most common symptom: pain.
- **Cancer Epidemiology.** Our group has made significant progress in the cancer epidemiology in recent years, especially in cancers related to environmental factors. Currently we have implemented three multicenter studies on lung cancer and, environmental and genetic factors, in which four communities and Portugal participate. The aim is to enhance the services of the Radon Laboratory of Galicia, the only residential radon laboratory recognized by the Nuclear Safety Council of Northwest Spain.
- **Pharmacoepidemiology.** This research line has identified important determinants for prescribing, dispensing, and reporting of adverse drug reactions. Currently we have implemented a project, in which the communities of Galicia and Catalonia participate, which aims to improve the dispensing of antibiotics through new technologies. We are also developing studies to further identify the genetic factors of adverse reactions to drugs most relevant from the point of view of Public Health, such as gastrointestinal bleeding.
- **Technology assessment and health services.** Our group aims to provide support within a consolidated evaluation activity such as technology assessment, services and health interventions through various mechanisms, one of them being the systematic reviews and the meta-analysis. The methodological

elements will be investigated, such as heterogeneity and publication bias, and these methodological knowledge will be used to apply to specific meta-analysis, collaborating with the clinical services interested.

- **Epidemiology of alcohol consumption.** During 2016 our group has completed the 11-year follow-up of the 2005 Compostela Cohort. This monitoring has received funding with a new AES project (2015 AES call). In addition, the follow-up of the Cohort Compostela 2016 has been started. The purpose of this new study is to evaluate changes in prevalence and explanatory factors of alcohol consumption among university students.

Most relevant scientific articles

- TORRES-DURÁN M., RUANO-RAVINA A., KELSEY K.T., PARENTE-LAMELAS I., PROVENCIO M., LEIRO-FERNÁNDEZ V. ET AL. Small cell lung cancer in never-smokers. *European Respiratory Journal*. 2016;47(3):947-953.
- RUANO-RAVINA A., TORRES-DURÁN M., KELSEY K.T., PARENTE-LAMELAS I., LEIRO-FERNÁNDEZ V., Abdulkader I. et al. Residential radon, EGFR mutations and ALK alterations in never-smoking lung cancer cases. *European Respiratory Journal*. 2016;48(5):1462-1470.
- LÓPEZ-VÁZQUEZ P., VÁZQUEZ-LAGO J.M., GONZÁLEZ-GONZÁLEZ C., PINEIRO-LAMAS M., LÓPEZ-DURÁN A., HERDEIRO M.T. ET AL. Development and validation of the knowledge and attitudes regarding antibiotics and resistance (KAAR-11) questionnaire for primary care physicians. *Journal of Antimicrobial Chemotherapy*. 2016;71(10):2972-2979.
- BARBOSA-LORENZO R., BARROS-DIOS J.M., RAICES ALDREY M., CERDEIRA CARAMES S., RUANO-RAVINA A. Residential radon and cancers other than lung cancer: a cohort study in Galicia, a Spanish radon-prone area. *European Journal of Epidemiology*. 2016;1-5.
- LÓPEZ MJ, PÉREZ-RÍOS M, SCHIAFFINO A, FERNÁNDEZ E. Mortality Attributable to Secondhand Smoke Exposure in Spain (2011). *Nicotine & tobacco research: official journal of the Society for Research on Nicotine and Tobacco*. 2016.

Highlights

Currently the group is running six competitive projects, in which our researchers are IPs: a study about the consequences of alcohol consumption in university students; the Small Cell Study about small cell lung cancer, its risk factors and genetic susceptibility; the IMATID Study to assess the effectiveness of an educational intervention in community pharmacists to improve pharmaceutical care in flu, colds and other infections of the upper respiratory tract; the continuation of the project EMPHOGEN, through the new determinants gastrointestinal bleeding project associated with consumption of AAS as antiplatelet; a study on how the residential radon could see mediated its effect on lung cancer through different genetic polymorphisms in DNA repairing genes and the recognition by the Xunta de **Galicia (on competitive basis)** as a **competitive reference group** of the Galician University System.

In 2016 a publication in *Future Microbiol* (first quartile) together with the University of Aveiro group was recognized with an award of the Sociedade de Ciências Médicas de Lisbon that 33 more projects concurred. At the international level highlight the participation in the European project EUCaRE on cardiac rehabilitation, the presence at the International Panel of Experts of the Government of Singapore and the presence in the Editorial Committee of three journals indexed in JCR. In addition, several plenary lectures have been given at national congresses and scientific meetings. Members of the group have also carried out research stays and European projects have been requested (pending resolution). One member of the group has been appointed coordinator of the Spanish Lung Cancer Group.

In terms of research results, the Map of Radon of Galicia has been presented, with 3,400 residential radon measurements in the Galician municipalities (the complete Map of Spain has 8,200 measurements). These results are available to society on the website of the Galician Radon Laboratory.




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PROGRAMME
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GROUP MEMBERS

Associated members: Lora Pablos, David | Ruiz López, Pedro Miguel

Main lines of research

- Development and validation of CLINICAL PREDICTION RULES:
This group has been coordinator THEME COOPERATIVE RESEARCH NETWORK 03/090 for the development of methodologies for the implementation and management of knowledge in clinical practice and this node responsible for the line of research prognostic development of clinical prediction rules.
Since 1995 develops the research methodology in prognostic studies on predictive methods and conducting projects on clinical prediction rules in cardiovascular diseases, oncology, rheumatology [FIS96/1809], [FIS02/0242], [P-FIS03/248], [FIS03/0046], FIS04/019].
Participation and collaboration in the following projects:
FIS Project PS07/0945 "Prediction of mortality in patients hospitalized for heart failure: building predictive models." The results are published in Cardiology Journal "Role of biological and non-biological factors in Congestive Heart Failure mortality: PREDICE-SCORE, a Clinical Prediction Rule" (J Cardiol 2012;19, 6:578-585).
FIS Project 05/1862 "Validation of clinical prediction rules in recurrent stroke." Publication: Recurrence after a first-ever ischemic Stroke Development of a Clinical Prediction Rule. Research in Neurology: An International Journal Vol 2013 (2013) Article ID264063
- CHRONIC DISEASE: FIS IntraSalud10/02123 projects. "Study DRECE V. (Diet and Cardiovascular Risk in Spain.) 20 years of monitoring of a Spanish cohort." [PI10/02123]
Study DRECE V (Diet and Risk of Cardiovascular Disease in Spain), which aims are to determine the association between diet and overall mortality and cardiovascular in Spain. Describe patterns and nutritional study of cardiovascular risk factors and their association with mortality.

Most relevant scientific articles

- CARMEN MARRÓN M., LORA D., GÁMEZ P., RIVAS J.J., EMBUN R., MOLINS L. ET AL. Agreement between computed tomography and pathologic nodule counts in colorectal lung metastases. *Annals of Thoracic Surgery*. 2016;101(1):259-265.
- SANZ-BUENO J., LORA D., MONSALVEZ V., MARONAS-JIMÉNEZ L., POSTIGO C., RODRÍGUEZ- PERALTO J.L. ET AL. The new Cutaneous Lymphoma International Prognostic index (CLIPi) for early mycosis fungoides failed to identify prognostic groups in a cohort of Spanish patients. *British Journal of Dermatology*. 2016.
- CASTANO-LEÓN A.M., LORA D., MUNARRIZ P.M., CEPEDA S., PAREDES I., DE LA CRUZ J. ET AL. Predicting Outcomes after Severe and Moderate Traumatic Brain Injury: An External Validation of Impact and Crash Prognostic Models in a Large Spanish Cohort. *Journal of Neurotrauma*. 2016;33(17):1598-1606.
- LORA D., CONTADOR I., PEREZ-REGADERA J.F., GÓMEZ DE LA CÁMARA A. Features of the area under the receiver operating characteristic (ROC) curve. A good practice. *Stata Journal*. 2016;16(1):185-196.
- BAENA-DIEZ J.M., PENAFIEL J., SUBIRANA I., RAMOS R., ELOSUA R., MARIN-IBÁÑEZ A. ET AL. Risk of cause-specific death in individuals with diabetes: A competing risks analysis. *Diabetes Care*. 2016;39(11):1987-1995.

Highlights

Our unit of research and clinical trials in the Hospital 12 de Octubre is a basic pillar, supporting and collaborating between clinical practice and clinical research. Group 23 belongs to the Instituto de Investigación 12 de Octubre (i + 12), and within it, participates in the Integrated Project of Solid Organ Transplantation (PITOS) titled "Innovative strategies to seek novel biomarkers and predictive models in solid organ transplantation: Establishing personalized transplant medicine".

The coordinator of the group coordinates the methodological and statistical program in the Spanish Clinical Research Network (SCReN). And the members of the group are actively working on the creation and implementation of standard procedures in clinical trials.

To highlight the work in the development of own research lines that have allowed us to integrate research groups such as Emerging Risk Factors Collaborations (ERFC), within the main line of research: study DRECE (diet and risk of cardiovascular disease in Spain). This study has been publishing data from a representative cohort of the general Spanish population with a follow-up of more than 20 years. This active line studies trends in cardiovascular mortality and its risk factors in our population.

At present, there is an active FIS project, whose objective is to establish the phenotype-genotype association and to identify genetic markers to incorporate into the cardiovascular risk equations. The DRECE project has generated derived research lines such as the bigDRECE project, which consists of extracting information from the data analysis (big data - real world data) using computational techniques of mass data analysis.

Finally, to highlight the line of prognostic research that characterizes the group, which enriches the collaborative projects of PITOS, to the projects of DRECE, bigDRECE, PREDICE and research on head trauma and cancer (articles and doctoral thesis).



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PROGRAMME

**Clinical Epidemiology
Health Service Evaluation
Social Determinants of Health
Epidemiology and Prevention of Chronic Diseases
Communicable Disease Surveillance, Prevention
and Control**

GROUP MEMBERS

Associated members: Aranaz Andrés, Jesús | Lumbreras Lacarra, Blanca | Parker, Lucy Anne | Pastor Valero, María Asunción

Contributors: García Aldeguer, Joaquín

Main lines of research

- Clinical epidemiology, evaluation of health technologies, assesement of diagnostic test and screening tests.
- Health services research, patient security and health care quality
- Preventive medicine
- Active aging
- Politics and health policies, health governance.

Most relevant scientific articles

- AZMAN A.S., PARKER L.A., RUMUNU J., TADESSE F., GRANDESSO F., DENG L.L. ET AL. Effectiveness of one dose of oral cholera vaccine in response to an outbreak: a case-cohort study. *The Lancet Global Health*. 2016;4(11):e856-e863.
- VILAR-PALOP J., VILAR J., HERNÁNDEZ-ÁGUADO I., GONZÁLEZ-ÁLVAREZ I., LUMBRERAS B. Updated effective doses in radiology. *Journal of Radiological Protection*. 2016;36(4):975-990.
- LUMBRERAS B., VILAR J., GONZÁLEZ-ÁLVAREZ I., GÓMEZ-SÁEZ N., DOMINGO M.L., LORENTE M.F. ET AL. The fate of patients with solitary pulmonary nodules: Clinical management and radiation exposure associated. *PLoS ONE*. 2016;11(7).
- LUMBRERAS B., VILAR J., GONZÁLEZ-ÁLVAREZ I., GUILABERT M., PARKER L.A., PASTOR-VALERO M. ET AL. Evaluation of clinicians' knowledge and practices regarding medical radiological exposure: Findings from a mixed-methods investigation (survey and qualitative study). *BMJ Open*. 2016;6(10).
- HERNÁNDEZ-ÁGUADO I., ZARAGOZA G.A. Support of public-private partnerships in health promotion and conflicts of interest. *BMJ Open*. 2016;6(4).

Highlights

In clinical epidemiology, we have designed tools for transference of the results of the projects: design of procedures for communicating radiological risk/benefit and impact of bio appearance in treatment compliance. We have participated in the European network: European Partnership on Active and Healthy Aging, A1, for the Plans of Improving Drug Adherence and Prescription. We continue the collaborations with the Johns Hopkins School of Public Health and Doctors without Borders in the development and implementation of a cholera vaccine. The group continues its implication in academic activities, coordinating the Doctoral Program of Public Health and Clinical Sciences and a Master on Cooperation. Also, we participate in 8 masters, 2 of them international. We have directed 5 doctoral theses. In the area of public health policy, we have coordinated an action of transference through the coordination and publications of the results of a meeting on public health priorities. We have started the collaboration with groups of academics on law, through a research project publicly funded to study the application of law to protect health. We continue with the provision of services such as participation in research agencies (ANEP) and the World Federation of Public Health Associations (Governing Council and Chair of the Policy Committee).



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PROGRAMME

**Epidemiology and Prevention of Chronic Diseases
Epidemiology and Prevention of Environmental
and Occupational Diseases
Clinical Epidemiology**

GROUP MEMBERS

Staff members: Molinuevo Auzmendi, Amaia Ursula

Associated members: Aldasoro Unamuno, Elena | Altzibar Arotzena, Jone Miren | Amano Etxezarreta, Pilar | Arriola Larrarte, Larraitz | Basterrechea Irurzun, Mikel | Dorronsoro Iraeta, Miren | Goñi Irigoyen, José Fernando | Larrañaga Larrañaga, Nerea | Santa Marina Rodríguez, Loreto

Main lines of research

The group participates in research projects in collaboration with national and international groups in the disciplines of epidemiology, prevention and control of diseases mainly on two lines:

1. Epidemiology and control of chronic diseases
2. Epidemiology and prevention of diseases caused by environmental exposures during childhood.

We participate in MCC-Spain and INMA, national collaborative projects that have been strategic projects. EPIC-cancer, EPIC-Heart, INTERACT, ESCAPE, HELIX and MEDALL are international projects in which we participate together with other groups of CIBER.

In the area of environmental exposures, we also cooperate with the European project Geronimo (Generalised EMF using Novel Research Methods - an integrated approach: from research to support risk assessment and risk management to) and Rembrandt (Radiofrequency Electromagnetic Fields exposure and Brain Development: from exposure assessment to dose-response assessment).

The group also participates in two European projects about the effectiveness of the flu vaccine. In cycEVA (IMOVE) study, from the 2008-2009 season and from the current season in the IMOVE + Horizon 2020 a hospital-based case control study to measure seasonal influenza vaccine effectiveness against laboratory confirmed influenza hospitalizations across the European Union and European Economic Area Members States. In the project, they are involved 23 European hospitals.

