THE LANCET

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: EAS Familial Hypercholesterolaemia Studies Collaboration (FHSC). Global perspective of familial hypercholesterolaemia: a cross-sectional study from the EAS Familial Hypercholesterolaemia Studies Collaboration (FHSC). *Lancet* 2021; published online Sept 7. http://dx.doi.org/10.1016/S0140-6736(21)01122-3.

GLOBAL PERSPECTIVE OF FAMILIAL HYPERCHOLESTEROLAEMIA: A CROSS-SECTIONAL STUDY FROM THE EAS FAMILIAL HYPERCHOLESTEROLAEMIA STUDIES COLLABORATION (FHSC)

APPENDIX 1 – EAS FAMILIAL HYPERCHOLESTEROLAEMIA STUDIES COLLABORATION (FHSC) COMMITTEES AND INVESTIGATORS

APPENDIX 2 – SUPPLEMENTAL MATERIAL

APPENDIX 1

EAS FAMILIAL HYPERCHOLESTEROLAEMIA STUDIES COLLABORATION (FHSC) COMMITTEES AND INVESTIGATORS

COORDINATING CENTRE

Kausik K. Ray (Lead Investigator), Antonio J. Vallejo-Vaz, Alexander R.M. Lyons, Christophe A.T. Stevens, Kanika I. Dharmayat (Imperial Centre for Cardiovascular Disease Prevention, Dept. of Primary Care and Public Health, School of Public Health, Imperial College London. London, United Kingdom).

EXECUTIVE COMMITTEE

Kausik K. Ray ([Lead Investigator] Imperial Centre for Cardiovascular Disease Prevention, Dept. of Primary Care and Public Health, School of Public Health, Imperial College London. London, United Kingdom), Alberico L. Catapano ([Co-Lead Investigator,] Centre of Epidemiology and Preventive Pharmacology, Laboratory of Lipoproteins, Immunity and Atherosclerosis, Dept. of Pharmacological and Biomolecular Sciences University of Milan, Italy; I.R.C.C.S. MultiMedica, Milan, Italy), Tomas Freiberger (Centre for Cardiovascular Surgery and Transplantation, Brno, Czech Republic; and Medical Faculty, Masaryk University, Brno, Czech Republic), G. Kees Hovingh (Dept of vascular medicine, Academic Medical Centre, Amsterdam, The Netherlands), John J.P. Kastelein (Dept. of Vascular Medicine, Academic Medical Centre, Amsterdam, The Netherlands), Pedro Mata (Fundación Hipercolesterolemia Familiar, Madrid, Spain), Frederick J. Raal (Carbohydrate and Lipid Metabolism Research Unit, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa), Raul D. Santos (Heart Institute InCor University of Sao Paulo and Hospital Israelita Albert Einstein, Sao Paulo, Brazil), Handrean Soran (Manchester University NHS Foundation Trust, Manchester, United Kingdom), Gerald F. Watts (School of Medicine, Faculty of Health and Medical Sciences, University of Western Australia, Perth, Australia; Lipid Disorders Clinic, Cardiometabolic Services, Dept. of Cardiology, Royal Perth Hospital, Perth, Australia).

STEERING COMMITTEE / FHSC NATIONAL LEAD INVESTIGATORS

ARGENTINA: Pablo Corral (FASTA University, School of Medicine, Pharmacology Dept., Mar del Plata, Argentina). **AUSTRALIA:** Gerald F. Watts (School of Medicine, Faculty of Health and Medical Sciences, University of Western Australia, Perth, Australia; Lipid Disorders Clinic, Cardiometabolic Services, Dept. of Cardiology, Royal Perth Hospital, Perth, Australia). **AUSTRIA:** Christoph J. Binder (Dept. of Laboratory Medicine, Medical University of Vienna, Vienna, Austria). **BULGARIA:** Arman Postadzhiyan (Medical University of Sofia, Sofia, Bulgaria). **BAHRAIN:** Nasreen Al-Sayed (Gulf Diabetes and Endocrine Centre, Manama, Bahrain). **BELGIUM:** Olivier S. Descamps (Centre de Recherche Médicale de Jolimont, Centres hospitaliers Jolimont, Haine-Saint-Paul, Belgium). **BOSNIA AND HERZEGOVINA:** Belma Pojskic (Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina). **BRAZIL:** Raul D. Santos (Heart Institute InCor University of Sao Paulo and Hospital Israelita Albert Einstein, Sao Paulo, Brazil). **CANADA:** Jacques Genest (McGill University, Montreal, Canada). **CHILE:** Rodrigo Alonso (Center for Advanced Metabolic Medicine and Nutrition, Santiago). **CHINA:** Jie Lin (Beijing Anzhen Hospital Capital Medical University, Beijing Institute of Heart Lung & Blood Vessel Diseases, Beijing, China), Luya Wang (Beijing Anzhen Hospital, Capital Medical University, Beijing Institute of Heart, Lung and Blood Vessel Diseases, Beijing, China). **CHINA - HONG KONG:** Brian Tomlinson (Faculty of Medicine, Macau University of Science and Technology, Macau, China). **CROATIA:** Željko Reiner (Dept. of Internal medicine, University Hospital Centre Zagreb, School of Medicine University of Zagreb, Zagreb, Croatia). **CYPRUS:** Andrie G. Panayiotou (Cyprus International Institute for Environmental and Public Health, Cyprus University of Technology, Limassol, Cyprus). **CZECH REPUBLIC:** Tom Freiberger (Centre for Cardiovascular Surgery and Transplantation, Brno, Czech Republic; and Medical Faculty, Masaryk University, Brno, Czech Republic). **DENMARK:** Børge G. Nordestgaard (Herlev and Gentofte Hospital, Copenhagen University Hospital, University of Copenhagen, Copenhagen, Denmark), Anne Tybjærg Hansen (Dept. of Clinical Biochemistry, Rigshospitalet, Copenhagen, Denmark; and Dept. of Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark). **EGYPT:** Ashraf Reda (Cardiology Dept., Faculty of medicine, Menoufia University, Menoufia, Egypt). **ESTONIA:** Margus Viigimaa (North Estonia Medical Centre, Tallinn University of Technology, Tallin). **FRANCE:** Eric Bruckert (Sorbonne University and Pitié Salpêtrière

Hospital APHP, Paris, France). **GERMANY:** Ulrich Laufs (Klinik und Poliklinik für Kardiologie, Universitätsklinikum Leipzig, Leipzig, Germany), Heribert Schunkert (Clinic for Heart and Circulatory Diseases, German Heart Centre Munich, Technical University Munich, Munich, Germany; DZHK German Centre for Cardiovascular Research, Partner Site Munich Heart Alliance, Munich, Germany), Winfried März (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg, Germany; Dept. of Internal Medicine V Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany; Klinisches Institut für Medizinische und Chemische Labordiagnostik, Medizinische Universität Graz, Graz, Austria; Synlab Akademie, Synlab Holding Deutschland GmbH, Mannheim und Augsburg, Germany). **GREECE:** Evangelos Liberopoulos (Dept. of Internal Medicine, Faculty of Medicine, University of Ioannina, Ioannina, Greece), Alexandros D. Tselepis (Atherothrombosis Research Centre, University of Ioannina, Ioannina, Greece). **HUNGARY:** György Paragh (Dept. of Internal Medicine, Faculty of Medicine, University of Debrecen, Debrecen, Hungary). **INDIA:** Tester F. Ashavaid (P.D. Hinduja Hospital and Medical Research Centre, Mahim, Mumbai, India). **IRAQ:** Mutaz Alkhnifsawi (Faculty of Medicine, University of Al Qadisiyah, Al Diwaniyah, Iraq). **IRELAND:** Vincent Maher (Advanced Lipid Management and Research Centre A.L.M.A.R. Tallaght University Hospital, Dublin, Ireland). **ISRAEL:** Ronen Durst (Cardiology Dept. and Centre for Treatment and Prevention of Atherosclerosis, Hadassah Hebrew University Medical Centre, Jerusalem, Israel). **ITALY:** Alberico L. Catapano (Centre of Epidemiology and Preventive Pharmacology, Laboratory of Lipoproteins, Immunity and Atherosclerosis, Dept. of Pharmacological and Biomolecular Sciences University of Milan, Italy; IRCCS MultiMedica, Milan, Italy). **JAPAN:** Mariko Harada-Shiba (National Cerebral and Cardiovascular Centre Research Institute, Osaka, Japan), Shizuya Yamashita (Rinku General Medical Centre, Osaka, Japan). **KAZAKHSTAN:** Kairat Davletov (Research Health Institute, Al Farabi Kazakh National University, Almaty, Kazakhstan). **KUWAIT:** Ahmad Al-Sarraf (Sabah Al Ahmad Cardiac Centre, Kuwait City, Kuwait). **KYRGYZSTAN:** Erkin Mirrakhimov (Kyrgyz State Medical Academy, Bishkek, Kyrgyzstan). **LATVIA:** Gustavs Latkovskis (Research Institute of Cardiology and Regenerative Medicine, Faculty of Medicine, University of Latvia, Pauls Stradins Clinical University Hospital, Riga, Latvia). **LEBANON:** Marianne Abi Fadel (Laboratory of Biochemistry and Molecular Therapeutics, Faculty of Pharmacy, Saint Joseph University, Beirut, Lebanon). **LITHUANIA:** Zaneta Petrulioniene (Vilnius University Faculty of Medicine, Vilnius, Lithuania; Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania). **MALAYSIA:** Hapizah Nawawi (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM and Faculty of Medicine, Universiti Teknologi MARA UiTM, Sungai Buloh, Selangor, Malaysia). **MALTA:** Myra Tilney (Lipid Clinic, Mater Dei Hospital, Msida, Malta; Dept. of Medicine, Faculty of Medicine and Surgery, University of Malta, Msida, Malta). **MEXICO:** Carlos A. Aguilar-Salinas (Unidad de Investigación de Enfermedades Metabólicas, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, México; Tecnologico de Monterrey, Escuela de Medicina y Ciencias de la Salud, Monterrey, México), Alejandra Vázquez Cárdenas (Facultad de Medicina, Universidad Autónoma de Guadalajara, Mexico). **NETHERLANDS:** G. Kees Hovingh (Dept of vascular medicine, Academic Medical Centre, Amsterdam, The Netherlands), John J.P. Kastelein (Dept of vascular medicine, Academic Medical Centre, Amsterdam, The Netherlands). **NIGERIA:** Wilson Ehidiamen Sadoh (Dept. of Child Health, University of Benin Teaching Hospital, Benin City, Edo State, Nigeria). **NORWAY:** Martin P. Bogsrud (National Advisory Unit on FH, Oslo University Hospital, Oslo, Norway), Kirsten B. Holven (National Advisory Unit on FH, Oslo University Hospital, Oslo, Norway). **OMAN:** Khalid Al Rasadi (Medical Research Center, Sultan Qaboos University, Muscat, Oman; Dept. of Biochemistry, College of Medicine & Health Science, Sultan Qaboos University, Muscat, Oman). **PAKISTAN:** Fouzia Sadiq (Shifa Tameer-e-Millat University, Islamabad, Pakistan). **POLAND:** Maciej Banach (Dept. of Hypertension, Medical University of Lodz, Poland; Polish Mother's Memorial Hospital Research Institute PMMHRI, Lodz, Poland; Cardiovascular Research Centre, University of Zielona Gora, Zielona Gora, Poland), Krzysztof Chlebus (1st Dept. of Cardiology Medical University of Gdansk, National Centre of Familial Hypercholesterolaemia in Gdańsk, Gdańsk, Poland). **PORTUGAL:** Mafalda Bourbon (Unidade de Investigação e Desenvolvimento, Grupo de Investigação Cardiovascular, Departamento de Promoção da Saúde e Prevenção de Doenças Não Transmissíveis, Instituto Nacional de Saúde Doutor Ricardo Jorge; BioISI – Biosystems & Integrative Sciences Institute, Faculty of Sciences, University of Lisbon, Lisbon, Portugal), Francisco Araujo (Portuguese Atherosclerosis Society, Portugal). **ROMANIA:** Dan Gaita (Universitatea de Medicina si Farmacie Victor Babes, Institutul de Boli Cardiovasculare, Fundatia CardioPrevent, Timisoara, Romania). **RUSSIA:** Andrey V. Susekov (Academy for Postgraduate Medical Education, Faculty of Clinical Pharmacology and therapeutics, Ministry of Health, Russian Federation, Moscow, Russian Federation, Russia), Marat Ezhov (National Medical Research Centre of Cardiology of Ministry of Health of the Russian Federation, Moscow, Russia). **SAUDI ARABIA:** Fahad Alnouri (Cardiovascular Prevention Unit, Adult Cardiology Dept., Prince Sultan Cardiac Centre, Riyadh, Saudi Arabia), Khalid F. Alhabib (Dept. of Cardiac Sciences, King Fahad Cardiac Centre, College of Medicine, King Saud University, Riyadh, Saudi Arabia). **SERBIA:** Katarina Lalic (Faculty of Medicine University of Belgrade, Clinic for Endocrinology, Diabetes and Metabolic Diseases, Belgrade, Serbia). **SINGAPORE:** Tavintharan Subramaniam (Admiralty Medical Centre and Khoo Teck Puat Hospital, Yishun Health, Singapore). **SLOVAKIA:** Branislav Vohnout (Coordination Centre for Familial Hyperlipidemias, Slovak Medical University in Bratislava, Bratislava, Slovakia). **SLOVENIA:** Urh Groselj (Dept. of Pediatric Endocrinology, Diabetes and Metabolism, UMC – University Children's Hospital Ljubljana, Ljubljana, Slovenia; University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia). **SOUTH AFRICA:** Frederick J. Raal (Carbohydrate and Lipid Metabolism Research Unit, Faculty of Health Sciences,