As far as responsible of the Basque Country Registry of Congenital Anomalies we are full members of EUROCAT. EUROCAT is a project of the EU- Programme of the Directorate General of Public Health Community Action on Rare Diseases. It was conceived to function as a service for the surveillance of congenital anomalies in Europe. Funded both by Member States and EU. Aiming to assess the feasibility of pooling data across national boundaries, cluster detection and evaluation well as identification of primary prevention initiatives.

Most relevant scientific articles

- ÍÑIGUEZ C., ESPLUGUES A., SUNYER J., BASTERRECHEA M., FERNÁNDEZ-SOMOANO A., COSTA O. ET AL. Prenatal exposure to NO₂ and ultrasound measures of fetal growth in the Spanish INMA cohort. *Environmental Health Perspectives*. 2016;124(2):235-242.
- MAITRE L., VILLANUEVA C.M., LEWIS M.R., IBARLUZEA J., SANTA-MARINA L., VRIJHEID M. ET AL. Maternal urinary metabolic signatures of fetal growth and associated clinical and environmental factors in the INMA study. *BMC Medicine*. 2016;14(1).
- ESPEJO-HERRERA N., GRACIA-LAVEDAN E., POLLÁN M., ARAGONÉS N., BOLDO E., PÉREZ-GÓMEZ B. ET AL. Ingested nitrate and breast cancer in the Spanish multicase-control study on cancer (MCC-Spain). *Environmental Health Perspectives*. 2016;124(7):1042-1049.
- DE BATLLE J, GRACIA-LAVEDAN E, ROMAGUERA D, MÉNDEZ M, CASTAÑO-VINYALS G, MARTÍN V ET AL. Meat intake, cooking methods and doneness and risk of colorectal tumours in the Spanish multicase-control study (MCC-Spain). *European journal of nutrition*. 2016.
- LARRAÑAGA N, SÁNCHEZ MJ, ARDANAZ E, FELIPE S, MARCOS-GRAGERA R, RAMOS M ET AL. Incidence Patterns and Trends of non-Central Nervous System Solid Tumours in Children and Adolescents. A Collaborative Study of the Spanish Population Based Cancer Registries. *Journal of Cancer*. 2016;7(3):335-43.

Highlights

The INMA group has started collaborating with experts in genomics and epigenomics from Texas University (School of Public Health) (preparing a NIH Grant) and with TECNUM (biomedical engineering) for the treatment of Big data. The monitoring of children at 8 years old has been performed and the planning of the monitoring at 11-12 years has started. We have started to include interaction in family context and other key variables in psycho-social stress in the analyses, due to their role as causal variables and effect modifiers. The project has actually an increasing interest for general public, medicine (family medicine, infirmary, pediatry), public health, urbanism and autonomic management.

The control of environmental factors and life habits is fundamental for cancer prevention. The project European Prospective Investigation into Cancer and Nutrition (EPIC), and the multi case-control study named MCC are investigating this issue. The EPIC project, started in 1992, has as main objective to analyze the relationship between nutrition, life-habits and environmental factors, and the incidence of cancer and other chronic diseases. In Gipuzkoa, in a cohort of 8.400 people, the relationship of Bisphenol A and breast cancer, prostate cancer and myocardial infarctions are studied, together with chronodiet and obesity. Environmental contamination of particles and NO_x and their relationship with specific cancer types are also studied (ESCAPE).

MCC, a multi case-control study with a participation of 10.000 people in 17 CIBERESP centres, analyzes cancers with high prevalence. Drinking water, red meat ingestion, the follow up of nutritional recommendations, medicament consumption, working shifts, social inequalities and infections are studied.




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PROGRAMME

Epidemiology and Prevention of Chronic Diseases

Epidemiology and Prevention of Environmental and Occupational Diseases



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Contributors: Ferrer de Molina, María del Mar

Main lines of research

The research of the group is focused in environmental, occupational and genetic factors related to cancer, respiratory disease and child health. Among the main exposures, the group is focused on radiations (smartphones, UV, ionizing), water pollutants (disinfection by-products in drinking water and swimming pools), air pollution, transport and green spaces in urban areas, hormonal disruption, life style (diet, passive smoking), as well as occupational studies on asthma and COPD and on shift-work and circadian cycle disruption. In the last years we have extensively applied approaches described as the Exposome including new technologies to assess environmental exposure (e.g. Smartphones, GIS) and new biomedical technologies (biomarkers, genomics, epigenetics, metabolomics, transcriptomics) and implemented complex statistics and bioinformatics methods. The group has an important international reputation and devotes considerable efforts in education, dissemination and knowledge transfer. Research of the group is funded by grants from FIS, FP7 (EU), and Horizon2020.

Most relevant scientific articles

- KOGEVINAS M., BUSTAMANTE M., GRACIA-LAVEDÁN E., BALLESTER F., CORDIER S., COSTET N. ET AL. Drinking water disinfection byproducts, genetic polymorphisms, and birth outcomes in a European mother-child cohort study. *Epidemiology*. 2016.
- CURTO A., DE NAZELLE A., DONAIRE-GONZÁLEZ D., COLE-HUNTER T., GARCÍA-AYMERICH J., MARTÍNEZ D. ET AL. Private and public modes of bicycle commuting: A perspective on attitude and perception. *European Journal of Public Health*. 2016;26(4):717-723.
- MORINA D., GRELLIER J., CARNICER A., PERNOT E., RYCKX N., CARDIS E. InterCardioRisk: A novel online tool for estimating doses of ionising radiation to occupationally-exposed medical staff and their associated health risks. *Journal of Radiological Protection*. 2016;36(3):561-578.
- DADVAND P., BARTOLL X., BASAGANA X., DALMAU-BUENO A., MARTÍNEZ D., AMBRÓS A. ET AL. Green spaces and General Health: Roles of mental health status, social support, and physical activity. *Environment International*. 2016;91:161-167.
- ESPEJO-HERRERA N., GRACIA-LAVEDÁN E., BOLDO E., ARAGONÉS N., PÉREZ-GOMEZ B., POLLÁN M. ET AL. Colorectal cancer risk and nitrate exposure through drinking water and diet. *International Journal of Cancer*. 2016.


Highlights


Some projects have started in 2015, including HORMONIT (hormonal changes associated to circadian disruption in night shift workers), Fondo de Investigación Sanitaria; SHAMISEN (Nuclear Emergency Situations-Improvement of Medical and Health Surveillance), and OPERRA (Open Project for the European Radiation Research Area), 7th EU Framework Programme; ExpoStat (Statistical methods, efficient algorithms and bioinformatic tools to analyze the exposome and its integration with omic data), MINECO; European Joint Programme for the Integration of Radiation Protection Research (CONCERT), European Commission; and Acciones de Dinamización “Europa Investigación”, MINECO, Exposomics (FP7), Helix (FP7), BlueHealth (Horizon2020). These projects have provided new evidence in the environmental epidemiology area, in particular concerning potential health effects of radiations, water pollutants, green spaces, air pollution, active transport policies among other environment exposures. In the occupational epidemiology area, these projects have provided new evidence about the effects in health of night shift work and cancer risk, and exposures to electromagnetic fields. Among the health effects assessed included there are several kinds of cancer in adults (prostate, bladder, breast, colorectal) and children (central nervous system), respiratory health and allergies in adults and children, reproductive effects (birth weight, gestation duration, etc.), and biomarkers, including –omics (e.g. epigenomics) and genetic data (genome wide). All this evidence provides possible recommendations to prevent disease and health promotion in the occupational settings and the public health, identifying preventable risk exposures. Results could be used by regulatory organisms to conduct a risk management based in the scientific evidence. Members of the group participated in numerous international committees e.g of the WHO and others.



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PROGRAMME

**Communicable Disease Surveillance,
Prevention and Control**



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Main lines of research

- Development of excellence networks for epidemiological surveillance at European level.
- Methodological research for health early warning
- Evaluation of public health measures against vaccine preventable diseases
- Spatio-temporal variability study of risk in acquiring and developing infectious diseases
- Molecular methodology use for detection and control of epidemic outbreaks
- Developing collaborative and interdisciplinary research in the field of disease surveillance, prevention and control.

Most relevant scientific articles

- KISSLING E., NUNES B., ROBERTSON C., VALENCIANO M., REUSS A., LARRAURI A. ET AL. I-MOVE multicentre case-control study 2010/11 to 2014/15: Is there within-season waning of influenza type/subtype vaccine effectiveness with increasing time since vaccination? *Eurosurveillance*. 2016;21(16).
- GHERASIM A., POZO F., DE MATEO S., ASPIRITXAGA GAMARRA I., GARCÍA-CENOZ M., VEGA T. ET AL. Waning protection of influenza vaccine against mild laboratory confirmed influenza A(H3N2) and B in Spain, season 2014-15. *Vaccine*. 2016.
- ÁLVARO-MECA A., DÍAZ A., DE MIGUEL DÍEZ J., RESINO R., RESINO S. Environmental factors related to pulmonary tuberculosis in HIV-infected patients in the combined antiretroviral therapy (cART) era. *PLoS ONE*. 2016;11(11).
- SOLANO R., MASA-CALLES J., GARIB Z., GRULLÓN P., SANTIAGO S.L., BRACHE A. ET AL. Epidemiology of pertussis in two Ibero-American countries with different vaccination policies: Lessons derived from different surveillance systems. *BMC Public Health*. 2016;16(1).
- CAYLA J.A., DOMÍNGUEZ A., RODRÍGUEZ VALÍN E., DE ORY F., VÁZQUEZ A., FORTUNY C. Zika virus infection: a new public health emergency with great media impact. *Gaceta Sanitaria*. 2016;30(6):468-471.

Highlights

The research activity of the G32 group is reflected in the participation in five national and seven international research projects, with the collaboration of other CIBERESP groups.

Research on the impact and effectiveness on the Epidemiology of vaccine preventable diseases is reflected in two international research projects: one from Horizon 2020 “I-Move+ Integrated Monitoring of Vaccine Effectiveness in Europe: a platform to measure and compare effectiveness and impact of influenza and pneumococcal vaccines and vaccination strategies in the elderly” (EU 634446) and the ECDC call for tender “Assessing the impact of vaccination with conjugate vaccines on the epidemiology of invasive pneumococcal disease in the EU/EEA (OJ/15/06/2015-PROC/2015/020). Así mismo, en el Subprograma de investigación sobre Gripe del PREVICET.

Our research in influenza vaccine effectiveness contributed to GIVE Report 2015 (The Global Influenza Vaccine Effectiveness Collaboration), with the aim of supporting WHO in the two annual selection processes of the influenza virus strains to include in the seasonal vaccine for the next flu season.

Related to emerging infectious diseases we are participating in the project “Research on Enterovirus infections causing serious neurological and systemic pathologies in children.” Likewise, we continue searching evidence to advance in the elimination of measles and rubella, participating in the project “Epidemiological and Virological Analysis of viral agents included in MMR: New Challenges.

The development of spatio-temporal models for the study of the risk of acquiring and developing infectious diseases has become in the AES2016 project “Integration of climate information for the improvement of surveillance of communicable diseases”, which has served as a basis for the development of a new subprogramme under the PREVICET program “Vector-borne infections, environmental factors and climate change”.

The protocol of the Surveillance of Health Care Associated Infections has been approved by the National Public Health Commission. In the next future its implementation will start in Spain with a pilot study of Surveillance of Health Care Associated Infections in surgical sites.

The G32 group participates in the Strategic National Action Plan for reducing the risk of antibiotic resistance spreading. This Plan was supported from the National Spanish Agency for Drugs and Sanitary Products. We also collaborated in the elaboration of the Annual Report of the Strategic Plan.



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PROGRAMME Social Determinants of Health



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Main lines of research

The main research line of the group is the evaluation of public health policies and programmes, which includes:

- Monitoring of behaviours and other health risk factors such as environmental exposures;
- Process, impact and economic evaluation of public health policies and programmes
- Innovative topics on evaluation, such as the evaluation related to the use of Information and Communication Technologies (ICT) in public health.

Most relevant scientific articles

- LÓPEZ MJ, PÉREZ-RÍOS M, SCHIAFFINO A, FERNÁNDEZ E. Mortality Attributable to Secondhand Smoke Exposure in Spain (2011). *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*. 2016;.
- STILLMAN FA, SOONG A, PANG Y, ZHENG L, GARCÍA-ESQUINAS E, LÓPEZ MJ ET AL. Tobacco Smoke Exposure in Indoor and Outdoor Locations in Airports Across Europe and the United States: A Cross-Sectional Study. *Nicotine & tobacco research: official journal of the Society for Research on Nicotine and Tobacco*. 2016.
- RUBIES A., GUO L., CENTRICH F., GRANADOS M. Analysis of non-steroidal anti-inflammatory drugs in milk using QuEChERS and liquid chromatography coupled to mass spectrometry: triple quadrupole versus Q-Orbitrap mass analyzers. *Analytical and Bioanalytical Chemistry*. 2016;1-10.
- AURREKOETXEA J.J., MURCIA M., REBAGLIATO M., GUXENS M., FERNÁNDEZ-SOMOANO A., LÓPEZ M.J. ET AL. Second-hand smoke exposure in 4-year-old children in Spain: Sources, associated factors and urinary cotinine. *Environmental Research*. 2016;145:116-125.
- FU M., FERNÁNDEZ E., MARTÍNEZ-SÁNCHEZ J.M., SAN EMETERIO N., QUIRÓS N., SUREDA X. ET AL. Second-hand smoke exposure in indoor and outdoor areas of cafés and restaurants: Need for extending smoking regulation outdoors?. *Environmental Research*. 2016;148:421-428.

Highlights

During 2016 we have obtained a new research project in competitive call that will start in 2017 under the title *“Evaluation of a project for comprehensive prevention of childhood obesity in the preschool stage in Barcelona (POIBA-2nd phase)”* with a duration of 3 years.

Regarding projects, currently a member of the group manages a workpackage in an European Horizon 2020 project *“Tackling secondhand smoke in Europe: assessment of SHS exposure according to policies, attributable disease and economic burden, and impact of interventions for reducing the exposure”*. In addition, three members of the group are PI of the following research projects: two health research projects from ISCIII: *“Exposure to environmental tobacco smoke in children under 12 years: prevalence and measurement of markers in homes and vehicles”* and *“Influence of social determinants, lifestyle, emotional wellbeing and use of unconventional therapies in the development of breast cancer in a cohort of women diagnosed in Barcelona”*, and one project financed by Plan Nacional sobre Drogas *“Design and evaluation of the effectiveness of a selective prevention of alcohol and cannabis use in vulnerable young people at community level”*.


During this year, we have read one doctoral thesis directed by a member of the group: *“Overweight, obesity and health-related behaviors among adolescents in Barcelona”* (Universitat Pompeu Fabra).