University of the Witwatersrand, Johannesburg, South Africa), A. David Marais (Chemical Pathology, University of Cape Town Health Science Faculty, Cape Town, South Africa). **SPAIN:** Pedro Mata (Fundación Hipercolesterolemia Familiar, Madrid, Spain). **SWITZERLAND:** André R. Miserez (diagene Research Institute, Reinach, Switzerland; Faculty of Medicine, University of Basel, Basel, Switzerland; Swiss Society for Familial Forms of Hypercholesterolemia (SSFH), Reinach, Switzerland). **TAIWAN:** Ta-Chen Su (Dept.s of Internal Medicine and Environmental and Occupational Medicine, National Taiwan University Hospital, Taipei, Taiwan). **THAILAND:** Weerapan Khovidhunkit (Dept. of Medicine, Faculty of Medicine, Chulalongkorn University and King Chulalongkorn Memorial Hospital, Bangkok, Thailand). **TURKEY:** Meral Kayikcioglu (Dept. of Cardiology, Ege University Medical School, Izmir, Turkey). **UKRAINE:** Olena Mitchenko (Dyslipidaemia Dept., Institute of cardiology AMS, Kiev, Ukraine). **UNITED ARAB EMIRATES:** Wael Almahmeed (Heart and Vascular Institute, Cleveland Clinic Abu Dhabi, Abu Dhabi, UAE). **UNITED KINGDOM:** Handrean Soran (Manchester University NHS Foundation Trust, Manchester, United Kingdom). **URUGUAY:** Mario Stoll (GENYCO Program, Comisión Nacional de Salud Cardiovascular, Montevideo, Uruguay). **UZBEKISTAN:** Aleksandr B. Shek (Coronary Heart Disease and Atherosclerosis Dept., Republican Specialized Centre of Cardiology RSCC, Ministry of Health of Republic Uzbekistan, Tashkent, Uzbekistan). **VENEZUELA:** Marcos Miguel Lima-Martinez (Universidad de Oriente, Nucleo Bolívar, Ciudad Bolívar, Venezuela). **VIETNAM:** Thanh Huong Truong (Vietnam National Heart Institute, Bach Mai Hospital; Dept. of Cardiology, Hanoi Medical University, Hanoi, Vietnam).

FHSC INVESTIGATORS

ARGENTINA: Laura Schreier (Lab. of Lipids and Atherosclerosis. Faculty of Pharmacy and Biochemistry. University of Buenos Aires). **AUSTRALIA:** Jing Pang (School of Medicine, Faculty of Health and Medical Sciences, University of Western Australia, Perth,). **AUSTRIA:** Christoph Ebenbichler (Dept. of Internal Medicine I, Medical University of Innsbruck), Hans Dieplinger (Institute of Genetic Epidemiology, Medical University of Innsbruck), Reinhold Innerhofer (Austrian Atherosclerosis Society), Yvonne Winhofer-Stöckl (Division of Endocrinology & Metabolism, Dept. of Medicine III, Medical University of Vienna), Susanne Greber-Platzer (Dept. of Pediatrics & Adolescent Medicine, Medical University of Vienna), Konstantin Krychtiuk and Walter Speidl (Division of Cardiology, Dept. of Internal Medicine II, Medical University of Vienna), Hermann Toplak (Division of Endocrinology and Diabetology, University of Graz), Kurt Widhalm (Austrian Academic Institute for Nutritional Medicine, Vienna), Thomas Stulnig (Dept. of Endocrinology and Nephrologie, Klinik Hietzing, Vienna), Kurt Huber (Dept. of Cardiology, Klinik Ottakring, Vienna), Florian Höllerl (Dept. of Diabetology, Endocrinology & Nephrology, Klinik Landstrasse, Vienna), Gersina Rega-Kaun (Dept. of Endocrinology, Rheumatology & Acute Geriatrics, Klinik Ottakring, Vienna), Lucas Kleemann (Dept. of Internal Medicine I, Universitätsklinikum Krems), Martin Mäser (Dept. of Pediatrics, Academic Teaching Hospital, Landeskrankenhaus Feldkirch), Sabine Scholl-Bürgi (Dept. of Pediatrics I, University Clinic Innsbruck, Medical University of Innsbruck), Christoph Säly (Vivit Institute, Feldkirch), Florian J. Mayer (Dept. of Laboratory Medicine, Medical University of Vienna). **BELGIUM** Gaelle Sablon (Centres hospitaliers Jolimont), Eric Tarantino (Centres hospitaliers Jolimont) Charlotte Nzeyimana (Centres hospitaliers Jolimont). **BOSNIA AND HERZEGOVINA:** Lamija Pojskic (Cantonal Hospital Zenica), Ibrahim Sisic (Cantonal Hospital Zenica), Azra Durak Nalbantic (University Clinical Center Sarajevo). **BRAZIL:** Cinthia E. Jannes (Heart Institute InCor University of Sao Paulo), Alexandre C. Pereira (Heart Institute InCor University of Sao Paulo), Jose E. Krieger (Heart Institute InCor University of Sao Paulo). **BULGARIA:** Ivo Petrov (Dept. of Angiology and Electrophysiology, City Clinic, Sofia), Assen Goudev (University Hospital Queen Joanna, Clinic of Cardiology, Sofia), Fedya Nikolov (Dept. of Cardiology, Medical University of Plovdiv, Plovdiv), Snejana Tisheva (Dept. of Cardiology, Pulmonology and Endocrinology, Medical University of Pleven), Yoto Yotov (Dept. of Cardiology, Medical University of Varna), Ivajlo Tzvetkov (Dept. of Cardiology, Saint Anna University Hospital, Sofia). **CANADA:** Alexis Baass (McGill University); Jean Bergeron (CHU de Québec-Université Laval); Sophie Bernard (Université de Montreal); Diane Brisson (Ecogene-21 and Université de Montreal); Liam R. Brunham (University of British Columbia), Lubomira Cermakova (University of British Columbia); Patrick Couture (CHU de Québec-Université Laval); Gordon A. Francis (University of British Columbia), Daniel Gaudet (Ecogene-21 and Université de Montreal); Robert A. Hegele (Western University); Etienne Khoury (Ecogene-21 and Université de Montreal); G.B. John Mancini (University of British Columbia); Brian W. McCrindle (University of Toronto); Martine Paquette (Montreal Clinical Research Institute); Isabelle Ruel (Research Institute of the McGill University Health Centre). **CHILE:** Ada Cuevas (Clínica Las Condes), Dra Sylvia Asenjo (Center for Advanced Metabolic Medicine and Nutrition, Santiago). **CHINA:** Xumin Wang (Beijing Institute of Genomics, Chinese Academy of Sciences, Beijing), Kang Meng (Dept. of Cardiology, Beijing Anzhen Hospital, Capital Medical University, Beijing), Xiantao Song (Dept. of Cardiology, Beijing Anzhen Hospital, Capital Medical University, Beijing), Qiang Yong (Dept. of Ultrasound, Beijing Anzhen Hospital, Capital Medical University, Beijing), Tao Jiang (Dept. of Radiology, Beijing Anzhen Hospital, Capital Medical University, Beijing), Ziyou Liu (Dept. of Cardiology, The First Affiliated Hospital of Gannan Medical College, Ganzhou), Yanyu Duan (Dept. of Cardiology, The First Affiliated Hospital of Gannan Medical College, Ganzhou), Jing Hong (Dept. of Endocrinology and

Metabolism-Japan Friendship Hospital, Beijing), Pucong Ye (Dept. of Emergency, Beijing Shijitan Hospital, Capital Medical University, Beijing), Yan Chen (Dept. of Cardiology, Tianjin Medical University General Hospital, Tianjin), Jianguang Qi (Dept. of Paediatrics, Peking University First Hospital, Beijing), Zesen Liu (Dept. of Cardiology, Beijing Luhe Hospital, Capital Medical University, Beijing), Yuntao Li (Dept. of cardiology, Beijing Civil Aviation General Hospital, Beijing), Chaoyi Zhang (Dept. of cardiology, Beijing Zhongguancun Hospital, Beijing), Jie Peng (Dept. of Emergency, Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University, Guangzhou). Ya Yang (Dept. of Ultrasound, Beijing Anzhen Hospital, Capital Medical University), Wei Yu (Dept. of Radiology, Beijing Anzhen Hospital, Capital Medical University), Qian Wang (Dept. of Nuclear Medicine, Beijing Anzhen Hospital, Capital Medical University), Hui Yuan (Dept. of Clinical Laboratory, Beijing Anzhen Hospital, Capital Medical University), Shitong Cheng (Dept. of Laboratory Medicine, First Affiliated Hospital of China Medical University), Long Jiang (Beijing Anzhen Hospital, Capital Medical University, Beijing Institute of Heart, Lung and Blood Vessel Diseases), Mei Chong (Dept. of Ultrasound, Beijing Anzhen Hospital, Capital Medical University), Jian Jiao (Dept. of Nuclear Medicine, Beijing Anzhen Hospital, Capital Medical University), Yue Wu (Beijing Anzhen Hospital, Capital Medical University, Beijing Institute of Heart, Lung and Blood Vessel Diseases), Wenhui Wen (Beijing Anzhen Hospital, Capital Medical University, Beijing Institute of Heart, Lung and Blood Vessel Diseases), Liyuan Xu (Dept. of Ultrasound, Beijing Anzhen Hospital, Capital Medical University), Ruiying Zhang (Dept. of Ultrasound, Beijing Anzhen Hospital, Capital Medical University), Yichen Qu (Dept. of Ultrasound, Beijing Anzhen Hospital, Capital Medical University), Jianxun He (Dept. of Clinical Laboratory, Beijing Anzhen Hospital, Capital Medical University), Xuesong Fan (Dept. of Clinical Laboratory, Beijing Anzhen Hospital, Capital Medical University), Zhenjia Wang (Dept. of Radiology, Beijing Anzhen Hospital, Capital Medical University). **CHINA – HONG KONG:** Elaine Chow (The Chinese University of Hong Kong). **CROATIA:** Ivan Pećin (Dept. of Internal medicine, University Hospital Centre Zagreb, School of Medicine University of Zagreb), Dražen Perica (Dept. of Internal medicine, University Hospital Centre Zagreb, School of Medicine University of Zagreb). **CYPRUS:** Phivos Symeonides (Hippocrateon Private Hospital, Cyprus and Dept. of Pharmacy, Frederick University). **CZECH REPUBLIC:** National MedPed adult centres: Michal Vrablik, Richard Ceska (General University Hospital and 1st Medical Faculty, Charles University, Prague), Vladimir Soska (St. Anne's University Hospital, Brno), Lukas Tichy (Centre of Molecular Biology and Gene Therapy, University Hospital Brno, Brno). Regional MedPed adult centres and collaborators: Vera Adamkova, Jana Franekova (Institute for Clinical and Experimental Medicine, Prague), Renata Cifkova (Thomayer Hospital and 1st Medical Faculty, Charles University, Prague), Pavel Kraml, Katerina Vonaskova (University Hospital Kralovske Vinohrady and 3rd Medical Faculty, Prague), Jana Cepova (University Hospital Motol, Prague), Magdalena Dusejovska (General University Hospital and 1st Medical Faculty, Charles University, Prague), Lenka Pavlickova (Hospital Na Homolce, Prague), Vladimir Blaha (University Hospital and Medical Faculty, Charles University, Hradec Kralove), Hana Rosolova, Barbora Nussbaumerova, Roman Cibulka (University Hospital and Medical Faculty, Charles University, Plzen), Helena Vaverkova, Lubica Cibickova (University Hospital and Medical Faculty, Palacky University, Olomouc), Zdenka Krejsova (Lipid Outpatient Clinic, Karlovy Vary), Katerina Rehouskova (Regional Hospital Ceske Budejovice), Pavel Malina (Hospital Pisek), Milena Budikova (Outpatient Interkrim Clinics, Usti nad Labem), Vaclava Palanova (Regional Hospital Liberec), Lucie Solcova (Regional Hospital Trutnov), Alena Lubasova (Hospital Jablonec nad Nisou), Helena Podzimkova (Regional Hospital Jicin), Juraj Bujdak (Hospital of the Pardubice region), Jiri Vesely (Edumed, Nachod), Marta Jordanova, Tomas Salek (Regional T. Bata Hospital, Zlin), Robin Urbanek (Ormiga Medical House, Zlin), Stanislav Zemek (Lipid Outpatient Clinics, Uherske Hradiste), Jan Lacko (Hospital Trebic), Hana Halamkova, Sona Machacova (Hospital Vyskov), Sarka Mala (Outpatient Mephacentrum Clinics, Ostrava), Eva Cubova (Ostrava City Hospital, Ostrava), Katerina Valoskova (Hospital Frydek-Mistek), Lukas Burda (Hospital Krnov). **DENMARK:** Marianne Benn (Dept. of Clinical Biochemistry, Rigshospitalet, Copenhagen; Dept. of Clinical Medicine, Faculty of Health and medical Sciences, University of Copenhagen). **EGYPT:** Ahmed Bendary (Benha University, Faculty of medicine, Cardiology Dept.), Ihab Daoud (Italian Hospital, Cairo), Sameh Emil (Military medical academy), Atef Elbahry (Port-Foad cardiac Centre), Samir Rafla (Alexandria University, Faculty of medicine, Cardiology Dept.), Osama Sanad (Benha University, Faculty of medicine, Cardiology Dept.), Ghada Kazamel (National Heart Institute, Giza), Dr Mohamed Ashraf (National Heart Institute, Giza), Mohamed Sobhy (Alexandria University, Faculty of medicine, Cardiology Dept.), Amro El-Hadidy (Cairo University, Critical care Dept.), Mohamed Abdoul Shafy (Benha University, Faculty of medicine, Cardiology Dept.), Saif Kamal (Hayat hospital, Cairo), Mohamed Bendary (Cairo University, National Cancer Institute, Biostatistics Dept.). **ESTONIA:** Grete Talviste (Tallinn University of Technology). **FRANCE:** Denis Angoulvant (Tours university & CHRU de Tours, Cardiology Dept. & EA4245 T2i, Loire Valley Cardiovascular Collaboration, F37000, Tours), Sophie Beliard (APHM, Hôpital de la Conception, and Centre de Recherche en Cardiovasculaire et Nutrition C2VN, UMR 1263 INSERM 1260 INRAE Aix Marseille Université, Marseille), Franck Boccara (AP-HP, Hôpitaux de l'Est Parisien, Hôpital Saint-Antoine, Service de Cardiologie Faculty of Medicine, Sorbonne Université, National Institute of Health and Medical Research, INSERM, UMR_S 938, UPMC, Paris), Bertrand cariou (L'institut du thorax, Endocrinology Dept., CIC 1413 INSERM, CHU de Nantes, Nantes), Valérie Carreau (La Pitié Salpêtrière hospital APHP), Alain Carrie (Sorbonne University, Inserm, Institute of Cardiometabolism and Nutrition (ICAN), UMR_S1166, APHP, Dept. of Biochemistry, Obesity and Dyslipidemia Genetics Unit, Hôpital de la Pitié, Paris), Sybil Charrieres (Hospices Civils de Lyon, Endocrinology Dept., Bron, University of Lyon 1), Yves Cottin (Dept. of Cardiology, CHU de Dijon-Bourgogne, 21000

Dijon), Mathilde Di-Fillipo (Dept. of Biochemistry and Molecular Biology, Centre de Biologie et de Pathologie Est, Hospices Civils de Lyon, Bron), Pierre Henri Ducluzeau (Internal Medicine Dept., Unit of Endocrinology, CHRU Tours, F-37044 Tours), Sonia Dulong (CHU Pontchaillou - Centre de Prévention Cardio-vasculaire, Pôle CPV, Rennes), Vincent Durlach (Pôle Thoracique / Cardiaque / Vasculaire, Centre Hospitalo-Universitaire, Reims), Michel Farnier (Lipid Clinic, Point Médical and Dept. of Cardiology, CHU Dijon-Bourgogne, Dijon), Emile Ferrari (Dept. of Cardiology, University Hospital of Nice, Nice), Dorota Ferrieres (Toulouse Rangueil University Hospital, Dept. of Cardiology; UMR1027, INSERM), Jean Ferrieres (Toulouse Rangueil University Hospital, Dept. of Cardiology; UMR1027, INSERM), Antonio Gallo (Sorbonne University and Pitié Salpêtrière hospital APHP), Regis hankard (Nutrition Unit, Regional University Hospital Centre, Tours), Jocelyne Inamo (Dept. of Cardiology CHU Martinique, University Hospital of Martinique, Fort de France, France.), Julie Lemale (Dept. of Nutrition and Gastroenterology Pediatric Unit, Trousseau Hospital (AP-HP), Sorbonne University, Paris), Philippe Moulin (Hospices Civils de Lyon, Endocrinology Dept., Bron, University of Lyon 1), François Paillard (CHU Pontchaillou - Centre de Prévention Cardio-vasculaire, Pôle CPV, Rennes), Noel Peretti (Hospices Civils de Lyon, Service de Gastroentérologie Hépatologie et Nutrition Pédiatrique, HFME, Bron), Agnès Perrin (Hospices Civils de Lyon, Endocrinology Dept., Bron, University of Lyon 1), Alain Pradignac (Service de Médecine Interne, Endocrinologie, Nutrition, Hôpital de Hautepierre, Strasbourg), Jean Pierre Rabes (Laboratory of Biochemistry and Molecular Genetics, Hospital Ambroise Paré-GHU APHP, Université Paris-Saclay, Boulogne-Billancourt), Vincent Rigalleau (Endocrinology - Diabetology - Nutrition, CHU de Bordeaux, Hôpital Haut-Lévêque, Pessac), Ariane Sultan (Département d'Endocrinologie, Diabète, Nutrition et CIC Inserm 1411, CHU de Montpellier, Montpellier), François Schiele (University Hospital Jean Minjoz, Dept. of Cardiology, Besançon), Patrick Tounian (Dept. of Nutrition and Gastroenterology Pediatric Unit, Trousseau Hospital (AP-HP), Sorbonne University, Paris), René Valero (APHM, Hôpital de la Conception, and Centre de Recherche en Cardiovasculaire et Nutrition C2VN, UMR 1263 INSERM 1260 INRAE Aix Marseille Université, Marseille), Bruno Verges (Service Endocrinologie, Diabétologie et Maladies Métaboliques, Hôpital du Bocage, Dijon), Cécile Yelnik (Département de Médecine Interne et Immunologie Clinique Centre de Référence des Maladies Auto-immunes Systémiques Rares du Nord et Nord-Ouest de France (CeRAINO) CHU de Lille, Lille France), Olivier Ziegler (Dept. of Endocrinology, Diabetes and Nutrition, Hôpital Brabois Adultes, CHRU de Nancy, Vandoeuvre Lès Nancy).
GERMANY: Ira an Haack (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg), Nina Schmidt (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg), Alexander Dressel (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg), Isabel Klein (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg), Jutta Christmann (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg), Antonia Sonntag (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg), Christine Stumpp (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg), Diana Boger (DACH Society for the Prevention of Heart and Circulatory Diseases registered society, Hamburg), Dana Biedermann (Centre for Internal Medicine with Gastroenterology and Nephrology, Lipid Clinic, Charité Berlin), Monica Maria Novoa Usme (Centre for Internal Medicine with Gastroenterology and Nephrology, Lipid Clinic, Charité Berlin), F. Ulrich Beil (MVZ Fachbereich Endokrinologie, Diabetologie, Adipositas und Lipide; Universitätsklinikum Eppendorf, Hamburg), Gerald Klose (Joint Practice for Internal Medicine, Gastroenterology and Cardiology Beckenbauer & Maierhof, Bremen), Christel König (Clinic of Internal Medicine, Lipid Clinic, Klinikum Links der Weser, Bremen), Ioanna Gouni-Berthold (Polyclinic for Endocrinology, Diabetes, and Preventive Medicine, University of Cologne), Britta Otte (Medical Clinic D, Lipid Clinic, University Hospital Münster), Gereon Böll (Reha-Klinik Königsfeld, Ennepetal), Anja Kirschbaum (Reha-Klinik Königsfeld, Ennepetal), Jürgen Merke (Private practice, Bensheim), Johannes Scholl (Prevention First, Frankfurt a.M.), Thomas Segiet (Diabetologische Schwerpunktpraxis Speyer), Marco Gebauer (Median Park-Klinik, Bad Dürkheim), Florentina Predica (Median Park-Klinik, Bad Dürkheim), Manfred Mayer (Private practice, Mannheim), Frank Leistikow (Nierenzentrum Mannheim), Sabine Füllgraf-Horst (Private Practice Lanzgarten, Mannheim), Cornelius Müller (Private practice, Mannheim), Melanie Schüler (Private practice, Hirschberg-Großsachsen), Judith Wiener (Private practice, Weinheim), Konrad Hein (Private practice, Böblingen), Peter Baumgartner (Private practice, Schwetzingen), Stefan Kopf (Klinik für Endokrinologie, Stoffwechsel und Klinische Chemie Universitätsklinikum, Heidelberg), Reinhold Busch (Private practice Ethianum, Heidelberg), Michael Schömig (Private practice, Heilbronn), Stephan Matthias (Private practice, Heilbronn), Nicole Allendorf-Ostwald (Dialysezentrum Bruchsal-Bretten, Bruchsal), Bruno Fink (Noxygen Science GmbH, Elzach), Dieter Böhm (Private Practice Panorama-Praxis, Marbach), Alexander Jäkel (Private Practice, Praxiszentrum Wiehre), Ann-Cathrin Koschker (Lipid Clinic University Clinic, Würzburg), Rüdiger Schweizer (Private Practice, Adelsried), Anja Vogt (Medical clinic and Polyclinic IV, Ludwig-Maximilian University, Munich), Klaus Parhofer (Medical clinic and Polyclinic IV, Ludwig-Maximilian University, Munich), Wolfgang König (Clinic for Heart and Circulatory Diseases, German Heart Centre Munich, Technical University Munich, Munich; DZHK German Centre for Cardiovascular Research, Partner Site Munich Heart Alliance, Munich), Wibke Reinhard (Clinic for Heart and Circulatory Diseases, German Heart Centre Munich, Technical University Munich, Munich, Germany; DZHK German Centre for Cardiovascular Research, Partner Site Munich Heart Alliance, Munich), Andrea Bäßler (Lipid Clinic; Clinic and Policlinic for Internal Medicine II; University Clinic Regensburg), Alexander Stadelmann (Cardiology Am Weißen Turm, Nürnberg), Volker Schrader (Cardiopulmonale Schwerpunktpraxis, Nürnberg), Julius Katzmann (Clinic and