Finally, it should be noted that the Laboratory of Public Health Agency of Barcelona led by Francesc Centrich, a member of the group, received the “Josep Trueta Plate” to sanitary merit in 2016.



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PROGRAMME

**Epidemiology and Prevention of
Environmental and Occupational Diseases**



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Main lines of research

- **Genotoxic/carcinogenic mechanisms of arsenic.**

This research field involves both in vitro and biomonitoring studies with exposed populations. The most interesting recent results can be summarized as:

In the human populations studied (Chile and Mexico), the exposed people (never mind if they are occupationally or environmentally exposed) present high levels of genetic damage. / We have found a new polymorphism of the AS3MT gene (Met287Thr) acting as an important modulator of the genetic risk. Individuals carrying such variant accumulate the metabolite MMA(III) that is the arsenic specie showing the highest genotoxic potentiality. / We have generated a wide set of in vitro tools to evaluate the carcinogenic potential of arsenic. / We have demonstrated for first time that oxidative damage plays an important role in both the genotoxicity and carcinogenicity of arsenic.

- **Risk factors in patients with thyroid pathologies.**

The most important goals reached in this research line can be summarized as follows:

We have found a region in chromosome 1p12 showing a strong association with thyroid cancer. In this region, there is a new gene (WDR3) responsible of the observed association / We have found associations between different genes involved in the repair of DNA (OGG1, XRCC1, XRCC2 and XRCC3) and the metabolism of thyroid (TG) and the thyroid cancer. / In a wide study of all the genome (GWA), carried out with samples from four European populations we have found a strong association with the rs6759952 polymorphism of the DIRC3 gene. / Finally, in a collaborative study with Italian groups we have shown for first time that the thyroperoxidase gene (TPO) is involved in the risk of suffering thyroid cancer.

- **Risk factors in patients with kidney thyroid pathologies.** The most important recent goals of this research line are as follows:

We have found that patients with chronic renal failure (CRF) present high levels of genetic damage at both primary and fixed level. / The CRF patients are characterized by genomic instability. This supposes that these patients are extremely sensitive to the environmental genotoxicants. / CRF patients present high mortality, but not specific causes have been found. / DNA oxidative damage and its inability to repair it is an important factor explaining why these patients show high levels of genetic damage.

- **Genotoxic mechanisms of nanomaterials.** This is a recent research line aiming to determine the risk that can suppose the presence of these new materials in our near environment.

The obtained results until now indicate that:

Silver in its nanoparticulated form is able of induce genotoxic damage *in vivo* as we have demonstrated in *Drosophila*. / We have detected several nanomaterials such as titanium dioxide and zinc oxide modulate the genotoxic effects induced by UV light. / Long-term exposures to sub-toxic doses of cobalt nanoparticles induce cell transformation as well as other markers of tumoral processes. / Cerium nanoparticles pose antioxidant potential both *in vivo* and *in vitro*.

Most relevant scientific articles

- VALES G., RUBIO L., MARCOS R. Genotoxic and cell-transformation effects of multi-walled carbon nanotubes (MWCNT) following in vitro sub-chronic exposures. *Journal of Hazardous Materials*. 2016;306:193-202.
- ANNANGI B., BONASSI S., MARCOS R., HERNÁNDEZ A.. Biomonitoring of humans exposed to arsenic, chromium, nickel, vanadium, and complex mixtures of metals by using the micronucleus test in lymphocytes. *Mutation Research - Reviews in Mutation Research*. 2016;770:140-161.
- CORREDOR Z., RODRÍGUEZ-RIBERA L., COLL E., MONTANES R., DÍAZ J.M., BALLARÍN J. ET AL. Unfermented grape juice reduce genomic damage on patients undergoing hemodialysis. *Food and Chemical Toxicology*. 2016;92:1-7.
- ALARABY M., ANNANGI B., MARCOS R., HERNÁNDEZ A.. *Drosophila Melanogaster* as a Suitable In Vivo Model to Determine Potential Side Effects of Nanomaterials: A Review. *Journal of Toxicology and Environmental Health - Part B: Critical Reviews*. 2016;1-40.
- CORREDOR Z., RODRÍGUEZ-RIBERA L., SILVA I., DIAZ J.M., BALLARÍN J., MARCOS R. ET AL. Levels of DNA damage in peripheral blood lymphocytes of patients undergoing standard hemodialysis vs on-line hemodiafiltration: A comet assay investigation. *Mutation Research - Genetic Toxicology and Environmental Mutagenesis*. 2016;808:1-7.

Highlights

A total 14 publications with an accumulated impact factor of 62.031 have been published. This means an averaged factor of 4.431.

Participation in three research projects.

- One supported by FIS in collaboration with the Fundación Puigvert entitled: Biomarcadores de pronóstico y estrategias para disminuir la morbimortalidad de pacientes con insuficiencia renal.

- The second one has been funded by the UE and entitled: A common European approach to the regulatory testing of nanomaterials (NaNoREG).

- The third has been funded by the Ministry of Economy and Competitividad entitled: NANOBARRIER. Desarrollo de modelos in vitro e in vivo de barrera intestinal para determinar el riesgo de los nanomateriales.

Defence of three PhD Thesis entitled:

- Daño genómico como biomarcador de la enfermedad renal crónica. Zuray F. Corredor Mancilla. Directores: S. Pastor y R. Marcos. Lectura: 30-06-2016.

- Desarrollo de un modelo in vitro de barrera intestinal para la evaluación del riesgo de nanomateriales. Laura Vila Vecilla. Directores: A. Hernández y R. Marcos. Lectura: 9-11-2016.

- Biological effects of nanomaterials in *Drosophila melanogaster* (diptera, insecta) as in vivo model. Mohamed Alaraby. Directores: R. Marcos y A. Hernández. Lectura: 12-12-2016.

Ricard Marcos acted as expert, nominated by the Ministerio de Sanidad y Consumo, in the ad hoc Commission of the OCDE responsible for the revision and updating of the Guidelines on Genotoxicity Assays.



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PROGRAMME

DAPET Programme

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Contributors: Llamas, Alicia | Merino, María José | Plasencia, Antoni | Vicente, Gonzalo

Main lines of research

- Maternal, Child and Reproductive Health, especially focused on Malaria in Pregnancy, Causes of Mortality and Human Papillomavirus (HPV)
- Malaria control and elimination: from Basic research in pathophysiology and immunology of the disease to clinical development of new tools for the prevention or treatment of malaria, including vector control, drugs and vaccines and social and economic issues, with a special focus now on malaria elimination strategies.
- HIV/AIDS: current focus in acute HIV infection and HIV-induced immune activation in the both HIV-infected adults and infants.
- Zika Virus (ZIKV): Current focus is on the epidemiology of ZIKV infection in pregnant women returning from affected areas and the understanding of the impact on maternal and infant health. Current work includes a prospective cohort study at the Hospital Clinic of Barcelona (HCB), a tertiary referral hospital, as part of the surveillance for ZIKV in a non-endemic area with important flow of immigration from ZIKV affected countries.
- Cause of death ascertainment: Line of work focused on increasing the knowledge and use of the minimally invasive autopsy (MIA) as a valid and comparable tool to the complete autopsy to determine the cause of death in low income countries. More specifically, since 2016, the research team is focused on continuing the validation of the MIA tool to expand awareness of its capabilities in identifying the cause of death in children in developing countries. It includes improving the technique to detect situations that contribute to mortality such as malnutrition, anemia or diarrhea.

Most relevant scientific articles

- RUPÉREZ M., GONZÁLEZ R., MOMBO-NGOMA G., KABANYWANYI A.M., SEVENE E., OUEDRAOGO S. ET AL. Mortality, Morbidity, and Developmental Outcomes in Infants Born to Women Who Received Either Mefloquine or Sulfadoxine-Pyrimethamine as Intermittent Preventive Treatment of Malaria in Pregnancy: A Cohort Study. PLoS Medicine. 2016;13(2).
- RUBIO M., BASSAT Q., ESTIVILL X., MAYOR A. Tying malaria and microRNAs: From the biology to future diagnostic perspectives. Malaria Journal. 2016;15(1).
- DOMÍNGUEZ A., URBIZTONDO L., BAYAS J.M., BORRAS E., BRONER S., CAMPINS M. ET AL. Serological survey of hepatitis B immunity in healthcare workers in Catalonia (Spain). Human Vaccines and Immunotherapeutics. 2016;1-5.
- MAGALLÓN-TEJADA A., MACHEVO S., CISTERO P., LAVSTSEN T., AIDE P., RUBIO M. ET AL. Cytoadhesion to gC1qR through Plasmodium Falciparum Erythrocyte Membrane Protein 1 in Severe Malaria. PLoS Pathogens. 2016;12(11).
- O'CALLAGHAN-GORDO C., CASABONNE D., CARRILHO C., FERRO J., LORENZONI C., ZAQUEU C. ET AL. Incidence of endemic burkitt lymphoma in three regions of Mozambique. American Journal of Tropical Medicine and Hygiene. 2016;95(6):1459-1462.

Highlights

Contextual information (2015 - 2016): Two new international projects have been launched: one operational research project aimed at evaluating alternatives to increase the coverage of intermittent preventive treatment of malaria in pregnancy (MIPPCOD Project) and a project aimed to improve technical capacity through conducting three workshops reduction of maternal and neonatal mortality (Project Safe Mothers and Newborns: a Leadership Workshop). The **MIPPCOD** (Malaria in Pregnancy Community Delivery) project (January 2015 to April 2016) will determine - a number of eligible countries where it is feasible to evaluate the implementation of intermittent preventive treatment (IPTp) delivery during pregnancy through community health workers (CHW), as a complementary avenue to the current distribution through the antenatal care services in order to increase the effective coverage of the IPTp, a highly cost-effective intervention that currently only 25% of pregnant women in malaria endemic countries receives. In 2016, building on the Proyecto MIPPCOD that came to an end in April 2016, a new proposal has been submitted to a UNiAID funded call. The project TIPTOP aimed at evaluating delivery of the intervention in the community in 4 countries (i.e. Democratic Republic of Congo, Madagascar, Mozambique and Nigeria) has passed the first round of the two-stage evaluation process and final resolution is still pending. It will be phase II of previous MIPPCOD. New research line in inequalities in maternal and reproductive health. The first output of which is a study of inequalities in health opportunities and outcomes in sub Saharan African women of reproductive age. This piece of work has been conducted in collaboration with the Global Equity and Poverty Practice of the World Bank. https://www.isglobal.org/en/web/guest/publication/-/asset_publisher/ljGAMKTwu9m4/content/inequalities-in-women-s-and-girls-health-opportunities-and-outcomes-a-report-from-sub-saharan-africa Moreover, in the field of training and capacity building in July 2016 we conducted the second workshop on maternal and newborn mortality reduction in Boston (Project: Safe Mothers and Newborns: A Leadership Workshop). <http://www.safemothersandnewborns.org/overview>. **A review on the evidence on Malaria in Pregnancy in the Americas** was conducted. This was a review commissioned by the World Health Organization (WHO), through the Roll Back Malaria (RBM) – Malaria in Pregnancy Working Group, aimed to understand the existing evidence available. The **Demonstration project to implement an HPV vaccination program to pre-adolescent girls through schools in Mozambique (HPVvax Project)**. The Barcelona Institute for Global Health (ISGlobal), the Manhiça Health Research Center (CISM), and the Fundação para o Desenvolvimento da Comunidade (FDC) in Mozambique have been actively involved and provided support to the Ministry of Health of Mozambique in undertaking the first pilot Demonstration project for HPV vaccination in the country. The study of the ZIKV infection in pregnant women returning from ZIKV affected areas and the impact of maternal and infant health. This study started in January 2016 at the Hospital Clinic of Barcelona (HCB), a tertiary referral hospital with the aim to investigate the clinical features of the ZIKV infection in pregnancy, the impact of ZIKV on maternal and foetal health, and the understanding of the ZIKV in uterus. Also during 2016 the results obtained in more than 50 autopsies conducted to women who died during pregnancy, delivery or postpartum in Mozambique between 2014 and 2015 have been analyzed.

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PROGRAMME

**Epidemiology and Prevention of
Chronic Diseases**



GROUP MEMBERS

Staff members: Colomar Savall, Anna

Associated members: Livianos Aldana, Lorenzo | Llopis González, Agustín | Navarro Pérez, Jorge | Pico García, Yolanda | Rojo Moreno, Luis Miguel | Ruiz Rojo, Elias

Main lines of research

- Epidemiology of chronic diseases
- Environment and health
- Effects of prenatal and postnatal exposure to environmental contaminants
- Effects of diet on childhood
- Effects of diet on the risk of chronic diseases

Most relevant scientific articles

- CALATAYUD-VERNICH P., CALATAYUD F., SIMO E., SUÁREZ-VARELA M.M., PICO Y. Influence of pesticide use in fruit orchards during blooming on honeybee mortality in 4 experimental apiaries. *Science of the Total Environment*. 2016;541:33-41.
- SABATER A., GARCÍA-BLANCO A.C., VERDET H.M., SIERRA P., RIBES J., VILLAR I. ET AL. Comparative neurocognitive effects of lithium and anticonvulsants in long-term stable bipolar patients. *Journal of Affective Disorders*. 2016;190:34-40.
- MORALES-SUÁREZ-VARELA M., NOHR E.A., BECH B.H., WU C., OLSEN J.. Smoking, physical exercise, BMI and late foetal death: a study within the Danish National Birth Cohort. *European Journal of Epidemiology*. 2016;1-11.
- TÉLLEZ-PLAZA M., OROZCO-BELTRÁN D., GIL-GUILLÉN V., PITA-FERNÁNDEZ S., NAVARRO-PÉREZ J., PALLARES V. ET AL. Renal function and attributable risk of death and cardiovascular hospitalization in patients with cardiovascular risk factors from a registry-based cohort: the Estudio Cardiovascular Valencia-risk study. *Journal of Hypertension*. 2016.
- RUBIO-LÓPEZ N, MORALES-SUÁREZ-VARELA M, PICO Y, LIVIANOS-ALDANA L, LLOPIS-GONZÁLEZ A. Nutrient Intake and Depression Symptoms in Spanish Children: The ANIVA Study. *International journal of environmental research and public health*. 2016;13(3).

Highlights

Our group is located within the University of Valencia and our members are also present in the University and Polytechnic La Fe Hospital, General University Hospital and Clinical University Hospital of Valencia. We currently participate in the following projects as principal researcher; “Environmental Strategy and Economic Sustainability Tools Applied to The Fluvial-Coastal Landscapes: Risks, Natural Capital and Ecosystem Services (Eco2TOOLS)”, “Evaluation of Emerging Contaminants in The Turia Basin: From Basic Research to The Application of Environmental Forensics” (CGL2011-29703-C02-02) and “Identification of Communication Barriers Between Health Personnel and Patients Attending Malaria Care Services in Colombia” (Projects for Development Cooperation, University of Valencia, 2014/15). The group collaborates with other CIBER groups: “Effectiveness of 23-Valent Polysaccharide and Anti-Pneumococcal Polysaccharide Vaccination in Persons Aged 65 And Over” (PI12 / 02079); “Study of Adequacy of Intermittent Hormone Therapy in Patients with Prostate Cancer” (PI15 / 00886) and in the “Dynamic Cohort of University Students for the Study of Drug Use and Other Addictions” (National Drug Plan 2013-2016). We are currently working on a study on breast cancer and diet in collaboration with the Valencian Institute of Oncology that would lead to an improved patient recovery. We are also working with the Gynecology Service of the University and Polytechnic La Fe Hospital with the project “Study on the Lifestyle and Health of the Newborn”. Our group leads the ANIVA study, on lifestyles in children of the province of Valencia and collaborates with the Public Health Laboratory of the Valencian Community within the framework of FISABIO. 7 doctoral theses have been defended; one of them with an Extraordinary Doctorate in Medicine Award.



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PROGRAMME

**Epidemiology and Prevention of
Chronic Diseases**



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Contributors: López Ciércoles, Olga

Main lines of research

- **Genetic Epidemiology**

Our research in the field of genetic epidemiology is focused primarily on identifying genetic polymorphisms as susceptibility markers of cancer risk associated with the study of drug consumption, colorectal cancer, and development of a predictor of individual risk based on the combination of multiple genetic polymorphisms associated with cancer. In this line, we also develop new biostatistical and bioinformatics methods.

- **Molecular diagnosis of cancer**

Within the area of molecular diagnosis of cancer, our research focuses on the identification of biomarkers useful for the early diagnosis of colorectal cancer. The domains of interest include genomics, proteomics and epigenetics. We believe that genomic regulatory networks are useful for the identification of new markers.

- **Prognostic markers and therapeutic response prediction**

We have series of colorectal cancer patients well characterized from a clinical point of view, with a long follow-up and prospective data collection. These series are useful to identify prognostic markers, prediction of therapeutic response and toxicity of chemotherapy and radiotherapy.

- **Identification of new therapeutic targets**

We use of bioinformatics tools for the identification of genes involved in cancer. This is a complex task since it requires in vivo and in vitro validation of hypotheses generated by bioinformatics models using genomic and proteomic data.

Most relevant scientific articles

- BINEFA G., GARCÍA M., MILA N., FERNÁNDEZ E., RODRÍGUEZ-MORANTA F., GONZALO N. ET AL. Colorectal Cancer Screening Programme in Spain: Results of Key Performance Indicators after Five Rounds (2000-2012). Scientific Reports. 2016;6.
- SANZ-PAMPLONA R., GIL-HOYOS R., LÓPEZ-DORIGA A., ALONSO M.H., AUSSO S., MOLLEVI D.G. ET AL. Mutanome and expression of immune response genes in microsatellite stable colon cancer. Oncotarget. 2016;7(14):17711-17725.
- MUR P., ELENA S.-C., AUSSO S., AIZA G., RAFAEL V.-M., PINEDA M. ET AL. Scarce evidence of the causal role of germline mutations in UNC5C in hereditary colorectal cancer and polyposis. Scientific Reports. 2016;6.
- BELHADJ S., MUR P., NAVARRO M., GONZÁLEZ S., MORENO V., CAPELLA G. ET AL. Delineating the Phenotypic Spectrum of the NTHL1-Associated Polyposis. Clinical Gastroenterology and Hepatology. 2016.
- CANTARINO N., MUSULEN E., VALERO V., PEINADO M.A., PERUCHO M., MORENO V. ET AL. Downregulation of the deiminase PADI2 is an early event in colorectal carcinogenesis and indicates poor prognosis. Molecular Cancer Research. 2016;14(9):841-848.

Highlights

This year we have been awarded two new research projects, a FIS entitled “Characterization and classification by molecular subtype of interval tumors in the population screening of colorectal cancer”, in which one of the principal investigators is Rebeca Sanz. The grant is € 147,000.

Also, a grant from the Spanish Association Against Cancer (AECC), entitled “Cost-effectiveness and budgetary impact of three preventive strategies in lung cancer.”

Two members of the group have read the doctoral thesis: David Cordero, entitled “Molecular analysis of colorectal cancer using an integrative computational approach” and Adriana López-Dóriga, entitled “Analysis of new generation sequencing data for molecular diagnosis of hereditary cancer and for the investigation of the genetic basis of sporadic colorectal cancer.”



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PROGRAMME DAPET Programme



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Main lines of research

- Development of new methods for genomic, metagenomic, epidemiological and evolutionary analysis to apply to the research on infectious diseases or dysbiotic microbiota, and also the regular study of them, particularly in the Comunidad Valenciana. Our group research focuses on microorganisms concerning the human health, in order to propose guidelines to the health administration in relation to certain pathogens, diseases related to the microbiota alteration and outbreaks.
- The objective of the studies in genomics, metagenomics, molecular epidemiology and evolution of organisms and / or microbial communities is their identification, sequencing and comparative and evolutionary analysis. The specific objectives aim to identify the genetic and metabolic factors associated with pathogenesis, to determine the genes or accessory elements responsible for the virulence, for the antigenic features relevant for vaccination or for the resistance to different treatments, as well as the evaluation of transmission routes, etc.

Most relevant scientific articles

- COMAS I. Legionella effectors reflect strength in diversity. *Nature Genetics*. 2016;48(2):115-116.
- SERRANO-VILLAR S, VÁZQUEZ-CASTELLANOS JF, VALLEJO A, LATORRE A, SAINZ T, FERRANDO-MARTÍNEZ S ET AL. The effects of prebiotics on microbial dysbiosis, butyrate production and immunity in HIV-infected subjects. *Mucosal immunology*. 2016;.
- DŽUNKOVÁ M, D'AURIA G, XU H, HUANG J, DUAN Y, MOYA A ET AL. The Monoclonal Antitoxin Antibodies (Actoxumab-Bezlotoxumab) Treatment Facilitates Normalization of the Gut Microbiota of Mice with *Clostridium difficile* Infection. *Frontiers in cellular and infection microbiology*. 2016;6:119.
- PATINO-GALINDO J.A., SALVATIERRA K., GONZÁLEZ-CANDELAS F., LÓPEZ-LABRADOR F.X. Comprehensive screening for naturally occurring hepatitis c virus resistance to direct-acting antivirals in the NS3, NS5A, and NS5B genes in worldwide isolates of viral genotypes 1 to 6. *Antimicrobial Agents and Chemotherapy*. 2016;60(4):2402-2416.
- MOYA A., FERRER M. Functional Redundancy-Induced Stability of Gut Microbiota Subjected to Disturbance. *Trends in Microbiology*. 2016.

Highlights

During 2016, our group has been funded by 9 grants both national and regional (PROMETEOII/2014/065, SAF2013-43521-R, SAF2013-49788-EXP, SAF2012-31187, BFU2014-58656-R, FPEF13-3E-2547, Prometeo/2016/122, SAF2015-65878-R, PI15/02010) and 3 European (ERC-StG-2014-638553TB ACCELERATE, H2020-MSCA-RISE-2015, ERA-NET Infect-ERA (Seventh Research Framework Programme). Also, we have participated in the European project "Recognition of the primary infection by *Pneumocystis* in infants: a silent threat to public health" (ELAC2014/HID0254) granted by "Instituto de Salud Carlos III" and led by Dr. Sergio Vargas (University of Santiago de Chile). During this year, we start the project "Identification of novel modulators of chronic inflammation in prevalent diseases: unveiling divergent mechanisms of disease" (PIE14/00045), being Prof. Andrés Moya the leader of workpackage 2 on Epidemiological Analyses. We belong to la Red de Excelencia "Genómica de la Adaptación" granted by Ministerio de Economía y Competitividad (CGL2015-71726-REDT,1/12/2015- 31/11/2017).

Furthermore, we maintain close partnerships with different national and international research groups and also with hospitals located in the Comunidad Valenciana and Spain to work in the field of human microbiome and infectious pathogens.

Our group has signed two collaboration agreements with IDF-INNOV (France) and Christian Hansen (Denmark).

The group has discovered a new bacterial species that is being developed as a probiotic to include in functional foods. A first clinical trial for the use of the probiotic in humans was performed in 2016, showing colonization of the bacterium and a significant improvement in the pH of the participants.

In 2016 the FISABIO-University of Valencia Academic Chair has continued, being Prof. Andrés Moya the director. Also, during this year we received various students from both national and international universities.



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PROGRAMME

**Communicable Disease Surveillance,
Prevention and Control**



GROUP MEMBERS

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Main lines of research

The research group on pediatric infectious diseases conducts translational research aimed at studying the clinical, molecular and epidemiological aspects of major pediatric infectious diseases, including vaccine-preventable diseases (such as pneumococcal disease or whooping cough), vertical transmission infections (such as HIV-1 or hepatitis C), and tuberculosis. The focus of the group is also on the early diagnosis and identification of infectious diseases through new technologies. The multidisciplinary nature of the team components promotes the global study of infections in our patients.

Main lines of research of the group are:

- **Molecular epidemiological surveillance of vaccine-preventable diseases.**

This research line is divided into two axes of action: epidemiological surveillance of vaccines and diagnostic innovation. The general objective of the first axis is the molecular epidemiological surveillance of three pathologies with significant disease burden in children (pneumococcal disease, whooping cough and meningococcal disease), the evaluation of conjugate vaccines in the prevention of pneumococcal disease, and the study of host-pathogen interaction in the development of invasive diseases caused by pathogens such as *P. pneumoniae*. The axis of diagnostic innovation is orientated towards the design and development of novel molecular techniques with the aim to integrate them in rapid, simple, accurate, and low cost point-of-care diagnostic devices

- **Vertical transmission diseases and infections in vulnerable patients**

The general objective of research on vertical transmission infections and infections in vulnerable patients is to increase knowledge in natural history, factors associated with transmission, prognostic diagnosis and treatment of infections transmitted from mother to child (Immunodeficiency Virus Humana, Hepatitis B and C virus, acute cytomegalovirus infection, toxoplasma) and atypical mycobacterial infections in our population.

- **Tuberculosis**

The scope of this research line is to investigate into the adherence and toxicity associated with first-line anti-tuberculosis drugs in the pediatric age, the pharmacokinetic characteristics of these drugs in the infant and preschool, the new diagnostic techniques of tuberculosis in the healthy child, the Child from areas of high endemic tuberculosis and in immunocompromised children, and in the clinical-epidemiological characteristics of tuberculosis in childhood in our country.

Most relevant scientific articles

- BROTONS P., DE PAZ H.D., TOLEDO D., VILLANOVA M., PLANS P., JORDAN I. ET AL. Differences in Bordetella pertussis DNA load according to clinical and epidemiological characteristics of patients with whooping cough. Journal of Infection. 2016.
- ARMERO G., LAUNES C., HERNÁNDEZ-PLATERO L., ALEJANDRE C., MUNOZ-ALMAGRO C., JORDAN I. Severe respiratory disease with rhinovirus detection: Role of bacteria in the most severe cases. Journal of Infection. 2016.
- CASAS-ALBA D., MARTÍNEZ-MONSENY A., MONFORT L., MUNOZ-ALMAGRO C., CABRERIZO M., DEYA A. ET AL. Extreme hyperferritinemia in dizygotic twins with human parechovirus-3 infection. Pediatric Infectious Disease Journal. 2016;35(12):1366-1368.
- BROTONS P., HENARES D., LATORRE I., CEPILLO A., LAUNES C., MUNOZ-ALMAGRO C. Comparison of NxTAG respiratory pathogen panel and Anyplex II RV16 tests for multiplex detection of respiratory pathogens in hospitalized children. Journal of Clinical Microbiology. 2016;54(12):2900-2904.
- GUIX-COMELLAS E.-M., ROZAS L., VELASCO-ARNAIZ E., MORIN-FRAILE V., FORCE-SANMARTÍN E., NOGUERA-JULIÁN A. Adherence to Antituberculosis Drugs in Children and Adolescents in a Low-Endemic Setting: A Retrospective Series. Pediatric Infectious Disease Journal. 2016.

Highlights

During 2016 the group has published 56 indexed publications and the senior author has been one of the members of the group in 26 of them. It also needs to be highlighted the defense of 4 doctoral theses directed by members of the team entitled respectively “Impact of molecular methods in the analysis of invasiveness of *Streptococcus pneumoniae*”, “Influence of genetic polymorphisms in the Toll-like receptor signalling pathways in severe invasive pneumococcal disease”, “Mitochondrial and hematological toxicity in non-infected pediatric patients exposed to HIV and Antiretrovirals “and” Study of the incidence, clinical characteristics and epidemiological factors associated with Respiratory Virus Infection in Pediatrics, with special reference to the emerging pathogens Metapneumovirus and Human Bocavirus “, all of them rated with the highest score. In the field of research projects, it is to be noted that three FIS projects led by team members were selected in the 2016 competitive call. The first project entitled “Microbiota of risk or resilient to acute respiratory infection in children and its usefulness in the differential diagnosis between pneumonia / bacterial bronchopneumonia and respiratory viral infection” will deepen research in the emerging field of the human microbiome. The second project entitled “Molecular characterization of *Bordetella* strains causing *pertussis* in children under five years of age. Analysis of the impact in the epidemiology and clinical of the disease “aims to analyze the possible microbiological causes related to the emergence of pertussis in our geographic area in recent years. The third project “Analysis of a diagnostic algorithm for severe pneumonia in critical pediatric patients using pulmonary ultrasound and procalcitonin as a plan to improve care quality” will carry out a cost-benefit study of the different diagnostic strategies.