Policlinic for Cardiology, Dept. for Internal Medicine, Neurology and Dermatology, University Hospital Leipzig), Adrienne Tarr (Clinic and Policlinic for Cardiology, Dept. for Internal Medicine, Neurology and Dermatology, University Hospital Leipzig), Elisabeth Steinhagen-Thiessen (Centre for Internal Medicine with Gastroenterology and Nephrology, Lipid Clinic, Charité Berlin), Ursula Kassner (Centre for Internal Medicine with Gastroenterology and Nephrology, Lipid Clinic, Charité Berlin), Gerret Paulsen (Private Practice, Berlin), Jürgen Homberger (Rehazentrum Westend, Berlin), Claudia Zemmrich (Private Practice, Berlin), Wolfgang Seeger (Private Practice Helle Mitte, Berlin), Kathrin Biolik (KfH-Nierenzentrum Berlin-Köpenick, Berlin), Dorothee Deiss (Medicover Berlin-Mitte, Berlin), Corinna Richter (Medicover Berlin-Mitte, Berlin), Elina Pantchechnikova (Private Practice, Berlin), Elena Dorn (Private Practice, Berlin), Ulrike Schatz (Dept. of Internal Medicine III, University Hospital Carl Gustav Carus at the Technische Universität Dresden), Ulrich Julius (Dept. of Internal Medicine III, University Hospital Carl Gustav Carus at the Technische niversität Dresden), Antje Spens (MVZ Stoffwechselmedizin Leipzig), Tobias Wiesner (MVZ Stoffwechselmedizin Leipzig), Michael Scholl (Joint Practice for Dialysis, Mühlhausen). **GREECE:** Christos V. Rizos (Dept. of Internal Medicine, Faculty of Medicine, University of Ioannina, Ioannina), Nikolaos Sakkas (Dept. of Internal Medicine, Faculty of Medicine, University of Ioannina, Ioannina), Moses Elisaf (Dept. of Internal Medicine, Faculty of Medicine, University of Ioannina, Ioannina), Ioannis Skoumas (1st Dept. of Cardiology, Medical School, National and Kapodistrian University of Athens, Hippokration Hospital, Athens), Konstantinos Tziomalos (1st Propedeutic Dept. of Internal Medicine, Medical School, Aristotle University of Thessaloniki, AHEPA Hospital, Thessaloniki), Loukianos Rallidis (Dept. of Cardiology, Medical School, National and Kapodistrian University of Athens, Attikon University General Hospital, Athens), Vasileios Kotsis (Dept. of Internal Medicine, Medical School, Aristotle University of Thessaloniki, Papageorgiou General Hospital Thessaloniki, Thessaloniki), Michalis Doumas (Dept. of Internal Medicine, Medical School, Aristotle University of Thessaloniki, Hippokration General Hospital, Thessaloniki), Vasileios Athyros (Dept. of Internal Medicine, Medical School, Aristotle University of Thessaloniki, Hippokration General Hospital, Thessaloniki), Emmanouil Skalidis (Cardiology Clinic, University General Hospital of Heraklion, Heraklion), Genovefa Kolovou (Metropolitan Hospital, Cardiometabolic Center, Lipoprotein Apheresis and Lipid Disorders Clinic, Athens, Greece Cardiology Clinic, Onassis Cardiac Surgery Centre, Athens), Anastasia Garoufi (Dept. of Pediatrics, Medical School, National and Kapodistrian University of Athens, 2ndPediatrics Clinic, General Children's Hospital "Pan. & Aglaia Kyriakou", Athens), Eleni Bilianou (Cardiology Clinic, 'Tzaneio' General Hospital, Piraeus), Iosif Koutagiar (1st Dept. of Cardiology, Medical School, National and Kapodistrian University of Athens, Hippokration Hospital, Athens), Dimitrios Agapakis (1st Propedeutic Dept. of Internal Medicine, Medical School, Aristotle University of Thessaloniki, AHEPA Hospital, Thessaloniki), Estela Kiouri (Dept. of Cardiology, Medical School, National and Kapodistrian University of Athens, Attikon University General Hospital, Athens), Christina Antza (Dept. of Internal Medicine, Medical School, Aristotle University of Thessaloniki, Papageorgiou General Hospital Thessaloniki, Thessaloniki), Niki Katsiki (Dept. of Internal Medicine, Medical School, Aristotle University of Thessaloniki, Hippokration General Hospital, Thessaloniki), Evangelos Zacharis (Cardiology Clinic, University General Hospital of Heraklion, Heraklion), Achilleas Attilakos (Dept. of Pediatrics, Medical School, National and Kapodistrian University of Athens, C' Pediatrics Clinic, Attikon University General Hospital, Athens), George Sfikas (Dept. of Internal Medicine, 424 Military Hospital, Thessaloniki), Charalambos Koumaras (Dept. of Internal Medicine, 424 Military Hospital, Thessaloniki), Panagiotis Anagnostis (Dept. of Endocrinology, Police Medical Centre of Thessaloniki, Thessaloniki), Georgia Anastasiou (Dept. of Internal Medicine, Faculty of Medicine, University of Ioannina, Ioannina), George Liamis (Dept. of Internal Medicine, Faculty of Medicine, University of Ioannina, Ioannina), Amalia-Despoina Koutsogianni (Dept. of Internal Medicine, Faculty of Medicine, University of Ioannina, Ioannina). **HUNGARY:** Zsolt Karányi (Dept. of Internal Medicine, Faculty of Medicine, University of Debrecen), Mariann Harangi (Dept. of Internal Medicine, Faculty of Medicine, University of Debrecen), László Bajnok (1st Dept. of Medicine, University of Pécs, Pécs), Mária Audikovszky (Metabolic Centre, Szent Imre University Teaching Hospital, Budapest), László Márk (2nd Dept. of Medicine e Cardiology, Pandy Kalman Bekes County Hospital, Gyula), Béla Benczúr (1st Dept. of Internal Medicine Cardiology/Nephrology, Balassa János County Hospital, Szekszárd), István Reiber (Fejér County St György Teaching Hospital, Székesfehérvár), Gergely Nagy (Borsod-Abaúj-Zemplén County University Teaching Hospital, Miskolc), András Nagy (1st Dept. of Internal Medicine Bács-Kiskun County Hospital-Cardiology, Kecskemét). **INDIA:** Lakshmi Lavanya Reddy (P. D Hinduja Hospital and Medical Research Centre, Mahim, Mumbai), Swarup A. V Shah (P. D Hinduja Hospital and Medical Research Centre, Mahim, Mumbai), Chandrashekhar K. Ponde (P. D Hinduja Hospital and Medical Research Centre, Mahim, Mumbai), Jamshed J. Dalal (Kokilaben Dhidubhai Ambani Hospital and Medical Research Institute, Mumbai), Jitendra P. S. Sawhney (Sir Ganga Ram Hospital, New Delhi), Ishwar C. Verma (Sir Ganga Ram Hospital, New Delhi). **IRAQ:** Mays Altaey (Elemamayn Al Kadhimayin Medical City), Khalid Al-Jumaily (Ministry of Health Ibn AlNafees Hospital), Dilshad Rasul (Ministry of health, Kurdistan, Erbil; Rizgary Hospital), Ali Fawzi abdalsahib (Ministry of Health Diwaniya Hospital), Amer Abdl Jabbar (Ministry of health, Salahaldeen, Balad hospital), Mohanad Al-ageedi (Al-Mamorah scientific Bureau). **IRELAND:** Ruth Agar (Tallaght University Hospital). **ISRAEL:** Hofit Cohen (Bert W. Strassburger Lipid Centre, the Chaim Sheba Medical Centre, Tel Hashomer), Avishay Ellis (Internal Medicine, Rabin Medical Centre, Petah Tikva), Dov Gavishv (Dept. of Medicine, Wolfson Medical Centre, Holon), Dror Harats (Bert W. Strassburger Lipid Centre, the Chaim Sheba Medical Centre, Tel Hashomer), Yaacov Henkin (Dept. of Cardiology, Soroka University Medical Centre, Beer-Sheva), Hila Knobler (Diabetes and Metabolic Disease Unit,

Kaplan Medical Centre, Rehovot), Leah Leavit (Cardiology Dept. and Centre for Treatment and Prevention of Atherosclerosis, Hadassah Hebrew University Medical Centre, Jerusalem), Eran Leitersdorf (Cardiology Dept. and Centre for Treatment and Prevention of Atherosclerosis, Hadassah Hebrew University Medical Centre, Jerusalem), Ardon Rubinstein (Dept. of Metabolic Clinic, Tel Aviv Medical Centre, Tel Aviv), Daniel Schurr (Cardiology Dept. and Centre for Treatment and Prevention of Atherosclerosis, Hadassah Hebrew University Medical Centre, Jerusalem), Shoshi Shpitzen (Cardiology Dept. and Centre for Treatment and Prevention of Atherosclerosis, Hadassah Hebrew University Medical Centre, Jerusalem), Auryan Szalat (Cardiology Dept. and Centre for Treatment and Prevention of Atherosclerosis, Hadassah Hebrew University Medical Centre, Jerusalem). **ITALY:** Manuela Casula (Epidemiology and Preventive Pharmacology Service SEFAP, Dept. of pharmacological and biomolecular sciences, University of Milan; IRCCS MultiMedica, Sesto S. Giovanni MI), Veronica Zampoleri (Centre for the study of atherosclerosis E.Bassini, Cinisello Balsamo, Milano, Italy), Marta Gazzotti (Epidemiology and Preventive Pharmacology Service SEFAP, Dept. of pharmacological and biomolecular sciences, University of Milan.), Elena Olmastroni (Epidemiology and Preventive Pharmacology Service SEFAP, Dept. of pharmacological and biomolecular sciences, University of Milan). **JAPAN:** Kota Matsuki (National Cerebral and Cardiovascular Centre Research Institute), Mika Hori (National Cerebral and Cardiovascular Centre Research Institute), Masatsune Ogura (National Cerebral and Cardiovascular Centre Research Institute), Daisaku Masuda (Rinku General Medical Centre), Takuya Kobayashi (Rinku General Medical Centre), Kumiko Nagahama (Rinku General Medical Centre). **KUWAIT:** Mohammed Al-Jarallah (Sabah Al Ahmad Cardiac Centre), Mirjana Radovic (Sabah Al Ahmad Cardiac Centre). **KYRGYZSTAN:** Olga Lunegova (Kyrgyz State Medical Academy), Erkayim Bektasheva (Kyrgyz State Medical Academy), Elyor Khodzhiboboev (Kyrgyz State Medical Academy). **LATVIA:** Andrejs Erglis (Research Institute of Cardiology and Regenerative Medicine, Faculty of Medicine, University of Latvia, Pauls Stradins Clinical University Hospital, Riga), Dainus Gilis (University of Latvia, Pauls Stradins Clinical University Hospital, Riga), Georgijs Nesterovics (Faculty of Medicine, University of Latvia, Riga), Vita Saripo (Faculty of Medicine, University of Latvia, Pauls Stradins Clinical University Hospital, Riga), Ruta Meiere (University of Latvia, Pauls Stradins Clinical University Hospital, Riga), Arta Upena-RozeMicena (University of Latvia, Pauls Stradins Clinical University Hospital, Riga), Elizabete Terauda (University of Latvia, Pauls Stradins Clinical University Hospital, Riga). **LEBANON:** Selim Jambart (Saint Joseph University of Beirut Faculty of Medicine, Hôtel Dieu Hospital, Beirut), Petra El Khoury (Laboratory of Biochemistry and Molecular Therapeutics, Faculty of Pharmacy, Saint Joseph University, Beirut), Sandy Elbitar (Laboratory of Biochemistry and Molecular Therapeutics, Faculty of Pharmacy, Saint Joseph University, Beirut), Carine Ayoub (Laboratory of Biochemistry and Molecular Therapeutics, Faculty of Pharmacy, Saint Joseph University, Beirut), Youmna Ghaleb (Laboratory of Biochemistry and Molecular Therapeutics, Faculty of Pharmacy, Saint Joseph University, Beirut). **LITHUANIA:** Urte Aliosaitiene (Vilnius University Faculty of Medicine, Vilnius, Lithuania; Vilnius University Hospital Santaros Klinikos, Vilnius), Sandra Kutkiene (Vilnius University Faculty of Medicine, Vilnius, Lithuania; Vilnius University Hospital Santaros Klinikos, Vilnius). **MALAYSIA:** Noor Alicezah Mohd Kasim (UiTM Teaching Hospital and Faculty of Medicine, Universiti Teknologi MARA UiTM, Sg Buloh Campus, Selangor), Noor Shafina Mohd Nor (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Anis Safura Ramli (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM and Faculty of Medicine, UiTM), Suraya Abdul Razak (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Alyaa Al-Khateeb (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM and Faculty of Medicine, UiTM), Siti Hamimah Sheikh Abdul Kadir (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM and Faculty of Medicine, UiTM), Suhaila Abd Muid (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM and Faculty of Medicine, UiTM), Thuhairah Abdul Rahman (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Sazzli Shahlan Kasim (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Ahmad Bakhtiar Md Radzi (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Khairul Shafiq Ibrahim (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Salmi Razali (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Zaliha Ismail (Faculty of Medicine, UiTM), Rohana Abdul Ghani (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Muhammad Iqbal Abdul Hafidz (UiTM Teaching Hospital and Faculty of Medicine, UiTM), Ang Lim Chua (Faculty of Medicine, UiTM), Marshima Mohd Rosli (Faculty of Information Technlogy and Computer Science, UiTM), Muthukkaruppan Annamalai (Faculty of Information Technlogy and Computer Science, UiTM), Lay Kek Teh (Integrative Pharmacogenomics Institute iPROMISE and Faculty of Pharmacy, Universiti Teknologi MARA, Puncak Alam, Selangor), Rafezah Razali (UiTM Teaching Hospital, Puncak Alam, Shah Alam, Selangor), Yung An Chua (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM, UiTM), Azhari Rosman (National Heart Institute IJN, Kuala Lumpur), Abdul Rais Sanusi (National Heart Institute IJN, Kuala Lumpur), Nor Azian Abdul Murad (UKM Medical Molecular Biology Institute UMBI, Universiti Kebangsaan Malaysia UKM Medical Centre, Kuala Lumpur), A Rahman A Jamal (UKM Medical Molecular Biology Institute UMBI, Universiti Kebangsaan Malaysia UKM Medical Centre, Kuala Lumpur), Sukma Azureen Nazli (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM, UiTM), Aimi Zafira Razman (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM, UiTM), Norhidayah Rosman (Institute of Pathology, Laboratory and Forensic Medicine I-PPerForM, UiTM), Radzi Rahmat (Faculty of Medicine, UiTM), Nur Suhana Hamzan (Faculty of Medicine, UiTM). **MALTA:** C. Azzopardi (University of Malta Medical School, Dept. of Medicine; Lipid Clinic, Mater Dei Hospital). **MEXICO:** Roopa Mehta (Unidad de Investigación de Enfermedades Metabolicas and Departamento de Endocrinologia y Metabolismo, Instituto Nacional de Ciencias

Médicas y Nutrición Salvador Zubiran, México City), Alexandro J. Martagon (Unidad de Investigación de Enfermedades Metabólicas, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, México and Tecnologico de Monterrey, Escuela de Medicina y Ciencias de la Salud, Monterrey, N.L., México), Gabriela A. Galan Ramirez (Unidad de Investigación de Enfermedades Metabólicas, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, México), Neftali E Antonio Villa (Faculty of Medicine, Universidad Nacional Autónoma de México. Mexico), Arsenio Vargas Vazquez (Faculty of Medicine, Universidad Nacional Autónoma de México. Mexico), Daniel Elias-Lopez (Unidad de Investigación de Enfermedades Metabolicas and Departamento de Endocrinologia y Metabolismo, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubiran, México City), Gustavo Gonzalez Retana (Departamento de Endocrinologia y Metabolismo, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubiran, México City), Betsabel Rodriguez (Departamento de Endocrinologia y Metabolismo, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubiran, México City), Jose J. Ceballos Macías (Secretaria de la Defensa Nacional SEDENA, Mexico City), Alejandro Romero Zazueta (Hospital Angeles, Culiacan,Sinaloa), Rocio Martinez Alvarado (Instituto Nacional de Cardiologia – Ignacio Chavez, Mexico City), Julieta D. Morales Portano (Centro Médico Nacional 20 de Noviembre ISSSTE, Mexico City), Humberto Alvares Lopez (Torre Medyca, Saltillo, Coahuila), Leobardo Sauque-Reyna (Instituto de Diabetes Obesidad y Nutricion S.C., Cuernavaca, Morelos), Laura G. Gomez Herrera (Hospital General Zona #2 IMSS, Saltillo, Coahuila), Luis E. Simental Mendia (Instituto Mexicano del Seguro Social (IMSS), Durango), Humberto Garcia Aguilar (Hospital Angeles Lomas, Estado de Mexico), Elizabeth Ramirez Cooremans (Clinica Condomedics, Torreon, Coahuila), Berenice Peña Aparicio (Instituto Nacional de Cardiologia – Ignacio Chavez, Mexico City), Victoria Mendoza Zubieta (Centro Médico Nacional S. XXI, Instituto Mexicano del Seguro Social, Mexico City), Perla A. Carrillo Gonzalez (Hospital Regional Lic. Adolfo Lopez Mateos, ISSSTE, Mexico City), Aldo Ferreira-Hermosillo (Centro Médico Nacional S. XXI, Instituto Mexicano del Seguro Social, Mexico City), Nacu Caracas Portilla (Instituto Nacional de Cardiologia – Ignacio Chavez, Mexico City), Guadalupe Jimenez Dominguez (Hospital General Zona #46 IMSS, Villahermosa and Hospital Angeles de Villahermosa, Tabasco), Alinna Y. Ruiz Garcia (Hospital AMERIMED, Cancun), Hector E. Arriaga Cazares (Centro Médico Nacional del Noreste IMSS, Monterrey and Tecnologico de Monterrey, Escuela de Medicina y Ciencias de la Salud, Monterrey, N.L., México), Jesus R. Gonzalez (Hospital de Cardiologia de Aguascalientes, Aguascalientes), Carla V. Mendez Valencia (Unidad Médica de Alta Especialidad 2 (UMAE), IMSS, Ciudad Obregon Sonora), Francisco G. Padilla (Cardiologia Clinica e Intervencionista, Guadalajara, Jalisco), Ramon Madriz Prado (Secretaria de la Defensa Nacional (SEDENA), Mexico City), Manuel O. De los Rios Ibarra (SINACOR, Culiacan, Sinaloa), Ruy D. Arjona Villicaña (Hospital Regional de Alta Especialidad, Merida, Yucatan), Karina J. Acevedo Rivera (Unidad de Endocrinolgia, Tijuana, Baja California), Ricardo Allende Carrera (Hospital de Especialidades Médicas de la Salud, San Luis Potosi), Jose A. Alvarez (Hospital Central Norte de PEMEX, Mexico City), Jose C. Amezcua Martinez (Hospital de Especialidades El Angel, Uruapan, Michoacan), Manuel de los Reyes Barrera Bustillo (Clinica de Merida, Yucatan), Gonzalo Carazo Vargas (Instituto Nacional de Cardiologia – Ignacio Chavez, Mexico City), Roberto Contreras Chacon (Instituto Cardiovascular de Penjamo, Guanajuato), Mario H. Figueroa Andrade (Hospital General de Zona 1, Colima), Ashanty Flores Ortega (Servicios de Salud del Estado de Hidalgo, Pachuca, Hidalgo), Hector Garcia Alcala (Hospital Christus Muguerza UPAEP, Puebla), Laura E. Garcia de Leon (Centro Hospitalario La Concepcion, Saltillo, Coahuila), Berenice Garcia Guzman (Hospital Angeles del Pedregal, Mexico City), Jose J. Garduño Garcia (UAE Mexico – Hospital General Regional #251, IMSS, Toluca, Estado de Mexico), Juan C. Garnica Cuellar (Hospital de Especialidades del Centro Médico Nacional – La Raza, IMSS, Mexico City), Jose R. Gomez Cruz (Hospital Angeles de Xalapa, Veracruz, Mexico), Anell Hernandez Garcia (Clinica , Oaxaca), Jesus R. Holguin Almada (Casa del diabetico Sonora, Mexico), Ursulo Juarez Herrera (Instituto Nacional de Cardiologia – Ignacio Chavez, Mexico City), Fabiola Lugo Sobrevilla (IMSS, Reynosa, Tamaulipas), Eduardo Marquez Rodriguez (Instituto Jaliscience de Metabolismo, Guadalajara, Jalisco), Cristina Martinez Sibaja (Facultad de Medicina Miguel Aleman, Veracruz), Alma B. Medrano Rodriguez (Torre Medyca, Saltillo, Coahuila), Jose C. Morales Oyervides (Hospital General Regional IMSS 270, Reynosa, Tamaulipas), Daniel I. Perez Vazquez (Smart Heart, Cholula Puebla), Eduardo A. Reyes Rodriguez (Hospital Regional PEMEX, Ciudad Madero, Tamaulipas), Ma. Ludivina Robles Osorio (Universidad Autónoma de Querétaro, Queretaro), Juan Rosas Saucedo (Instituto de Diabetes de Celaya, Guanajuato), Margarita Torres Tamayo (Instituto Nacional de Cardiologia – Ignacio Chavez, Mexico City), Luis A. Valdez Talavera (Centro Hospitalario La Concepcion, Saltillo, Coahuila), Luis E. Vera Arroyo (Centro el Corazon de Coahuila, Torreon, Coahuila), Eloy A. Zepeda Carrillo (Hospital Civil Tepic, Nayarit). **NETHERLANDS:** Erik S Stroes (dept of vascular medicine, Amsterdam university, Amsterdam). **NIGERIA:** Alphonsus Isara (Dept. of Community Health, University of Benin Teaching Hospital, Benin City, Edo State), Darlington E. Obaseki (Dept. of Pathology, University of Benin Teaching Hospital, Benin City, Edo State). **OMAN:** Khalid Al-Waili (Dept. of Biochemistry, Sultan Qaboos University Hospital, Muscat), Fahad Al-Zadjali (Dept. of Biochemistry, College of Medicine & Health Science, Sultan Qaboos University, Muscat), Ibrahim Al-Zakwani (Dept. of Pharmacology, College of Medicine & Health Science, Sultan Qaboos University, Muscat), Mohammed Al-Kindi (Dept. of Biochemistry, College of Medicine & Health Science, Sultan Qaboos University, Muscat), Suad Al-Mukhaini (Dept. of Nursing, Sultan Qaboos University Hospital, Muscat), Hamida Al-Barwani (Dept. of Biochemistry, College of Medicine & Health Science, Sultan Qaboos University, Muscat). **PAKISTAN:** Asim Rana (Dept. of Medicine & Critical Care, Bahria International Hospital), Lahore Saeed Ullah Shah (Shifa International Hospital, Islamabad), Fahad Al-Nouri

(Prince Sultan Cardiac Centre, Saudi Arabia). **POLAND:** Ewa Starostecka (Polish Mother's Memorial Hospital Research Institute PMMHRI, Lodz), Agnieszka Konopka (Polish Mother's Memorial Hospital Research Institute PMMHRI, Lodz), Joanna Lewek (Dept. of Hypertension, Chair of Nephrology and Hypertension, Medical University of Lodz; Polish Mother's Memorial Hospital Research Institute PMMHRI, Lodz), Marcin Bartłomiejczyk (Dept. of Hypertension, Chair of Nephrology and Hypertension, Medical University of Lodz; Polish Mother's Memorial Hospital Research Institute PMMHRI, Lodz), Mariusz Gąsior (3rd Dept. of Cardiology, School of Medicine with the Division of Dentistry in Zabrze, Medical University of Silesia, Katowice; Silesian Centre for Heart Diseases in Zabrze), Krzysztof Dyrbuś (3rd Dept. of Cardiology, School of Medicine with the Division of Dentistry in Zabrze, Medical University of Silesia, Katowice; Silesian Centre for Heart Diseases in Zabrze), Jacek Jóźwiak (Dept. of Family Medicine and Public Health, Institute of Medicine, University of Opole, Opole), Marcin Gruchała (1-st Dept. of Cardiology, Medical University of Gdansk), Marcin Pajkowski (National Centre of Familial Hypercholesterolaemia, Dept. of Cardiac, Diagnostics, 1-st Dept. of Cardiology, Medical University of Gdansk), Marzena Romanowska-Kocejko (National Centre of Familial Hypercholesterolaemia, University Clinical Centre in Gdańsk), Marta Żarczyńska-Buchowiecka (National Centre of Familial Hypercholesterolaemia, Dept. of Cardiac Diagnostics, Medical University of Gdansk), Magdalena Chmara (Dept. of Biology and Medical Genetics Medical University of Gdańsk), Bartosz Wasąg (Dept. of Biology and Medical Genetics Medical University of Gdańsk), Aleksandra Parczewska (National Centre of Familial Hypercholesterolaemia, 1-st Dept. of Cardiology, Medical University of Gdansk), Natasza Gilis-Malinowska (National Centre of Familial Hypercholesterolaemia, 1-st Dept. of Cardiology, Medical University of Gdansk), Justyna Borowiec-Wolna (National Centre of Familial Hypercholesterolaemia, 1-st Dept. of Cardiology, Medical University of Gdansk), Aneta Stróżyk (National Centre of Familial Hypercholesterolaemia, University Clinical Centre in Gdańsk), Marlena Woś (National Centre of Familial Hypercholesterolaemia, 1-st Dept. of Cardiology, Medical University of Gdansk), Aleksandra Michalska-Grzonkowska (National Centre of Familial Hypercholesterolaemia, University Clinical Centre in Gdańsk). **PORTUGAL:** Ana Margarida Medeiros (Instituto Nacional de Saúde Doutor Ricardo Jorge, Departamento de Promoção da Saúde e Prevenção de Doenças Não Transmissíveis Unidade de I&D, Grupo de Investigação Cardiovascular, Lisboa), Ana Catarina Alves (Instituto Nacional de Saúde Doutor Ricardo Jorge, Departamento de Promoção da Saúde e Prevenção de Doenças Não Transmissíveis Unidade de I&D, Grupo de Investigação Cardiovascular, Lisboa), Francisco Silva (Hospital Dr. Nélio Mendonça, Serviço de Pediatria, Funchal), Goreti Lobarinhas (Hospital Santa Maria Maior Barcelos, Serviço de Pediatria), Isabel Palma (Centro Hospitalar Universitário do Porto, Hospital de Sto Antonio, Serviço Endocrinologia), Jose Pereira de Moura (Centro Hospitalar e Universitário de Coimbra, Serviço Medicina Interna), Miguel Toscano Rico (Centro Hospitalar Lisboa Central, Hospital de Sta Marta, Serviço Medicina Interna), Quitéria Rato (Centro Hospitalar de Setúbal, Hospital S. Bernardo, Serviço de Cardiologia), Patrícia Pais (Centro Hospitalar do Barreiro Montijo, Serviço de Pediatria), Susana Correia (Centro Hospitalar do Barreiro Montijo, Serviço de Pediatria), Oana Moldovan (Centro Hospitalar de Lisboa Norte, Hospital de Sta. Maria, Serviço de Genética Médica), Maria João Virtuoso (Centro Hospitalar do Algarve - Faro, Serviço de Pediatria), Francisco Araujo (Hospital Lusiadas, Departamento de Medicina Interna), Jose Miguel Salgado (Hospital Senhora da Oliveira, Serviço de Pediatria), Ines Colaço (Centro Hospitalar Universitario Lisboa Norte, Hospital de Sta Maria, Serviço Medicina Interna). **ROMANIA:** Andreea Dumitrescu (Fundatia CardioPrevent), Calin Lengher (Fundatia CardioPrevent), Svetlana Mosteoru (Institutul de Boli Cardiovasculare Timisoara). **RUSSIA:** Alexey Meshkov (Federal State Institution, National Medical Research Centre for Preventive Medicin, of the Ministry of Healthcare of the Russian Federation Moscow), Alexandra Ershova (Federal State Institution, National Medical Research Centre for Preventive Medicine of the Ministry of Healthcare of the Russian Federation Moscow), Tatiana Rozkova (Federal State Institution National Medical Research Centre for cardiology Ministry of Health n Federation, Moscow), Victoria Korneva (Petrozavodsk State university, faculty therapy Dept., Pertozavodsk. North-Western Region), Kuznetsova T. Yu (Petrozavodsk State university, faculty therapy Dept., Pertozavodsk, North-Westen Regio), Vitaliy Zafiraki (Kuban State Medical University Krasnodar City. South Region), Mikhail Voevoda (Federal Research Centre of fundamental and translational medicine, Novosibirsk), Victor Gurevich (Centre of Atherosclerosis and Lipid Disorders, Saint-Petersburg State University; North-Western State Medical University named after I.I. Mechnikov, Saint-Petersburg), Dmitry Duplyakov (Samara Regional Cardiology Dispensary, Samara), Yulia Ragino (Research Institute of Internal and Preventive Medicine-Branch of Institute of Cytology and Genetics, Siberian Branch of Russian Academy of Sciences, Novosibirsk), Maya Safarova (National Medical Research Centre of Cardiology, Ministry of Health of the Russian Federation, Moscow), Igor Shaposhnik (South-Ural State Medical University of the Ministry of Health of the Russian Federation, Chelyabinsk). **SAUDI ARABIA:** Fahmi Alkaf (Cardiovascular Prevention Unit. Adult Cardiology Dept. Prince Sultan Cardiac Centre Riyadh), Alia Khudari (Cardiovascular Prevention Unit. Adult Cardiology Dept. Prince Sultan Cardiac Centre Riyadh), Nawal Rwaili (Cardiovascular Prevention Unit. Adult Cardiology Dept. Prince Sultan Cardiac Centre Riyadh), Faisal Al-Allaf (Dept. of Medical Genetics, Faculty of Medicine, Umm Al-Qura University, Makkah. Saudi Arabia), Mohammad Alghamdi (National Guard Hospital, Riyadh), Mohammed A Batais (Dept. of Family and Community Medicine, College of Medicine, King Saud University, Riyadh), Turky H Almigbal (Dept. of Family and Community Medicine, College of Medicine, King Saud University, Riyadh), Abdulhalim Kinsara (King Saud bin Abdulaziz University for Health Sciences, College of Medicine, King Abdul Aziz Medical City, Jeddah), Ashraf Hammouda Ahmed AlQudaimi (Saud Al Babtain Cardiac Centre, Dammam), Zuhier Awan (King Abdulaziz University, Jeddah),