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PROGRAMME

Epidemiology and Prevention of Chronic Diseases



GROUP MEMBERS

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Contributors: Ríos Molina, M^a Esperanza

Main lines of research

- **Cancer epidemiology.** The group has consolidated a research line on cancer over the last two decades by taking part in the cohort study European Prospective Investigation into Cancer and Nutrition (EPIC), focused on diet, cancer, and lifestyle and genetic interactions. Also, recently, the group has joined the Spanish multi-center case-control population study (MCC-Spain), developed within the CIBERESP, aimed at investigating the effect of the environment and its interaction with genetic factors on high-incidence tumours in Spain. Furthermore, the group has an active participation in several national and international projects on cancer survival (EUROCARE, CONCORD, RARECARE), and information systems and cancer registries (EUROCHIP, REDEPICAN, REDECAN).
- **Epidemiology of cardiovascular disease, diabetes, and other chronic diseases.** In the field of other chronic diseases, the group participates in the DARIOS and FRESCO studies, on cardiovascular risk functions for the Spanish population, and in the EPIC-CVD study, conceived to perform a joint study of the effect of genetic factors, biomarkers, and life styles, on coronary heart disease and stroke in Europe. On diabetes, the group takes part in the European case-cohort InterAct study on the interaction between genetic and modifiable life-style factors (particularly diet and physical activity), and has designed and developed the DINO study (study on diabetes, nutrition, and obesity in the Region of Murcia). It is also noteworthy the participation in an interesting project to analyse whether the presence of specific antibodies for rheumatoid arthritis could be able to predict the onset of the disease, and what are the related factors (genetic and environmental) that could affect this process. Other specific objective of the group is to estimate the burden of infectious diseases in Spain with a special focus on hepatitis B and C. Finally, the group has research interests in the epidemiology of neurological disorders such as Parkinson or Alzheimer disease, and

dementia, and it is currently leading the PEGASUS-Murcia study (study on health and quality of life in the Region of Murcia), a population-based survey to know the prevalence of mental disorders, co-morbidity patterns and related factors, in the general population.

- **Environmental health, reproductive health, life styles, and diet.** The group works in this research line on food and nutrient patterns, physical activity, and other life style factors, in relation to health and development of chronic diseases. Other research interest focuses on reproductive health of young adults, and the study of its related factors, both endogenous and environmental (hormonal and developmental factors, diet, sedentarism, environmental pollutants, heavy metals).
- **Social determinants of health. Inequality, immigration and gender.** Through the project 'Health and Cultures' the group has carried out the study of the health of the immigrant population in Murcia and its determinant factors, in order to identify the specific health needs of such a minority and the barriers that limit their health care. Other research lines of the group involve the study of social problems such as the domestic violence, or the double workload (paid work and domestic labors) of women and its health consequences. Furthermore, within the MEDEA project, the group takes part in the study of economic and environmental inequalities on the morbidity and mortality in small areas of large cities in Spain.

Most relevant scientific articles

- BAENA-DÍEZ J.M., PENAFIEL J., SUBIRANA I., RAMOS R., ELOSUA R., MARIN-IBÁÑEZ A. ET AL. Risk of cause-specific death in individuals with diabetes: A competing risks analysis. *Diabetes Care*. 2016;39(11):1987-1995.
- HUERTA JM, CHIRLAQUE MD, TORMO MJ, BUCKLAND G, ARDANAZ E, ARRIOLA L ET AL. Work, household, and leisure-time physical activity and risk of mortality in the EPIC-Spain cohort. *Preventive medicine*. 2016;85:106-112.
- CIRERA L, HUERTA JM, CHIRLAQUE MD, MOLINA-MONTES E, ALTZIBAR JM, ARDANAZ E ET AL. Life-course social position, obesity and diabetes risk in the EPIC-Spain Cohort. *European journal of public health*. 2016.
- FUCHSBERGER C., FLANNICK J., TESLOVICH T.M., MAHAJAN A., AGARWALA V., GAULTON K.J. ET AL. The genetic architecture of type 2 diabetes. *Nature*. 2016;536(7614):41-47.
- LOTTA L.A., SHARP S.J., BURGESS S., PERRY J.R.B., STEWART I.D., WILLEMS S.M. ET AL. Association between low-density lipoprotein cholesterol-lowering genetic variants and risk of type 2 diabetes: A meta-analysis. *JAMA - Journal of the American Medical Association*. 2016;316(13):1383-1391.

Highlights

Throughout 2016, the CIBERESP group 24 led by Dr. Carmen Navarro has maintained an intense national and international scientific activity, pushing forward its own research lines, such as the study of social position as determinant of diabetes (Cirera et al., 2016), or the role of physical activity in the prevention of mortality (Huerta et al., 2016). It is remarkable the active role of the group in studies on cancer incidence and survival (EUROCARE, CONCORD-2, SUDCAN), taking the lead in worldwide studies on ovarian cancer survival (Chirlaque et al., 2017, PMID: 28005613). Other research lines of the group are the association of physical activity with the incidence of gastric cancer (MCC-Spain), the importance of glycated hemoglobin for coronary risk prediction among non-diabetics (EPIC-CVD), the study of intimate partner violence among immigrants in Spain (Colorado-Yohar et al. 2106, PMID: 26670923), and the investigation of cardiovascular risk factors (Baena-Díez et al., 2016; Patiño et al., 2016, PMID: 27268022). The group develops several competitive projects on the association of bisphenol-A on cancer incidence, on diet, chronobiology and obesity, and on the role of Mediterranean diet in the prevention of dementia. The participation in international consortia has resulted in co-authorship of important papers published in top scientific journal as *Nature Communications*, *Lancet*, *Lancet Oncology*, *Science Translational Medicine*, *JAMA Psychiatry*, or *PLoS Medicine*, among others.

The group has joined the Global Burden of Metabolic Risk Factors of Chronic Diseases Collaboration (NCD-RisC), and the WHO World Mental Health Surveys Initiative, participates in the 'Pancreatic cancer overall survival registry (PancreOs)' project, and acts as a partner in the EU Joint Action on Rare Cancer. Furthermore, the group is member of the Spanish Cancer Registries Network, and has an active role in the European Network of Cancer Registries (ENCR) as members of the Steering Committee and the "WG on Date of Incidence". Finally, as leaders of the EIP-AHA partnership in Murcia, the group has been involved in several European health innovation projects: IN3CA (<http://www.in3ca.eu/>), FICHe (<https://www.f6s.com/fiche>), and proEmpower (<https://www.ticbiomed.org/english/projects/proempower/>).



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PROGRAMME

**Epidemiology and Prevention of Environmental and
Occupational Diseases**

**Epidemiology and Prevention of Chronic Diseases
Clinical Epidemiology**



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Main lines of research

Multidisciplinary group created to investigate environmental causes of disease, particularly, malignant tumors and its basic and clinical aspects, with a strong character translational and applied to clinical practice. Both the epidemiology of malignant tumor disease as the diagnosis and treatment has been and are the object of attention. Especially:

- Research on environmental factors related to exposure to hormonally active chemical contaminants (endocrine disruption) and physical agents (ionizing and non-ionizing radiation).
- The diagnosis of tumor disease in its early stages and subsequent evolution by radiological techniques and molecular imaging.
- A holistic approach to the concept of health and environment based on: i) markers of exposure; ii) development of biomarkers combined effect; iii) research focused on mechanisms of gene-environment interaction; and iv) actions in prevention.

Most relevant scientific articles

- ARREBOLA J.P., FERNÁNDEZ-RODRÍGUEZ M., ARTACHO-CORDÓN F., GARDE C., PÉREZ-CARRASCOSA F., LINARES I. ET AL. Associations of persistent organic pollutants in serum and adipose tissue with breast cancer prognostic markers. *Science of the Total Environment*. 2016;566-567:41-49.
- JIMÉNEZ-DÍAZ I., ARTACHO-CORDÓN F., VELA-SORIA F., BELHASSEN H., ARREBOLA J.P., FERNÁNDEZ M.F. ET AL. Urinary levels of bisphenol A, benzophenones and parabens in Tunisian women: A pilot study. *Science of the Total Environment*. 2016;562:81-88.
- FERNÁNDEZ M.F., ARREBOLA J.P., JIMÉNEZ-DÍAZ I., SÁENZ J.M., MOLINA-MOLINA J.M., BALLESTEROS O. ET AL. Bisphenol A and other phenols in human placenta from children with cryptorchidism or hypospadias. *Reproductive Toxicology*. 2016;59:89-95.
- PASTOR-BARRIUSO R., FERNÁNDEZ M.F., CASTANO-VINYALS G., WHELAN D., PÉREZ-GÓMEZ B., LLORCA J. ET AL. Total effective xenoestrogen burden in serum samples and risk for breast cancer in a population-based multicase-control study in Spain. *Environmental Health Perspectives*. 2016;124(10):1575-1582.
- ARTACHO-CORDÓN F., LEÓN J., SÁENZ JM, FERNÁNDEZ MF, MARTÍN-OLMEDO P, OLEA N ET AL. Contribution of Persistent Organic Pollutant Exposure to the Adipose Tissue Oxidative Microenvironment in an Adult Cohort: A Multipollutant Approach. *Environmental science & technology*. 2016;50(24):13529-13538.


Highlights


The CIBERESP-19 group has continued to carry out clinical and epidemiological studies, both in the framework of national and international collaborations (Brazil, Tunisia, among others), focused on exposure to endocrine-disrupting compounds, persistent and non-persistent, and its effects on human health. Studies on the influence of environmental exposure on infant development in the context of the INMA birth cohort, including urogenital malformations at birth, thyroid function and neurodevelopment during the first years of life, have been pursued. Scientific progress has been made in (i) the identification of “obesogenic” environmental compounds favoring obesity, hypertension, diabetes, and metabolic syndrome, as well as in the development of a biomarker of combined exposure to environmental compounds with obesogenic activity (O-SCREEN); ii) the assessment of the relationship between historical exposure to bisphenol-A and hormone-dependent cancer and cardiovascular risk in the EPIC-Spain cohort; iii) the assessment of exposure to endocrine disruptors in low birth weight infants at the Neonatal Intensive Care Units, and the evaluation of the health consequences; and finally, (iv) the development of a procedure for minimizing the environmental presence of antineoplastic drugs of hospital origin. The group has got two European projects, The European Human Biomonitoring Initiative-HBM4EU- # 733032, and the ONCONET-SUDOE, SOE1 / P1 / F0082, leading, in both cases, a Workpackage, three national ISCIII funded projects [FIS-PI16 / 01820; FIS-PI16 / 01812; FIS-PI16 / 01858] and one autonomic funded project [PS-0506-2016]. Moreover, one of the team members has obtained a Miguel Servet type I contract, P16 / 00085, who join the previous MS-I contract, incorporated last year CP15 / 00193. Lastly, the Institute of Biosanitary Research ibs.GRANADA, accredited by ISCIII, continues under the scientific leadership of the Group leader.



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PROGRAMME

**Epidemiology and Prevention of
Chronic Diseases**



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Main lines of research

The activities of the Environmental Epidemiology and Cancer Unit of the National Center of Epidemiology (CNE) continue and broaden the experience of the Cancer Epidemiology Unit, established in 1991. The group mainly works on three research lines: 1) Surveillance of cancer burden in Spain, where our unit is considered a national reference in the study of the spatial and temporal distribution of this group of diseases, 2) environmental, occupational and life style epidemiology research, exploring the impact of environmental exposures in cancer both from an ecological point of view -possible effects of industrial pollution or physical agents- as well as using individual measurements of exposure in case-control and cohort studies; those projects related with biomonitoring in general population can also be included in this research line and 3) genetics and molecular cancer epidemiology, especially in breast cancer. Accordingly, the activities of the Unit, therefore, cover a wide range of topics in etiological research of different types of cancer and in the development of innovative methods of study design and data analysis. Most of the activities integrate researchers and groups external to the ISCIII from different disciplines.

Most relevant scientific articles

- PASTOR-BARRIUSO R., FERNÁNDEZ M.F., CASTANO-VINYALS G., WHELAN D., PÉREZ-GÓMEZ B., LLORCA J. ET AL. Total effective xenoestrogen burden in serum samples and risk for breast cancer in a population-based multicase-control study in Spain. *Environmental Health Perspectives*. 2016;124(10):1575-1582.
- CASTELLO A., ASCUNCE N., SALAS-TREJO D., VIDAL C., SÁNCHEZ-CONTADOR C., SANTAMARÍA C. ET AL. Association Between Western and Mediterranean Dietary Patterns and Mammographic Density. *Obstetrics and Gynecology*. 2016.
- GARCÍA-PÉREZ J., PÉREZ-ÁBAD N., LOPE V., CASTELLÓ A., POLLÁN M., GONZÁLEZ-SÁNCHEZ M. ET AL. Breast and prostate cancer mortality and industrial pollution. *Environmental Pollution*. 2016;214:394-399.
- GARCÍA-PÉREZ J., MORALES-PIGA A., GÓMEZ-BARROSO D., TAMAYO-URIA I., PARDO ROMAGUERA E., FERNÁNDEZ-NAVARRO P. ET AL. Risk of neuroblastoma and residential proximity to industrial and urban sites: A case-control study. *Environment International*. 2016;92-93:269-275.
- LOPE V., DE LARREA N.F., PÉREZ-GÓMEZ B., MARTÍN V., MORENO V., COSTAS L. ET AL. Menstrual and reproductive factors and risk of gastric and colorectal cancer in Spain. *PLoS ONE*. 2016;11(10).

Highlights

Inside the MCC-Spain group, we investigated for the first time, in collaboration with Nicolas Olea's lab, the association between total xenoestrogenic burden in serum and breast cancer. We have also provided information on the effect of reproductive factors and childhood exposures on different tumors. Regarding diet, we have reproduced and validated the dietary patterns we had previously found, and quantified their association with mammographic density, as a phenotype risk marker for breast cancer. As a methodologic contribution, we have studied the way to compare dietary patterns extracted in different populations.

Studying the association between pollutant sources and cancer mortality, we found new results linking industrial pollution and breast and prostate cancer mortality. In collaboration with the National Registry of Childhood Cancer we have also investigated the association between environmental exposures and the incidence of different childhood tumors. We maintain an active collaboration with many research groups in Spain and abroad.

The group has imparted different divulgative lectures on cancer risk factors in different settings, collaborating with associations of patients and different institutions interested in this matters. Finally, we want to highlight the monography entitled: "La contaminación del aire" (Air pollution), written in our group that was presented in a bookstore in Madrid and has been enthusiastically wellcome by the public, and the creation of apps for mobiles with the spatial distribution of cancer mortality in Spain (small areas analyses).