Omer A Elamin (King Faisal Specialist Hospital & Research Centre, Jeddah), Hani Altaradi (Dept. of Cardiac Sciences, King Fahad Cardiac Centre, College of Medicine, King Saud University, Riyadh). **SERBIA:** Natasa Rajkovic (Faculty of Medicine University of Belgrade, Clinic for Endocrinology, Diabetes and Metabolic Diseases, Belgrade), Ljiljana Popovic (Faculty of Medicine University of Belgrade, Clinic for Endocrinology, Diabetes and Metabolic Diseases, Belgrade), Sandra Singh (Faculty of Medicine University of Belgrade, Clinic for Endocrinology, Diabetes and Metabolic Diseases, Belgrade), Ljubica Stosic (Faculty of Medicine University of Belgrade, Clinic for Endocrinology, Diabetes and Metabolic Diseases, Belgrade), Iva Rasulic (Clinic for Endocrinology, Diabetes and Metabolic Diseases, Belgrade), Nebojsa M. Lalic (Faculty of Medicine University of Belgrade, Clinic for Endocrinology, Diabetes and Metabolic Diseases, Belgrade). **SINGAPORE:** Carolyn Lam (National Heart Centre), Tan Ju Le (National Heart Centre), Eric Lim Tien Siang (National Heart Centre), Sanjaya Dissanayake (Khoo Teck Puat Hospital), Justin Tang I-Shing (Khoo Teck Puat Hospital), Tai E Shyong (National University Hospital and NUS Saw Swee Hock School of Public Health), Terrance Chua Siang Jin (National Heart Centre, Singhealth). **SLOVAKIA:** Katarina Raslova (Coordination Centre for Familial Hyperlipidemias, Slovak Medical University in Bratislava), Karin Balinth (Dept. of Internal Medicine, Hospital Levice), Ingrid Buganova (Diabetes Clinic, MEDIVASA Ltd, Žilina), Lubomira Fabryova (Metabolklinik Ltd, Bratislava), Michaela Kadurova (Lipid Clinic, Poprad), Alexander Klabnik (Cardiology Clinic, Námestovo), Miriam Kozárová (IVth Dept. of Internal Medicine, Medical Faculty, PJ Šafárik University, Košice), Jana Sirotiakova (Dept. of Internal Medicine, Hospital Myjava). **SLOVENIA:** Tadej Battelino (UMC – University Children's Hospital Ljubljana; University of Ljubljana, Faculty of Medicine, Ljubljana), Jernej Kovac (UMC – University Children's Hospital Ljubljana), Matej Mlinaric (UMC – University Children's Hospital Ljubljana), Ursa Sustar (UMC – University Children's Hospital Ljubljana), Katarina Trebusak Podkrajsek (UMC – University Children's Hospital Ljubljana; University of Ljubljana, Faculty of Medicine, Ljubljana), Zlatko Fras (UMC Ljubljana), Borut Jug (UMC Ljubljana), Matija Cevc (UMC Ljubljana). **SOUTH AFRICA:** Gillian Joan Pilcher (Carbohydrate and Lipid Metabolism Research Unit, Faculty of Health Sciences, University of the Witwatersrand), D J Blom (University of Cape Town), K H Wolmarans (University of Cape Town), B C Brice (University of Cape Town). **SPAIN:** Ovidio Muñiz-Grijalvo (Dept. of Internal Medicine, Hospital Virgen del Rocío, Sevilla), Jose Luis Díaz-Díaz (Dept. of Internal Medicine, Hospital Abente y Lago, A Coruña), Leopoldo Pérez de Isla (Dept. of Cardiology, Hospital Clínico San Carlos, IDISSC, Madrid) Francisco Fuentes (Lipids and Atherosclerosis Unit, IMIBIC/Reina Sofia University Hospital, Cordoba), Lina Badimon (Programa-ICCC Cardiovascular, Institut de Recerca del Hospital Santa Creu i Sant Pau, IIB, Barcelona). **SWITZERLAND:** François Martin (diagene Research Institute, Kaegenstrasse, Reinach), Angela Lux (diagene Research Institute, Kaegenstrasse, Reinach). **TAIWAN:** Nien-Tzu Chang (School of Nursing, College of Medicine National Taiwan University). **THAILAND:** Poranee Ganokroj (Chulalongkorn University and King Chulalongkorn Memorial Hospital). **TURKEY:** Mehmet Akbulut (Firat University Medical Faculty Dept. of Cardiology), Gökhan Alici (Kosuyolu Traning and Research Hospital), Fahri Bayram (ErciYes University Medical Faculty Dept. of Endocrinology and Metabolism), Levent Hürkan Can (Ege University Medical Faculty Dept. of Cardiology), Ahmet Celik (Mersin University Medical Faculty Dept. of Cardiology), Ceyhun Ceyhan (Adnan Menderes University Medical Faculty Dept. of Cardiology), Fatma Yilmaz Coskun (Gaziantep University Medical Faculty Dept. of Cardiology), Mesut Demir (Cukurova University Medical Faculty Dept. of Cardiology), Sabri Demircan (Florence Nightingale Hospital), Volkan Dogan (Sitki Kocman University Medical Faculty Dept. of Cardiology), Emre Durakoglugil (Recep Tayyip Erdogan University Medical Faculty Dept. of Cardiology), İbrahim Etem Dural (Kocatepe University Medical Faculty Dept. of Cardiology), Omer Gedikli (Ondokuz Mayis University Medical Faculty Dept. of Cardiology), Aysa Hacioglu (ErciYes University Medical Faculty Dept. of Endocrinology and Metabolism), Muge Ildizli (Sultanbeyli State Hospital), Salih Kilic (Nizip State Hospital), Bahadir Kirilmaz (Onsekiz Mart University Medical Faculty), Merih Kutlu (Karadeniz Technical University Medical Faculty Dept. of Cardiology), Aytekin Oguz (Medeniyet University Medical Faculty Dept. of Internal Diseases), Oner Ozdogan (Tepecik Traning and Research Hospital), Ersel Onrat (Kocatepe University Medical Faculty Dept. of Cardiology), Savas Ozer (Karadeniz Technical University Medical Faculty Dept. of Cardiology), Tevfik Sabuncu (Harran University Medical Faculty Dept. of Endocrinology and Metabolism), Tayfun Sahin (Kocaeli University Medical Faculty Dept. of Cardiology), Fatih Sivri (Adnan Menderes University Medical Faculty Dept. of Cardiology), Alper Sonmez (Gulhane Training and Research Hospital Endocrinology and Metabolism Clinic), Ahmet Temizhan (Yuksek Ihtisas Training and Research Hospital, Dept. of Cardiology), Selim Topcu (Ataturk University Medical Faculty Dept. of Cardiology), Lale Tokgozoglu (Hacettepe University Medical Faculty Dept. of Cardiology), Abdullah Tuncez (Selcuk University Medical Faculty Dept. of Cardiology), Mirac Vural (Medeniyet University Medical Faculty Dept. of Internal Diseases), Mustafa Yenercag (Samsun Traning and Research Hospital), Dilek Yesilbursa (Uludag University Medical Faculty Dept. of Cardiology), Zerrin Yigit (Istanbul University Haseki Cardiology Institution), Aytul Belgi Yildirim (Akdeniz University Medical Faculty Dept. of Cardiology), Aylin Yildirir (Baskent University Medical Faculty Dept. of Cardiology), Mehmet Birhan Yilmaz (Cumhuriyet University Medical Faculty Dept. of Cardiology). **UNITED ARAB EMIRATES:** Bassam Atallah (Cleveland Clinic Abu Dhabi), Mahmoud Traina (Cleveland Clinic Abu Dhabi), Hani Sabbour (Cleveland Clinic Abu Dhabi), Dana Abdul Hay (Sheikh Khalifa Medical City), Neama Luqman (Sheikh Khalifa Medical City), Abubaker Elfatih (Sheikh Khalifa Medical City), Arshad Abdulrasheed (Sheikh Khalifa Medical City). **UNITED KINGDOM:** See Kwok (Manchester University NHS Foundation Trust). **URUGUAY:** Nicolas Dell Oca (GENYCO program, Comisión Nacional de Salud Cardiovascular), Ximena Reyes (GENYCO program, Comisión

Nacional de Salud Cardiovascular). **UZBEKISTAN:** Rano B. Alieva (CAD and Atherosclerosis Dept., Republican Specialized Centre of Cardiology RSCC, Ministry of Health of Republic Uzbekistan, Tashkent), Ravshanbek D. Kurbanov (Republican Specialized Centre of Cardiology RSCC, Ministry of Health of Republic Uzbekistan, Tashkent), Shavkat U. Hoshimov (CAD and Atherosclerosis Dept., RSCC, Ministry of Health of Republic Uzbekistan, Tashkent), Ulugbek I. Nizamov (CAD and Atherosclerosis Dept., RSCC, Ministry of Health of Republic Uzbekistan, Tashkent), Adolat V. Ziyaeva (Laboratory of Biochemistry and Immunoassay of RSCC, Ministry of Health of Republic Uzbekistan, Tashkent), Guzal J. Abdullaeva (Senior Researcher of the Molecular Genetic Research Group of RSCC, Ministry of Health of Republic Uzbekistan, Tashkent). **VIETNAM:** Doan Loi Do (Vietnam National Heart Institute, Bach Mai Hospital, Hanoi; Dept. of Cardiology, Hanoi Medical University, Hanoi), Mai Ngoc Thi Nguyen (Vietnam National Heart Institute, Bach Mai Hospital, Hanoi; Dept. of Cardiology, Hanoi Medical University, Hanoi), Ngoc Thanh Kim (Vietnam National Heart Institute, Bach Mai Hospital, Hanoi; Dept. of Cardiology, Hanoi Medical University, Hanoi), Thanh Tung Le (Vietnam National Heart Institute, Bach Mai Hospital, Hanoi), Hong An Le (School of Medicine and Pharmacy, Vietnam National University, Hanoi).

APPENDIX 2 – SUPPLEMENTAL MATERIAL

SUPPLEMENTAL METHODS

The methods of the FHSC are described in further detail within the FHSC protocol, which can be accessed (open access) at "*Atheroscler Suppl* 2016; 22: 1–32", https://doi.org/10.1016/j.atherosclerosissup.2016.10.001.

Data entry criteria

The FHSC Registry inclusion criteria comprise both adults and children, with a clinical and/or genetic diagnosis of heterozygous (HeFH) or homozygous (HoFH) FH. Where the diagnosis is clinical, this must conform with accepted clinical criteria (or modified criteria thereof) such as the Dutch Lipid Clinic Network (DLCN), Make Early Diagnosis to Prevent Early Deaths (MEDPED), Simon-Broome criteria, Canadian definition of FH, or Japanese Atherosclerosis Society FH criteria. Where data is available (through cascade screening or other), unaffected (non-FH) relatives of index cases are also included. Exclusion criteria includes cases relying only on a self-reported history of FH and those with secondary causes of hypercholesterolaemia. Additionally, quality and operational criteria are required: the data must be in electronic format and should add relevant information to the registry; participants included should be representative of the target population and the data must have been collected rigorously, with defined inclusion/exclusion criteria and standard definitions of variables; data sharing must be compliant with local ethical and security requirements, data must have been de-identified prior to transferring to the FHSC, and a data sharing agreement between the data supplier and the FHSC must be in place prior to any data sharing with the FHSC.

Data management

The FHSC Global Registry draws upon data from an international consortium of investigators with access to patients managed in specialist clinics which serve as national, regional or local registries of FH. Individual data from these diverse data sources are then harmonised and merged into a single global FH Registry. Data is transferred by the appointed FHSC country lead (responsible for the coordination of regional or country-level data from individual sites within the specific country) to the FHSC Coordinating Centre (Imperial College London, United Kingdom) through the bespoke FHSC web-based platform (Supplemental Figure 1). The platform accepts the transfer of individual participant data as whole datasets or entered individually by the lead investigators or their affiliated centres via a bespoke individual data entry application in a pseudoanonymised fashion. The data shared by each provider are checked for quality, consistency, and accuracy at the Coordinating Centre first through automated data validation algorithms upon reception of the data and then manually at the analysis stage. Any discrepancies are resolved by raising queries with the respective individual investigators. The information is saved into a central Data Warehouse securely on a restricted server at the Coordinating Centre in strict adherence with data safety protocols and regulatory requirements. A comprehensive data dictionary has been produced for multiple variables which allow standardisation of information irrespective of its source. Within the FHSC data warehouse, country (provider)-specific bespoke electronic algorithms mapped to the data dictionary automatically transform incoming data into a standardised output, thus allowing seamless mapping of incoming data and merging into a single coherent FHSC global dataset.

Present Study

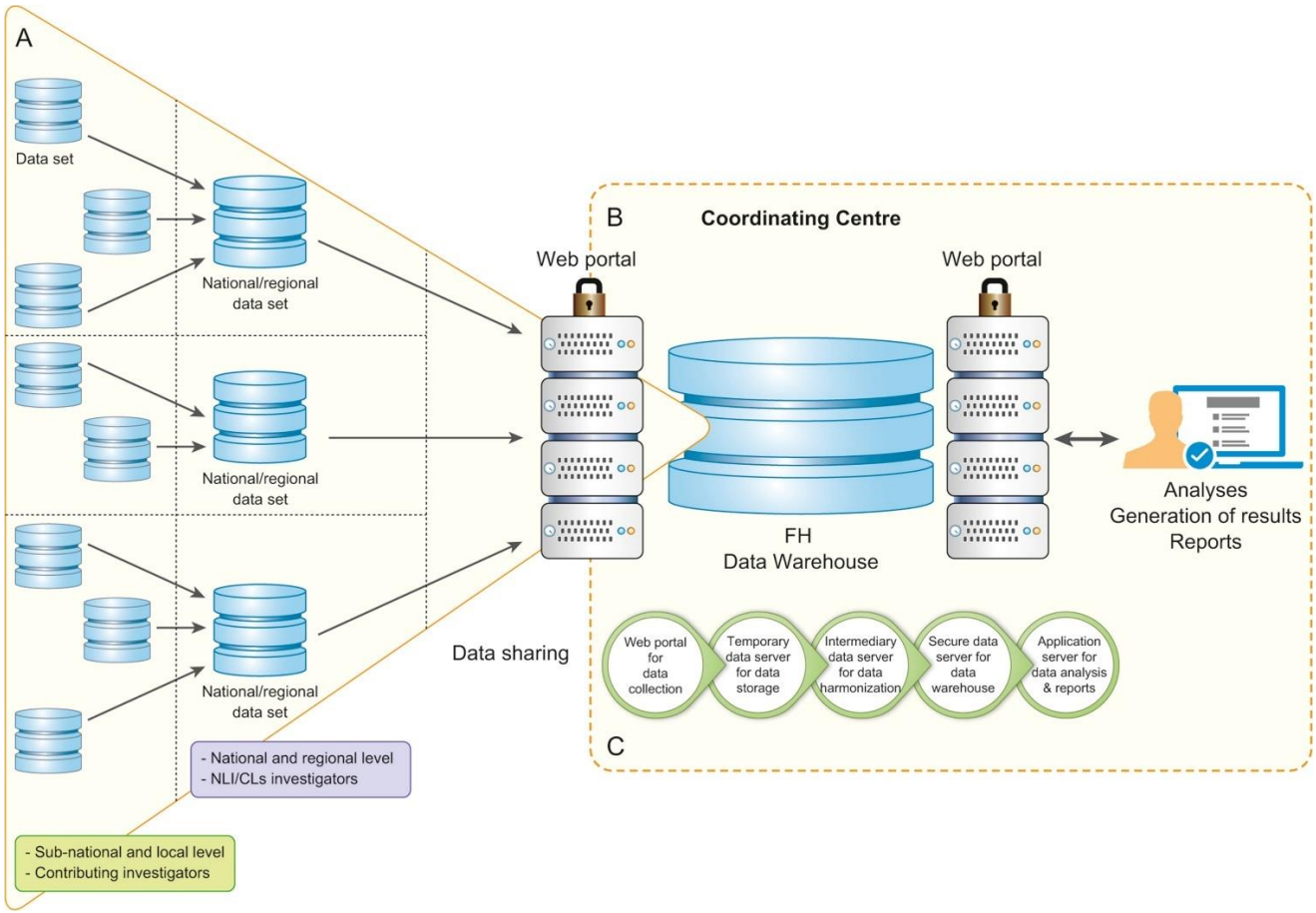
In the present study we conducted a cross-sectional assessment of adult patients (age ≥18 years) with probable or definite HeFH (possible and definite using Simon-Broome criteria) at the time individuals were entered into the respective parent registries. Descriptive assessment of characteristics of the cohort included demographics,

cardiovascular risk factors (CVRF) and co-morbidities, time of FH diagnosis, lipid levels, proportion of patients taking lipid-lowering medication (LLM) and type of medication, and among patients on LLM, the proportion of patients below recommended LDL-C goals.

Merged data were analysed at individual-level on the composite dataset. Where a data supplier/investigator of a specific country was not granted approval by their local ethical/research committee to provide individual-level data to the FHSC, similar analyses to those conducted on the merged dataset were conducted by the corresponding investigator on their respective individual-level dataset, and the aggregated results were shared with the FHSC. In this instance, summary data for each relevant output of interest were combined with the results from the merged dataset in case of categorical variables, whereas summary of results for quantitative variables are presented separately. In all cases except France (French Registry of Familial Hypercholesterolaemia) data were provided at an individual-level and were merged and analysed as one composite dataset. A total of 42,167 adults with HeFH from 56 countries were included in the present analysis, Supplemental Figure 2 (including 37,972 cases with individual-level data available and 4,195 cases with aggregated data [French registry]).

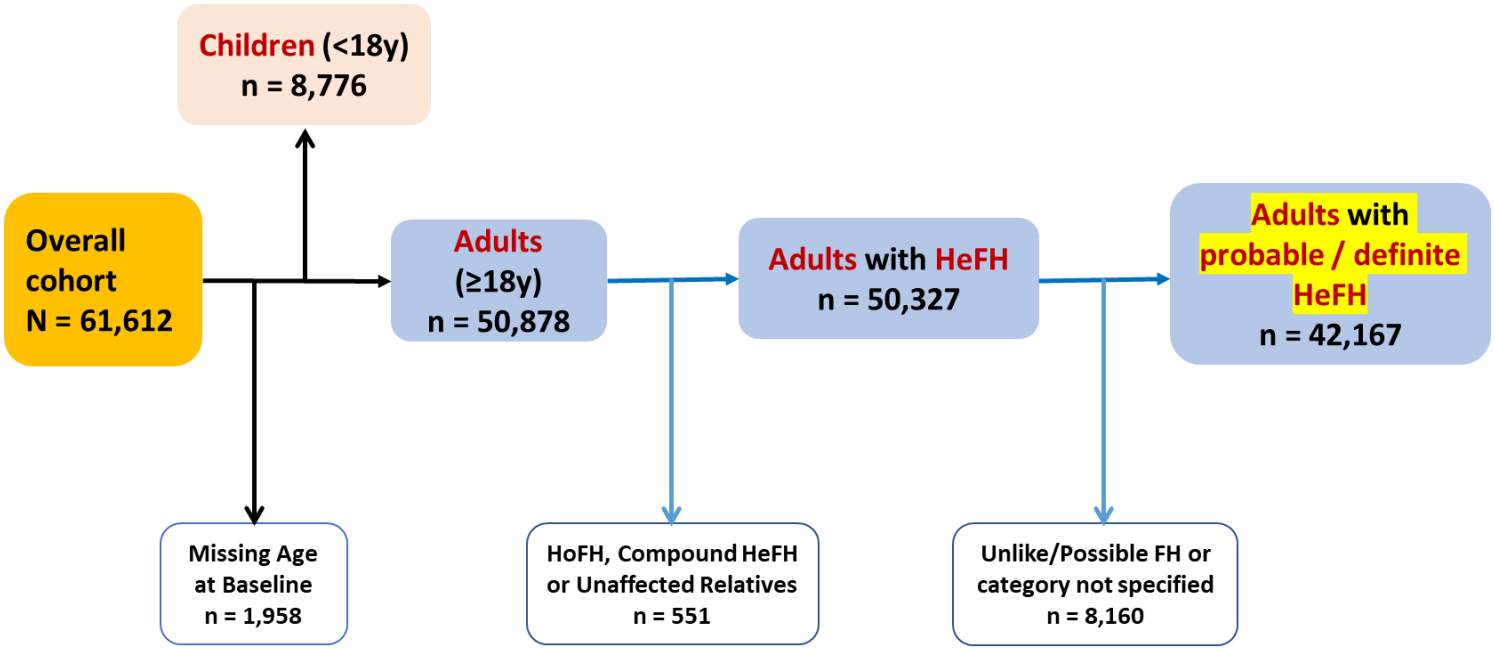
SUPPLEMENTAL FIGURES

Supplemental Figure 1. Data flow and management in the Familial Hypercholesterolaemia Studies Collaboration (FHSC) Registry.



Reproduced with permission from "EAS Familial Hypercholesterolaemia Studies Collaboration. *Atheroscl Suppl* 2016; 22: 1–32. doi: 10.1016/j.atherosclerosissup.2016.10.001". ©2016 Elsevier Ireland Ltd. FH, Familial Hypercholesterolaemia; NLI/CL, National Lead investigator/Country Lead.

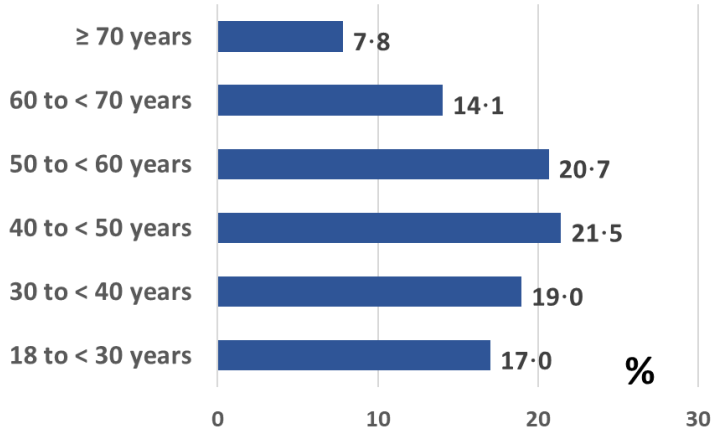
Supplemental Figure 2. Selection of adult participants with Heterozygous Familial Hypercholesterolaemia for inclusion in the present study from the overall FHSC Registry participants.



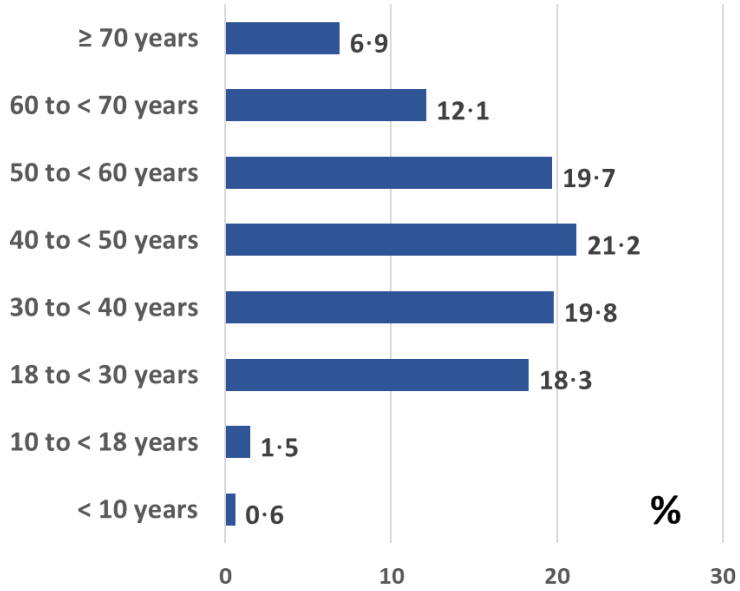
Further details are described in the Methods section of the Article. FH, Familial Hypercholesterolaemia; HeFH, Heterozygous Familial Hypercholesterolaemia; HoFH, Homozygous Familial Hypercholesterolaemia; y, years.

Supplemental Figure 3. Distribution of participants by age at entry in the registry (A) and at FH diagnosis (B).

(A) By age at entry in the registry.