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PROGRAMME

Epidemiology and Prevention of Chronic Diseases



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Contributors: Rovira Pons, Yolanda

Main lines of research

- Clinical and molecular epidemiology of exocrine pancreatic cancer. This line of work partly operates in the frame of the European Prospective Investigation into Cancer and Nutrition (EPIC), the PANKRAS II Study (still yielding results and publications), and the Pancreatic Cancer Case Control Consortium (PanC4). These projects are successful thanks to the efforts of numerous scientists from Spain and the rest of the world. They are also joint collaborations with research units of the Cancer and the Public Health research programmes of our institution (IMIM), as well as collaborations with other organizations such as Centro Nacional de Investigaciones Oncológicas (CNIO), US National Cancer Institute, Universities of Barcelona, Huelva, and Miguel Hernandez from Alicante, International Agency for Research on Cancer (IARC), National Institute for Health and Welfare of Finland, Harvard School of Public Health, Imperial College London, or the University of North Carolina, among others.
- Analysis of outpatient and inpatient phases of the “Symptom to treatment interval” (STI) (“treatment delay”) and its impact on survival in cancer patients. This line of work is developed together with the Tumour Registry of Hospital del Mar.
- Concentrations of Persistent Organic Pollutants and their impact on the health of the general population. This line of work is partly developed within two projects, ‘Blood concentrations of Persistent Organic Pollutants in the general population of Catalonia’, in collaboration with the Departament of Health of the Government of Catalonia, and ‘Blood concentrations of Persistent Organic Pollutants in the population of Barcelona’, in collaboration with the Public Health Agency of Barcelona and the University of las Palmas de Gran Canaria, among other organisations from Spain and elsewhere (USA, Australia).

Most relevant scientific articles

- DI CESARE M., BENTHAM J., STEVENS G.A., ZHOU B., DANAEI G., LU Y. ET AL. Trends in adult body-mass index in 200 countries from 1975 to 2014: A pooled analysis of 1698 population-based measurement studies with 19.2 million participants. *The Lancet*. 2016;387(10026):1377-1396.
- PORTA M., BOLUMAR F. Caution: work in progress: While the methodological “revolution” deserves in-depth study, clinical researchers and senior epidemiologists should not be disenfranchised. *European Journal of Epidemiology*. 2016;31(6):535-539.
- PUMAREGA J., GASULL M., LEE D.-H., LÓPEZ T., PORTA M. Number of persistent organic pollutants detected at high concentrations in blood samples of the United States population. *PLoS ONE*. 2016;11(8).
- ZHANG M., WANG Z., OBAAZEE O., JIA J., CHILDS E.J., HOSKINS J. ET AL. Three new pancreatic cancer susceptibility signals identified on chromosomes 1q32.1, 5p15.33 and 8q24.21. *Oncotarget*. 2016;7(41):66328-66343.
- GYARMATI G., TURNER M.C., CASTANO-VINYALS G., ESPINOSA A., PAPANTONIOU K., ALGUACIL J. ET AL. Night shift work and stomach cancer risk in the MCC-Spain study. *Occupational and Environmental Medicine*. 2016.

Highlights

GRECMC is and strives to be a research group with a global and local, scholarly and social influence and recognition. We conceive and develop this influence mainly through research and teaching, as well as through collaborations and conversations with institutions, organisations and companies (“knowledge transfer”), which includes a regular activity in global and local academic institutions, media, networks, and advocacy forums. In 2016, for example, we were invited speakers at the “6th Mantua Workshop on Diabetes Mellitus and Related Disorders - The Future of Diabetes Care”, (Mantova, Italy); participated at the “Meeting on Avoidable Early Environmental Exposures” convened by WHO (Geneva, Switzerland); and were invited by the University of Ottawa (Canada) to the Inauguration of the School of Epidemiology, Public Health, and Preventive Medicine and the celebration in honour of Prof. John M. Last. Dr. Porta was also an “External Examiner, Community Medicine Rotation” at the Kuwait University.

In 2016 we continued publishing in journals of international reputation in the fields of molecular, clinical, and environmental epidemiology, as well as of clinical medicine and basic biological sciences: such a broad integration of basic, clinical and epidemiologic knowledge is one of our signs of identity. A Dictionary of Epidemiology (Oxford University Press, 2014) reflects as well our aims and approaches.

Selected presence in the media:

Eldiario.es: <http://goo.gl/GkyOaW>, <https://goo.gl/KjildN> / El País: <http://goo.gl/ZUSXxE>, <https://goo.gl/4fijhj>, <https://goo.gl/579L9E> / Radio Francia Internacional: <https://goo.gl/nhVP7c> / Julia en la Onda: <http://goo.gl/ZBnRgi> / Retrats: <http://goo.gl/n5cGfr> / Folia Humanística: <https://goo.gl/QTQFPE> / El Periódico.com: <http://goo.gl/XUE6Su>, <https://goo.gl/Pi4b5d> / Informativos.Net: <http://goo.gl/2y9gmJ> / La Vanguardia: <https://goo.gl/EtkyLY> Oxford Reference (“Featured author”): <https://goo.gl/xJ5G7r> / Other links of interest: <http://www.amazon.com/-/e/B00IZJZW3S>, <https://goo.gl/H4CMxY>

In 2016 we continued the study on plasma concentrations of organochlorine compounds, life styles and conditions, and pancreatic cancer risk in the EPIC cohort, funded by FIS/ISCIII and Marató de TV3, as well as through the innovative public crowdfunding platform Precipita. In collaboration with the Public Health Agency of Barcelona, we also started a new study about persistent organic pollutants in the population of Barcelona, within the frame of its Health Survey.



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PROGRAMME

**Epidemiology and Prevention of
Chronic Diseases**



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Staff members: Laclaustra Gimeno, Martín

Associated members: Banegas Banegas, José Ramón | García García-Esquinas, Esther | Graciano Pérez-Regadera, María Auxiliadora | Guallar Castillos, Pilar | Gutiérrez Fisac, Juan Luis | López García, Esther | Pérez Tasigchana, Raúl Francisco | Valencia Martín, José Lorenzo

Main lines of research

Our strategic objective is to produce relevant information to support clinical and population-based policies aimed at controlling CVD. The results of our studies have been explicitly incorporated into the National Strategy for Ischemic Heart Disease Control, the National Strategy for Obesity Prevention and Control, and the National Strategy on Disease Prevention and health Promotion, elaborated by the Ministry of Health. Moreover, our research results have also supported the development of clinical guidelines in this field; specifically, the guidelines of the Spanish Society for Arterial Hypertension, and guidelines of the Spanish Society of Family Medicine, the leading society devoted to primary health care in Spain.

Our main research themes are:

- a) Determinants and consequences of frailty in the older adult.
- b) Improvement of diagnosis and prognosis of the patient with hypertension and heart failure.
- c) Diet and physical activity as determinants of obesity and cardiovascular risk in the elderly.

Most relevant scientific articles

- LACLAUSTRA M., CASASNOVAS J.A., FERNÁNDEZ-ORTIZ A., FUSTER V., LEÓN-LATRE M., JIMÉNEZ-BORREGUERO L.J. ET AL. Femoral and carotid subclinical atherosclerosis association with risk factors and coronary calcium: The AWHS study. *Journal of the American College of Cardiology*. 2016;67(11):1263-1274.
- GARCÍA-ESQUINAS E., RAHI B., PERES K., COLPO M., DARTIGUES J.-F., BANDINELLI S. ET AL. Consumption of fruit and vegetables and risk of frailty: A dose-response analysis of 3 prospective cohorts of community-dwelling older adults. *American Journal of Clinical Nutrition*. 2016;104(1):132-142.
- RUIZ-HURTADO G., RUILOPE L.M., DE LA SIERRA A., SARAFIDIS P., DE LA CRUZ J.J., GOROSTIDI M. ET AL. Association between high and very high Albuminuria and nighttime blood pressure: Influence of diabetes and chronic kidney disease. *Diabetes Care*. 2016;39(10):1729-1737.
- BANEGAS J.R., RUILOPE L.M., DE LA SIERRA A., VINYOLÉS E., GOROSTIDI M., DE LA CRUZ J.J. ET AL. Clinic Versus Daytime Ambulatory Blood Pressure Difference in Hypertensive Patients: The Impact of Age and Clinic Blood Pressure. *Hypertension*. 2016.
- MARTÍNEZ-GÓMEZ D., GUALLAR-CASTILLON P., RODRÍGUEZ-ARTEALEJO F. Sitting Time and Mortality in Older Adults with Disability: A National Cohort Study. *Journal of the American Medical Directors Association*. 2016;17(10):960.e15-960.e20.

Highlights

We have started the development of the ATHLOS project, funded by the European Union (H2020) in collaboration with more than 15 groups from all over Europe. This project aims to characterize healthy aging trajectories and their determinants by harmonizing data from more than 15 independent cohorts. We have also been able to get funding for a project in the ERA-NET call, with the participation of groups from France and the United Kingdom. This project aims to identify in saliva omic markers of adherence to the Mediterranean diet and of the risk of developing type 2 diabetes. In addition, funding was obtained for three projects in national competitive calls and for another one (carried out through CIBERESP) to generate useful information to guide the implementation of strategies for addressing chronicity in frail patients within the National Health System. Finally, the group maintains an active scientific production, endorsed by many publications in the first decile of impact factor, in collaboration with numerous national and international groups, where we often carry out leadership functions.



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PROGRAMME

**Epidemiology and Prevention of
Environmental and Occupational Diseases**



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Staff members: Martí Perales, Elisenda

Associated members: Briz Herrezuelo, Víctor | Olguin Alderete, Nair Temis | Palou Serra, Aina | Suñol Esquirol, Cristina

Main lines of research

- Neurotoxicity of environmental pollutants
- Biomarkers of exposure to mercury and persistent organochlorine pollutants
- Endocrine disruption induced by environmental pollutants in the central nervous system

Most relevant scientific articles

- REVERTE I., PERIS-SAMPEDRO F., BASAURE P., CAMPA L., SUNOL C., MORENO M. ET AL. Attentional performance, impulsivity, and related neurotransmitter systems in apoE2, apoE3, and apoE4 female transgenic mice. *Psychopharmacology*. 2016;233(2):295-308.
- CABALLERO B, OLGUIN N, CAMPOS F, FARINA M, BALLESTER F, LÓPEZ-ESPINOSA MJ ET AL. Methylmercury-induced developmental toxicity is associated with oxidative stress and cofilin phosphorylation. Cellular and human studies. *Neurotoxicology*. 2016.

Highlights

Concerning our research line in environmental health and Nervous System disorders, we want to highlight the following activities:

- Research Projects: participation in two national projects and one international
- Clinical guides: Chair and Rapporteur of 2016 revision of the clinical guide on the Health Safety of Medical Devices Containing Phthalates (DEHP)
- Participation on the International meeting on Developmental origins of health and Disease (DOHAD). Presentation of a communication on Environmental Contaminants and Neurodevelopment
- Invited conference on Neurotoxicity of Methylmercury: Experimental and Human Studies. Post-graduate Program. Universidad Federal de Santa Catarina, Brasil



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PROGRAMME

Social Determinants of Health



GROUP MEMBERS

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Main lines of research

- Social Inequalities
- Gender Violence
- Women's Health
- Mental health
- Crisis and Health

Most relevant scientific articles

- ISABEL R.-P., MIGUEL R.-B., ANTONIO R.-G., ÓSCAR M.-G. Economic crisis and suicides in Spain. Socio-demographic and regional variability. *European Journal of Health Economics*. 2016;1-8.
- ESCRIBA-AGUIR V., RODRÍGUEZ-GÓMEZ M., RUIZ-PÉREZ I. Effectiveness of patient-targeted interventions to promote cancer screening among ethnic minorities: A systematic review. *Cancer Epidemiology*. 2016;44:22-39.
- BLANCO-MUNOZ J., LACASANA M., LÓPEZ-FLORES I., RODRÍGUEZ-BARRANCO M., GONZÁLEZ-ALZAGA B., BASSOL S. ET AL. Association between organochlorine pesticide exposure and thyroid hormones in floriculture workers. *Environmental Research*. 2016;150:357-363.
- BERMÚDEZ-TAMAYO C., MUKAMANA O., CARABALI M., OSORIO L., FOURNET F., DABIRE K.R. ET AL. Priorities and needs for research on urban interventions targeting vector-borne diseases: Rapid review of scoping and systematic reviews. *Infectious Diseases of Poverty*. 2016;5(1).
- ARTAZCOZ L., CORTES I., BENAVIDES F.G., ESCRIBA-AGUIR V., BARTOLL X., VARGAS H. ET AL. Long working hours and health in Europe: Gender and welfare state differences in a context of economic crisis. *Health and Place*. 2016;40:161-168.

Highlights

- Participation by three professionals from the group in the project European Human Monitoring Initiative (EHMI). H2020-SC1-2016.
- Completion of the study of cohort on violence of gender during the pregnancy and postpartum and home of thesis doctoral.
- Participation of the group in the lines of research and publications on the theme crisis and health, and participation in the subprogramme of Crisis and health.
- Development of the methodology of systematic reviews and meta-analyses as methods.

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PROGRAMME

Social determinants of health

Clinical Epidemiology

Epidemiology and Prevention of Chronic Diseases

**Epidemiology and Prevention of Environmental and
Occupational Diseases**



GROUP MEMBERS

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Main lines of research

- Epidemiology
 - Environmental epidemiology
 - Clinical epidemiology
 - Cardiovascular risk factors
 - Amyotrophic lateral sclerosis disease
 - Attention deficit hyperactivity disorder
 - Socioeconomic inequalities in health
 - Cancer epidemiology
 - Delinquency as a public health problem

- Statistical methods
 - Mixed models
 - Spatial statistics
 - Spatial misalignment
 - Bayesian methods
- Health econometrics
 - Effects of the economic crisis on health
 - Evaluation of public policies
 - Evaluation of health technologies

Most relevant scientific articles

- BARCELÓ M.A., COLL-NEGRE M., COLL-DE-TUERO G., SÁEZ M. Effects of the financial crisis on psychotropic drug consumption in a cohort from a semi-urban region in Catalonia, Spain. PLoS ONE. 2016;11(2)
- BARCELÓ M.A., VARGA D., TOBIAS A., DÍAZ J., LINARES C., SÁEZ M. Long term effects of traffic noise on mortality in the city of Barcelona, 2004-2007. Environmental Research. 2016;147:193-206.
- MAYNOU L., SÁEZ M.. Economic crisis and health inequalities: Evidence from the European Union. International Journal for Equity in Health. 2016;15(1).
- FERRI MJ, SÁEZ M, FIGUERAS J, FORT E, SABAT M, LÓPEZ-BEN S ET AL. Improved Pancreatic Adenocarcinoma Diagnosis in Jaundiced and Non-Jaundiced Pancreatic Adenocarcinoma Patients through the Combination of Routine Clinical Markers Associated to Pancreatic Adenocarcinoma Pathophysiology. PloS one. 2016;11(1):e0147214.
- ARROYO V., DIAZ J., ORTIZ C., CARMONA R., SÁEZ M., LINARES C. Short term effect of air pollution, noise and heat waves on preterm births in Madrid (Spain). Environmental Research. 2016;145:162-168.

Highlights

During 2016 our group has continued working on our main lines of research: environmental epidemiology, in which all our methodological lines intervene; Clinical epidemiology, involving mixed models and Bayesian methods; Epidemiology of cancer, involving mixed models and Bayesian statistics, health econometrics, in which also all our methodological lines intervene.

As far as research projects are concerned, we participated in two FIS funded projects, ISCIII, for 2016 to 2018, one on clinical epidemiology (PI15 / 00140) (cardiovascular risk factors), in which both the Principal investigator as some collaborators we are members of our group; And another on cancer epidemiology (PI15 / 00966), in which members of our group participate as collaborators. Finally, we have obtained an aid, financed by the University of Girona, to support all our lines of research.

We signed three research agreements, one with Pfizer (line of research, clinical epidemiology), another with the Serveis de Salut Integrats of the Baix Empordà (SSIBE) (research line, Health Econometrics) and another with the Girona City Council Municipal) (line of research, Epidemiology-Delinquency).

One member of our group defended her doctoral thesis (qualification of outstanding cum laude by unanimity), in the line of Health Econometrics (socioeconomic inequalities in health and effects of the crisis on health).

In the research lines of environmental epidemiology, spatial statistics, spatial misalignment and mixed models, we were awarded the VI Emilio Perea Prize for the best senior communication during XXXIV Annual Meeting of the Spanish Society of Epidemiology (SEE).

We have started two new lines of research: ALS and ADHD.



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PROGRAMME

Epidemiology and Prevention of Chronic Diseases



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Associated members: Espín Balbino, Jaime | García Gutiérrez, José Francisco | Martínez García, Carmen | Rodríguez Barranco, Miguel | Sánchez-Cantalejo Ramírez, Emilio

Main lines of research

The Granada Cancer Registry (GCR), since its startup in 1985, has developed research projects produced by the GCR itself or in collaboration with other national or international institutions, along four main research lines:

- Descriptive epidemiology of cancer:
Temporal trends of cancer incidence in Granada for adults, children and adolescents / Survival of cancer in Granada / Estimates of cancer incidence and prevalence in Andalusia and Spain / Rare malignant tumors (RDR Spain): definition, incidence and survival. / Risk of second primary multiple tumors / Childhood Cancer
- Risk factors for cancer and other chronic diseases, especially in the Framework of the EPIC project (European Prospective Investigation into Cancer and Nutrition)
Studies on the association between lifestyle factors, diet and other environmental factors with risk of cancer and other chronic diseases (diabetes, cardiovascular diseases,...) / Studies on the association between biomarkers of exposure (antioxidants, inflammation, oxidative stress, etc.) with risk of cancer and other chronic diseases. / Studies on gen*environment and gen*gen interactions and their association with risk of cancer and other chronic diseases.
- Health care and outcomes assessment in cancer patients
Survival and patterns of care in cancer and variability in clinical practice (diagnostic methods, stage, treatment, tumor markers, second primary cancers, recurrences): differences between countries and geographical areas (EUROCARE, CONCORD, HIGHCARE and EMPARO-CU projects). / Surveillance and control of rare tumors in Spain and Europe (EUROCARE project).
- Health technologies and drugs economic evaluation
Pricing policies and reimbursement of drugs

- Environmental health:
Study of health effects of exposure to environmental pollutants, including air pollution, BTEX, persistent and non-persistent pesticides, PCB and heavy metals.

Most relevant scientific articles

- MOLINA-MONTES E., SÁNCHEZ M.-J., ZAMORA-ROS R., BUENO-DE-MESQUITA H.B., WARK P.A., OBON-SANTACANA M. ET AL. Flavonoid and lignan intake and pancreatic cancer risk in the European prospective investigation into cancer and nutrition cohort. *International Journal of Cancer*. 2016;139(7):1480-1492.
- LARRAÑAGA N, SÁNCHEZ MJ, ARDANAZ E, FELIPE S, MARCOS-GRAGERA R, RAMOS M ET AL. Incidence Patterns and Trends of non-Central Nervous System Solid Tumours in Children and Adolescents. A Collaborative Study of the Spanish Population Based Cancer Registries. *Journal of Cancer*. 2016;7(3):335-43.
- TRAMA A, MARCOS-GRAGERA R, SÁNCHEZ PÉREZ MJ, VAN DER ZWAN JM, ARDANAZ E, BOUCHARDY C ET AL. Data quality in rare cancers registration: the report of the RARECARE data quality study. *Tumori*. 2016;:0.
- RODRÍGUEZ-BARRANCO M., GIL F., HERNÁNDEZ A.F., ALGUACIL J., LORCA A., MENDOZA R. ET AL. Postnatal arsenic exposure and attention impairment in school children. *Cortex*. 2016.
- AMIANO P, CHAMOSA S, ETXEZARRETA N, ARRIOLA L, SÁNCHEZ MJ, ARDANAZ E ET AL. Unprocessed red meat and processed meat consumption and risk of stroke in the Spanish cohort of the European Prospective Investigation into Cancer and Nutrition (EPIC). *European journal of clinical nutrition*. 2016.

Highlights

- Participation in the Excellence Integrated Project INTERCIBER from ISCIII (CIBERESP, CIBERDEM, CIBEREBN, CIBEROBN): *INFLAMES Identification of novel modulators of chronic inflammation in prevalent diseases: unveiling divergent mechanisms of disease*
- Coordination in Spain of the HIGHCARE Project, funded by ISCIII in ERA-NET on Translational Cancer Research (TRANSCAN): *High Resolution Project on Prognosis and care of cancer patients*.
- Coordination of the Multicenter Project: *Effects of exposure to Bisphenol-A on human health (cancer and ischaemic coronary heart disease) in the European Prospective Investigation into Cancer and Nutrition (EPIC-Spain) study*, funded by FIS and involving other 4 CIBERESP research groups.
- IP of the multicenter project: *Cronodiet, circadian clock regulating gene polymorphisms, weight change and obesity in the European Prospective Investigation into Cancer and Nutrition (EPIC-Spain) study*, funded by FIS and involving other 4 CIBERESP research groups.
- Participation in the *Joint Action on Rare Cancers*, funded by the European Commission.
- *WP1 Coordination of the project*: ONCONET-SUDOE, funded in the INTERREG-SUDOE call.
- *Coordination of the Project*: “EFFECT OF EXPOSURE TO MIXTURES OF PERSISTENT ENVIRONMENTAL POLLUTANTS ON THE RISK OF BREAST AND PROSTATE CANCER IN THE EPIC-GRANADA COHORT” *in the call for Public Health of the Regional Ministry of Health of the Regional Government of Andalusia*.
- *Obtaining a postdoctoral contract of the human resources: Juan de La Cierva Training, funded by MINECO*.
- Participation in the “Assessment of the Oncology Comprehensive Plan for Andalusia 2007-2015”
- Coordination of the Evaluation Panel for Public Health Research Projects of the Ministry of Health of the Regional Government of Andalusia.
- Participation in the Steering Group for Health R+i Strategy Assessment in Andalusia.
- Incorporation of a consolidated research group to the Biosanitary Research Institute of Granada (ibs. Granada), coordinating the Cancer Area. The Institute is accredited by the ISCIII
- Coauthor of the Cancer Control Join Action (CANCON) Policy Paper - Enhancing value of cancer care through a more appropriate use of health care interventions.



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PROGRAMME

**Epidemiology and Prevention of Chronic
Diseases**

**Epidemiology and Prevention of Environmental
and Occupational Diseases**



GROUP MEMBERS

Staff members: Casabonne, Delphine | Rodríguez Sales, Vanesa

Associated members: Alberó Abril, Ginesa | Alemany Viches, María Eulalia | Benavente Moreno, Yolanda | Castellsague Piqué, Xavier | Domingo Domenech, Eva | Roura Fornells, Esther

Main lines of research

- Epidemiology, etiology and prevention of cancers related to Human Papilloma Virus (HPV)
 - Studies of prevalence and HPV type distribution in cancers of the vulva, penis, vagina, anus, oral cavity, oro-pharynx and larynx (HPWAPO study)
 - Evaluation of cervical cancer screening program in Catalonia
 - Phase III and phase IV studies of new generation vaccines
 - Assessment of the burden of HPV-related diseases worldwide (HPV Information Center)
 - Cost-effectiveness models of cervical cancer prevention
 - Training and elearning programs on HPV associated cancer prevention (e-oncology)
- Epidemiology and etiology of lymphoid neoplasms.
 - Epidemiology of chronic lymphocytic leukaemia (CLL) (MCC-Spain study).
 - Evaluation of environmental and occupational exposures
 - Genetic susceptibility
 - Sero-epidemiology of Epstein-Barr virus and poliovirus infections

- Evaluation of the association between human and viral miRNA in plasma and CLL.
- Study of endemic Burkitt lymphoma and Epstein-Barr virus.
- International consortiums (InterLymph, Internacional Multiple Myeloma Consortium, Hodgkin Lymphoma Consortium).
 - Comprehensive evaluation of risk factors and different histologic lymphoma subtypes within an international consortium (InterLymph NHL Subtype Project)
 - Evaluation of hormonal and reproductive factors in multiple myeloma etiology (Internacional Multiple Myeloma Consortium)
 - Gene and environment interaction studies
 - GWAS studies on follicular lymphoma, Hodgkin lymphoma and other subtypes

Most relevant scientific articles

- BOSCH F.X., ROBLES C., DÍAZ M., ARBYN M., BAUSSANO I., CLAVEL C. ET AL. HPV-FASTER: Broadening the scope for prevention of HPV-related cancer. *Nature Reviews Clinical Oncology*. 2016;13(2):119-132.
- KARACHALIOU M., WATERBOER T., CASABONNE D., CHALKIADAKI G., ROUMELIOTAKI T., MICHEL A. ET AL. The natural history of human polyomaviruses and herpesviruses in early life - The rhea birth cohort in Greece. *American Journal of Epidemiology*. 2016;183(7):671-679.
- MARTÍN-BUSTAMANTE M., OLIETE-CANELA A., DIÉGUEZ-RODRÍGUEZ M., BENAVENTE Y., CASABONNE D., ALGUACIL J. ET AL. Job-exposure matrix for the assessment of alkylphenolic compounds. *Occupational and Environmental Medicine*. 2016.
- SCHIFFMAN M, DOORBAR J, WENTZENSEN N, DE SANJOSÉ S, FAKHRY C, MONK BJ ET AL. Carcinogenic human papillomavirus infection. *Nature reviews. Disease primers*. 2016;2:16086.
- BRUNI L., DÍAZ M., BARRIONUEVO-ROSAS L., HERRERO R., BRAY F., BOSCH F.X. ET AL. Global estimates of human papillomavirus vaccination coverage by region and income level: A pooled analysis. *The Lancet Global Health*. 2016;4(7):e453-e463.

Highlights

During 2016, the most relevant of the group was the participation in the concept of integration of cervical cancer prevention combining the impact of screening with the adult vaccination. We have also finished the protocol of recommendations for population screening in Catalonia for cervical cancer. The group completed the analysis of the possible joint contribution of Epstein Barr virus and *Plasmodium falciparum* in the etiology of endemic Burkitt's lymphoma, and we published the analysis of the gene-environment interactions in the etiology of lymphomas within the Interlymph consortium.




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PROGRAMME

Epidemiology and Prevention of Chronic Diseases



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Contributors: Gómez Pires, Esmeralda

Main lines of research

- **Impact of diet on cardiometabolic health.**

Diet plays an important role in the prevention of chronic diseases. We have determined the association between diet (foods/beverages/nutrients/dietary patterns) and cardiovascular risk factors, such as dyslipidemia, lipid oxidation, and obesity in children and adults.

- **Development and validation of short assessments tools.**

An urgent need in dietary and physical activity assessment is the development of short tools that provide valid assessments of dietary quality for use in time-limited settings. Therefore, we developed and validated 3 short screeners for dietary quality assessment in adults. Currently we are validating a short physical activity screener in 150 boys and girls aged 6 to 10 year.

- **Prevalence and impact of obesity on cardiometabolic health.**

The obesity epidemic is one of the biggest current challenges for health policy. Surrogate measures of general and abdominal adiposity have been related to cardiometabolic risk in children, adolescents, and adults. We have analyzed the prevalence and trends in general and abdominal obesity in adults and children. Furthermore, we have determined the impact of adiposity on cardiovascular risk factors. Currently we are analyzing the impact of obesity on cardiovascular events in 50.000 Spaniards.

- **Effect of a community based intervention program to prevent childhood obesity.**

The rapid growth of childhood obesity is a serious problem for public health worldwide. Spain has one of the highest prevalence rates of childhood overweight and obesity among OECD countries. A recent study reported 25,3% of Spanish children aged 8-13 were overweight and 9.6% were obese [6]. Childhood obesity has a multifactorial aetiology. Unhealthy lifestyle such as inadequate diet and low physical activity is strongly related with weight gain.

Community Based Interventions programs (CBI) are a holistic approach to prevent childhood obesity. CBI act from all key sectors that influence childhood development (family, school, health professionals, sports, media, stores and food markets). However, there is limited information on the efficacy of CBI in Europe. Currently we are performing a parallel intervention study including 2249 children aged 8 to 10 years from 4 Spanish towns to determine the efficacy of a CBI on the prevention of childhood obesity and modification of lifestyle.

Most relevant scientific articles

- SCHRODER H., GÓMEZ S.F., RIBAS-BARBA L., PÉREZ-RODRIGO C., BAWAKED R.A., FITO M. ET AL. Monetary diet cost, diet quality, and parental socioeconomic status in Spanish Youth. PLoS ONE. 2016;11(9).
- SCHRODER H., SERRA-MAJEM L., SUBIRANA I., IZQUIERDO-PULIDO M., FITO M., ELOSUA R. Association of increased monetary cost of dietary intake, diet quality and weight management in Spanish adults. British Journal of Nutrition. 2016;1-6.
- RÍOS-RODRÍGUEZ M.D.L.A., GARCÍA-CERDAN M.R., CALONGE-VALLEJO A.R., TOBELL-ANDREU L., BAENA-DÍEZ J.M., SCHRODER H.. Feasibility and results of the short Diet Quality Screener in Primary Care: EMAP study. Enfermeria Clinica. 2016;26(6):351-357.
- DÍEZ-ESPINO J., BASTERRA-GORTARI F.J., SALAS-SALVADÓ J., BUIL-COSIALES P., CORELLA D., SCHRODER H. ET AL. Egg consumption and cardiovascular disease according to diabetic status: The PREDIMED study. Clinical Nutrition. 2016.
- HENRÍQUEZ-SÁNCHEZ P., SÁNCHEZ-VILLEGAS A., RUANO-RODRÍGUEZ C., GEA A., LAMUELA-RAVENTÓS R.M., ESTRUCH R. et al. Dietary total antioxidant capacity and mortality in the PREDIMED study. European Journal of Nutrition. 2016.

Highlights


Our group collaborated in the elaboration of a report on physical activity in the infantile and juvenile population in Spain inside the network Activate Global Healthy Kids Alliance (<http://www.activehealthykids.org/about/>). The report was distributed to the media and health professionals among others. Additionally, the main results were published in the international scientific journal Journal of Physical Activity and Health. Our group participated in several publications of the PREDIMED study. One of the most important works was published in Clinical Nutrition and present data on the association of egg consumption and cardiovascular disease. We observed no significant impact of egg consumption on CHD. Within our research line Impact of diet on cardiometabolic health we have published two manuscripts about the impact of monetary diet cost on diet quality and weight management in adults and children in the *British Journal of Nutrition* and *Plos*. We provided additional evidence for adverse impact of monetary diet cost on diet quality in adults and children. Additionally, higher diet costs were positively associated with weight development in adults. Finally, we published data on the feasibility of the application of a short diet questionnaire in primary care. Our results showed that this dietary questionnaire is a valid instrument to record diet quality in time limited settings.



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PROGRAMME

**Epidemiology and Prevention of
Environmental and Occupational Diseases**

GROUP MEMBERS

Staff members: Cirugeda Bolós, Lourdes | Delgado Llobet, Ana | García Esteban, Raquel | Gros Monné, Susana | Murcia Hinarejos, Mario Jesús

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Main lines of research

Pre and post-natal life are critical periods in the origins of chronic diseases, such as obesity, the metabolic syndrome, cognitive development, and the origins of asthma and allergy.

The major scientific objective is: To perform epidemiological studies on the early life origins of the neurodevelopment, the obesity and metabolic syndrome and allergy and asthma.

Scientific objectives:

- To discover the effects of early life environmental factors (i.e., traffic, indoor air pollution, fish intake) on brain function, lung function and asthma/allergy.
- To investigate the role of environmental agents (i.e., DDE, BPA, PFCs, endocrine disruptors) on obesity and metabolic syndrome, and on asthma and the immune system.
- To identify early epigenetic markers of neurodevelopment, obesity and growth, and asthma, as well as the gene-environmental interactions related to asthma and COPD progression.
- To develop methods on omics in child health studies and methods on the statistical analysis of these data.
- To extend the program to a global health agenda following collaboration on risk balance of indoor residual spraying and indoor biofuel mass combustion.
- To assess the effects of physical activity and diet in asthma/allergy, obesity and COPD. To assess the phenotypic heterogeneity and the comorbidities of respiratory and allergic diseases and COPD.

Most relevant scientific articles

- PUJOL J., MARTÍNEZ-VILAVELLA G., MACIA D., FENOLL R., ÁLVAREZ-PEDREROL M., RIVAS I. ET AL. Traffic pollution exposure is associated with altered brain connectivity in school children. *NeuroImage*. 2016;129:175-184.
- FORNS J., DADVAND P., FORASTER M., ÁLVAREZ-PEDREROL M., RIVAS I., LÓPEZ-VICENTE M. ET AL. Traffic-Related air pollution, noise at school, and behavioral problems in barcelona schoolchildren: A cross-sectional study. *Environmental Health Perspectives*. 2016;124(4):529-535.
- JULVEZ J, MÉNDEZ M, FERNÁNDEZ-BARRES S, ROMAGUERA D, VIOQUE J, LLOP S ET AL. Maternal Consumption of Seafood in Pregnancy and Child Neuropsychological Development: A Longitudinal Study Based on a Population With High Consumption Levels. *American journal of epidemiology*. 2016;183(3):169-82.
- GUXENS M., GHASSABIAN A., GONG T., GARCÍA-ESTEBAN R., PORTA D., GIORGIS-ALLEMAND L. ET AL. Air pollution exposure during pregnancy and childhood autistic traits in four European population-based cohort studies: The ESCAPE project. *Environmental Health Perspectives*. 2016;124(1):133-140.
- AVELLA-GARCÍA CB, JULVEZ J, FORTUNY J, REBORDOSA C, GARCÍA-ESTEBAN R, GALÁN IR ET AL. Acetaminophen use in pregnancy and neurodevelopment: attention function and autism spectrum symptoms. *International journal of epidemiology*. 2016.


Highlights


This group has achieved the following operational objectives: 1. Maintenance and growth of the birth cohorts, follow-up of existing cohorts (INMA, RHEA), and collaboration in (EGG, EAGLE, PACE) and leadership of (CHICOS, HELIX) international consortiums; 2. Development of a research programme on the exposome, including the development of statistical and biocomputational methods; 3. A new programme on neurodevelopment in school studies; 4. Intense activity on communication, translation to policy, and outreach to schools; and 5. Research shows that the environmental determinants of respiratory diseases are the main causes of AVAD worldwide: particulate matter, physical inactivity and low activity, occupational particles, gases and fumes, ozone pollution and occupational asthma, and asthma and COPD are complex phenotypes whose definitions and classification need to be reconsidered. We have established ourselves as scientific leaders in all these areas, leading and participating in major national and international projects. In relation to the birth cohorts, in 2016 INMA has produced 38 original articles (76,3% Q1 and 57,9% D1). Many of the original articles were published in collaboration with other cohorts under CHICOS, and the genetic studies under EGG and EAGLE. HELIX started in 2013 and lab analyses are currently being completed and new statistical methods are being developed (EHP 2016, ES&T 2015). Midterm review progress was rated as excellent. The new programme of school studies includes two active projects, BREATHE and WALNUTS, and two submitted projects on biodiversity, microbiota and brain development. The members of this programme have leading roles in designing and establishing new national birth cohorts in Qatar and Iran, funded by their respective governments. Furthermore, a project on indoor pollution has been developed in Mozambique in collaboration with ISGlobal.



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PROGRAMME

**Epidemiology and Prevention of
Environmental and Occupational Diseases**



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Main lines of research

CAPUA STUDY (LUNG CANCER in ASTURIAS). It is the largest epidemiological study in Spain in lung cancer research with 880 incident cases and 844 controls with demographic data, history of cancer and potential risk factors, and 24 SNPs genotyped.

In 2010 is integrated into the International Lung Cancer Consortium of the International Agency for Research on Cancer. It has also been incorporated into the SYNERGY project, which brings together several European case-control studies to analyze the effects of exposure to occupational carcinogens in the development of lung cancer.

SPANISH BLADDER CANCER STUDY. In Asturias, it was initiated in 1997 as a collaborative project of the IMIM, DCEG INC in USA, and the University of Oviedo for assessing the risk of bladder cancer in relation to environmental and occupational exposures, lifestyle, genetic susceptibility and its interaction with environmental exposure. It is also evaluating molecular genetics and clinical factors associated with survival.

INMA PROJECT - Childhood and Environment. It was created with the aim of studying the role of the most important environmental pollutants in air, water and diet during pregnancy and early life, and its effects on infant growth and development. Asturias INMA Cohort in the III health area, begins in 2004 and follows 485

pregnant women from the 12th week of pregnancy and their children up to 7-8 years. MCC SPAIN. Poblational multicase-control study that was initiated in 2008 with funding from the Transversal Action in Cancer, to investigate the influence of environmental factors and their interaction with genetic factors in common or with peculiar epidemiologic characteristics tumors in our country (colorectal, breast, stomach, prostate and chronic lymphatic leukemia).

Most relevant scientific articles

- LÓPEZ-ESPINOSA M.-J., MURCIA M., ÍNIGUEZ C., VIZCAÍNO E., COSTA O., FERNÁNDEZ-SOMOANO A. ET AL. Organochlorine compounds and ultrasound measurements of fetal growth in the INMA cohort (Spain). *Environmental Health Perspectives*. 2016;124(1):157-163.
- LLOP S, BALLESTER F, MURCIA M, FORNS J, TARDÓN A, ANDIARENA A ET AL. Prenatal exposure to mercury and neuropsychological development in young children: the role of fish consumption. *International journal of epidemiology*. 2016.
- BIGERT C., GUSTAVSSON P., STRAIF K., TAEGER D., PESCH B., KENDZIA B. ET AL. Lung cancer among firefighters: Smoking-adjusted risk estimates in a pooled analysis of case-control studies. *Journal of Occupational and Environmental Medicine*. 2016;58(11):1137-1143.
- SCHOLZ A., GIMÉNEZ-MONZO D., NAVARRETE-MUNOZ E.M., GARCÍA-DE-LA-HERA M., FERNÁNDEZ-SOMOANO A., TARDÓN A. ET AL. Dietary intake of trans fatty acids in children aged 4–5 in Spain: The INMA cohort study. *Nutrients*. 2016;8(10).
- ÍNIGUEZ C., ESPLUGUES A., SUNYER J., BASTERRECHEA M., FERNÁNDEZ-SOMOANO A., COSTA O. ET AL. Prenatal exposure to NO₂ and ultrasound measures of fetal growth in the Spanish INMA cohort. *Environmental Health Perspectives*. 2016;124(2):235-242.


Highlights


In lung cancer, study CAPUA, we have conducted in collaboration with the SYNERGY project of IARC, an array of occupation-exposition (SYN-JEM) for the development of occupational exposure variables to assess relations occupation-exposition in lung cancer and estimate the interactions between occupational carcinogens. Study CAPUA in ILCCO is part of the international basis “The database of genotype and Phenotypes (dbGaP)”, including genome-wide association, sequencing, molecular diagnosis, genotype and treatment. The objective is to increase the power of detection of genetic factors influencing all histological types of lung cancer, to be able to analyze, cancers that make their debut very young, of certain histological characteristics, groups of never-smokers or women. The breadth of these studies GWAS sample will allow studying the interactions of gene and environment on lung cancer, with the ultimate goal of identifying individuals and groups at high risk can lead to screening and early detection in lung cancer. Bladder cancer in collaboration with NCI and the CNIO, have continued the exploration and analysis of genetic susceptibility, through application of pathways analysis factors candidates and multi-single nucleotide polymorphism (multi-SNP), by Bayesian analysis to detect the main effects of variants of genes of bladder cancer and inflammation. In the INMA cohort we have completed follow-up at age 7 with a rate of 93,55%, the highest of the INMA project tracking. We have signed an agreement with the Ministry of health of Asturias to participate in the Plan of the air quality in Gijón. We have participated in the drafting of the Plan of quality of the air of Gijón and Avilés. We have participated in the drafting of the Guide Clinic: recommendations about nutrition with iodine in the preconception stage, pregnancy and lactation. Technical report.




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PROGRAMME
Clinical Epidemiology



GROUP MEMBERS

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Main lines of research

- Evaluation of clinical practice and health technologies, covering a wide range of research objectives, all oriented to the analysis of clinical practice, health outcomes and health technology assessment, with special emphasis on the diagnosis.
- Evaluation and improving of the appropriateness of Clinical Practices with special focus on diagnostic technologies and procedures.
- Multivariate models and research on prognosis, which is dedicated to the study of multivariate regression models and its extension to particular situations as longitudinal studies with repeated measurements and Individual Patient Data meta-analysis.

Most relevant scientific articles

- JIMÉNEZ D., DE MIGUEL-DIEZ J., GUIJARRO R., TRUJILLO-SANTOS J., OTERO R., BARBA R. ET AL. Trends in the Management and Outcomes of Acute Pulmonary Embolism Analysis from the RIETE Registry. *Journal of the American College of Cardiology*. 2016;67(2):162-170.
- SOBHY S., ZAMORA J., DHARMARAJAH K., ARROYO-MANZANO D., WILSON M., NAVARATNARAJAH R. ET AL. Anaesthesia-related maternal mortality in low-income and middle-income countries: A systematic review and meta-analysis. *The Lancet Global Health*. 2016;4(5): e320-e327.
- QUINTERO E., CARRILLO M., LEOZ M.-L., CUBIELLA J., GARGALLO C., LANAS A. ET AL. Risk of Advanced Neoplasia in First-Degree Relatives with Colorectal Cancer: A Large Multicenter Cross-Sectional Study. *PLoS Medicine*. 2016;13(5).
- MELLADO M., PIJOAN J.I., JIMÉNEZ D., MURIEL A., AUJESKY D., BERTOLETTI L. ET AL. Outcomes Associated With Inferior Vena Cava Filters Among Patients With Thromboembolic Recurrence During Anticoagulant Therapy. *JACC: Cardiovascular Interventions*. 2016;9(23):2440-2448.
- RAYANAGOUDAR G., HASHI A.A., ZAMORA J., KHAN K.S., HITMAN G.A., THANGARATINAM S. Quantification of the type 2 diabetes risk in women with gestational diabetes: a systematic review and meta-analysis of 95,750 women. *Diabetologia*. 2016;1-9.

Highlights

The group has consolidated in 2016 the research line about Improvement of the Adequacy of Clinical Practice (MAPAC Program), concluding the multi-center project on the adequacy of imaging tests with ionising radiation in emergency services (MAPAC-image Project). This project has ended with the implementation in the emergency departments of several hospitals of the SNS of computer decision support systems (CDSS) for the request of Computerized Tomographies. The use of these CDSS improves the process of requesting these tests by properly selecting patients who will benefit most from these tests and avoiding unnecessary exposures to radiation to other patients. In the AES 2016 call, funding has been obtained to continue this multi-center project (MAPAC-image II) and funds for another related project aimed to estimate the risk of significant coronary disease in emergency patients. This predictive model will serve to improve the process of selection of confirmatory tests of ischemia in the emergency room (MAPAC-CardioPreTest multicenter project).

In 2016, the agreement contract between the Francisco de Vitoria University, the Ibero-American Cochrane Center and the Ramón y Cajal Institute for Health Research (IRYCIS) was renewed to support the Cochrane Collaborating Center for the Community of Madrid.

Our group, in collaboration with the group of the Association of Biodonostia Institute (Group Leader Dr. Emparanza), organised the Scientific Conference CIBERESP entitled “Observational studies can answer questions of causality”. The seminar was preceded by a Course on propensity index.

Finally, the group has achieved several media impacts in the year, resulting from two international collaborative publications related to reproductive health in low-income countries (*Lancet Global Health*, 2016 May; 4 (5): e320-7) and related to the risk of intrauterine mortality in twin pregnancies (*BMJ*, 2016, 354: i4353).

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