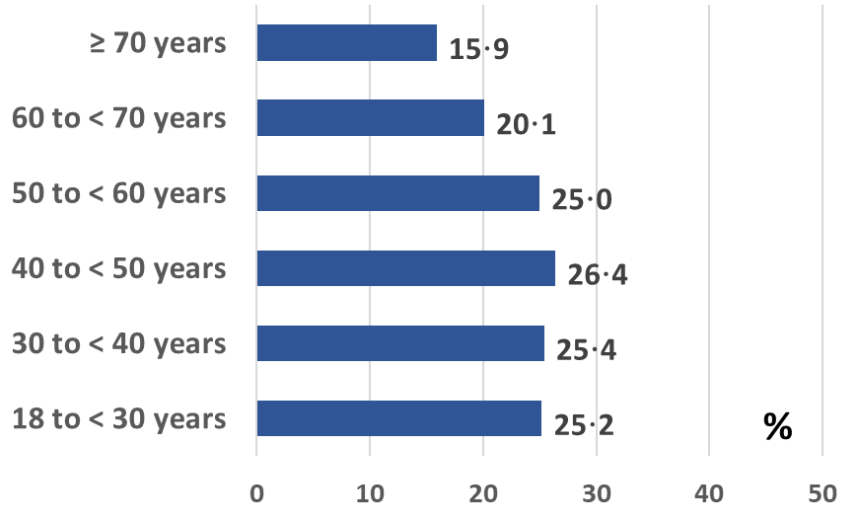


(B) By age at FH diagnosis.

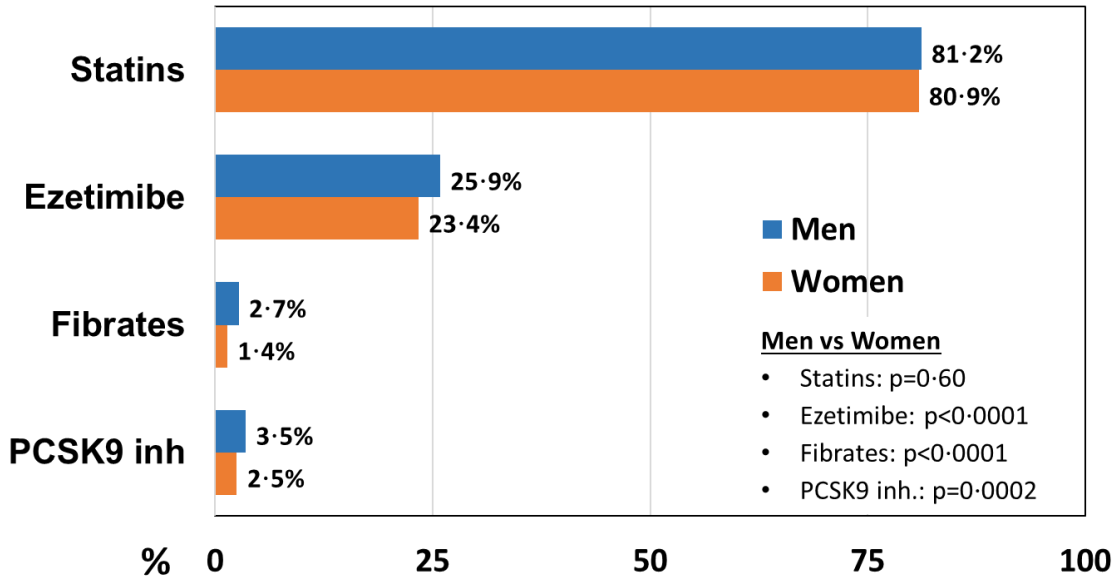


Inclusion criteria for the study was age at entry in the registry 18 years or older. FH, familial hypercholesterolaemia.

Supplemental Figure 4. Prevalence of smoking (current smokers) by age.



Supplemental Figure 5. Type of lipid-lowering medication stratified by sex among participants taking lipid lowering medication at registry entry.

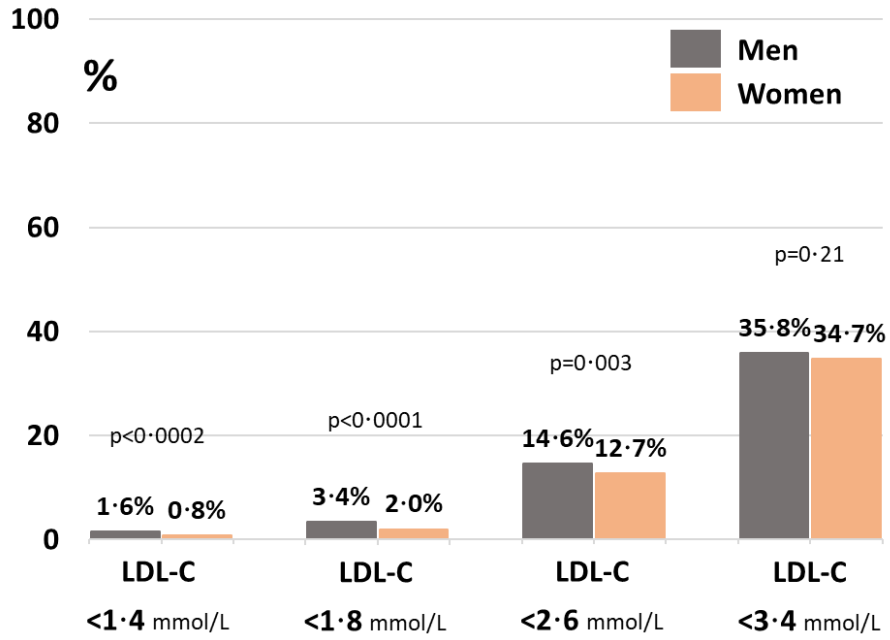


Combination therapy
(Statins +/- ezetimibe +/- PCSK9 inh)
Men: 22·7%
Women: 19·9%
Men vs Women, p<0·0001

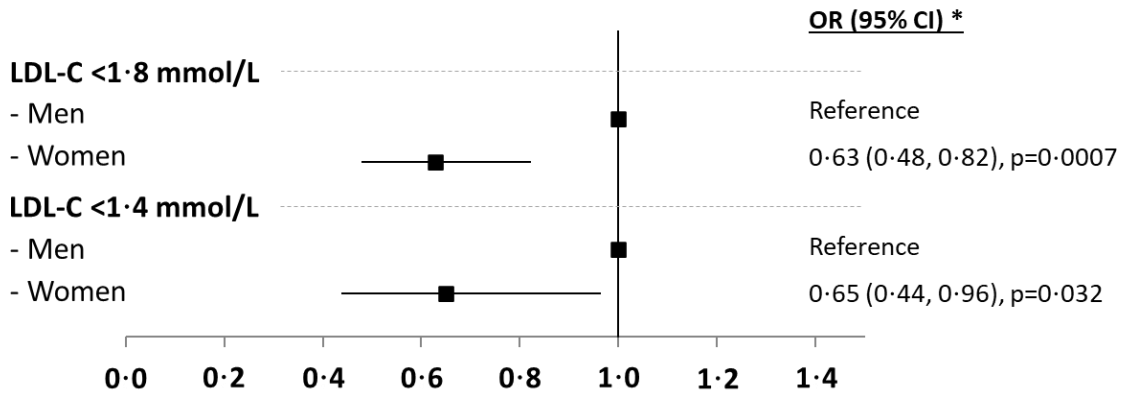
PCSK9 inh, proprotein convertase subtilisin/kexin type 9 inhibitors.

Supplemental Figure 6. Attainment of LDL-C targets among patients on LLM (statins, ezetimibe and/or PCSK9 inhibitors) stratified by sex.

(A) Percentage of patients on lipid-lowering medication with an LDL-C below different thresholds stratified by sex.



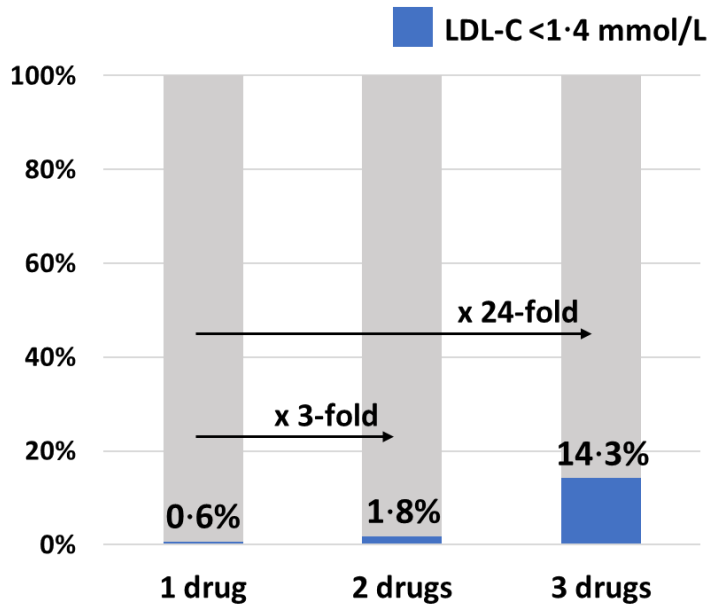
(B) Association of sex with having an LDL-C below different thresholds.



* Adjusted by age, baseline comorbidities (hypertension, diabetes, smoking, body mass index), high-density lipoprotein cholesterol, log(triglycerides), lipid/lowering medication, and index case status. CI, confidence interval, LDL-C, low-density lipoprotein cholesterol; OR, odds ratio.

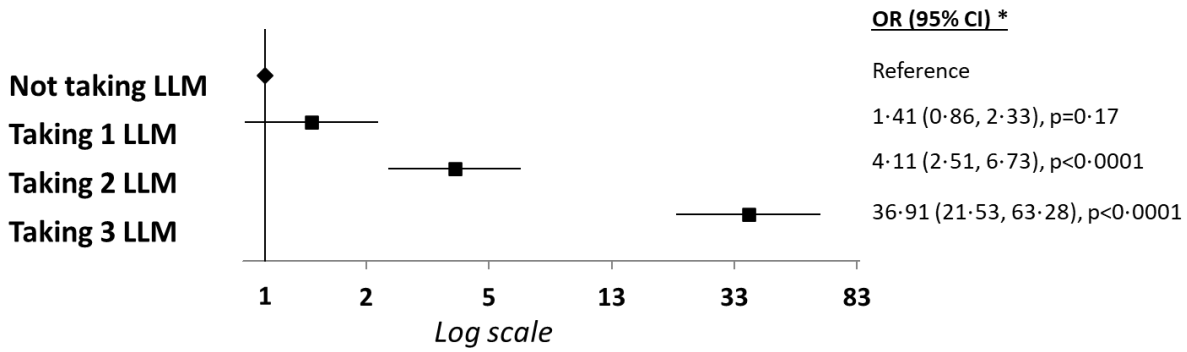
Supplemental Figure 7. Attainment of LDL-C <1·4 mmol/L among patients on lipid-lowering medication (statins, ezetimibe and/or PCSK9 inhibitors)

(A) Percentage of patients with an LDL-C <1·4 mmol/L based on the number of lipid-lowering medication taken.



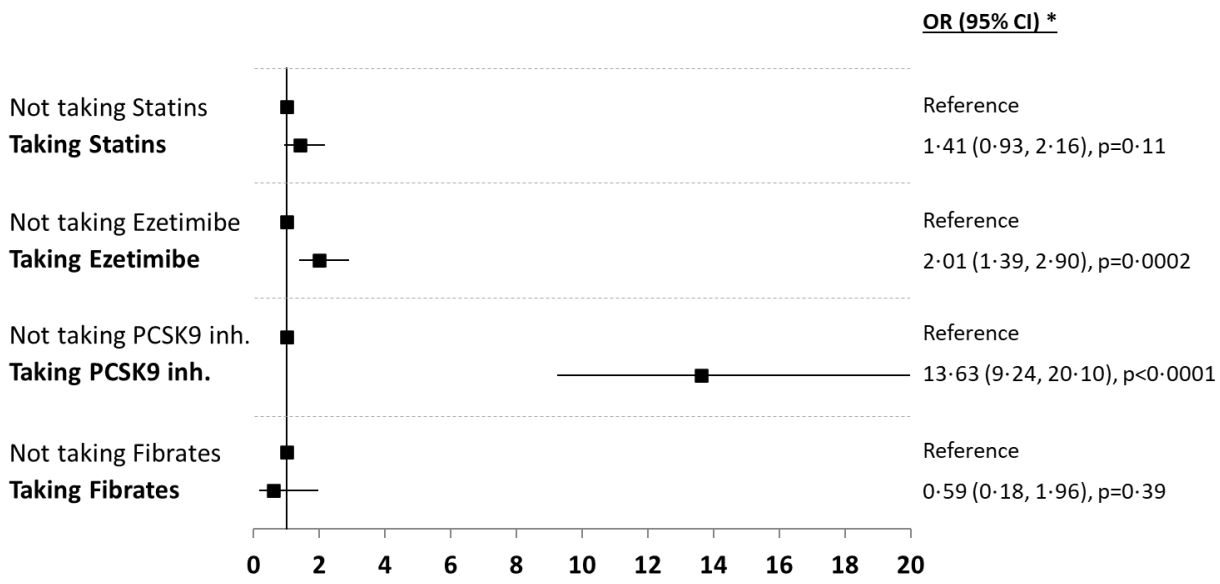
LDL-C, low-density lipoprotein cholesterol.

(B) Association of number of lipid-lowering medications taking with having an LDL-C <1·4 mmol/L



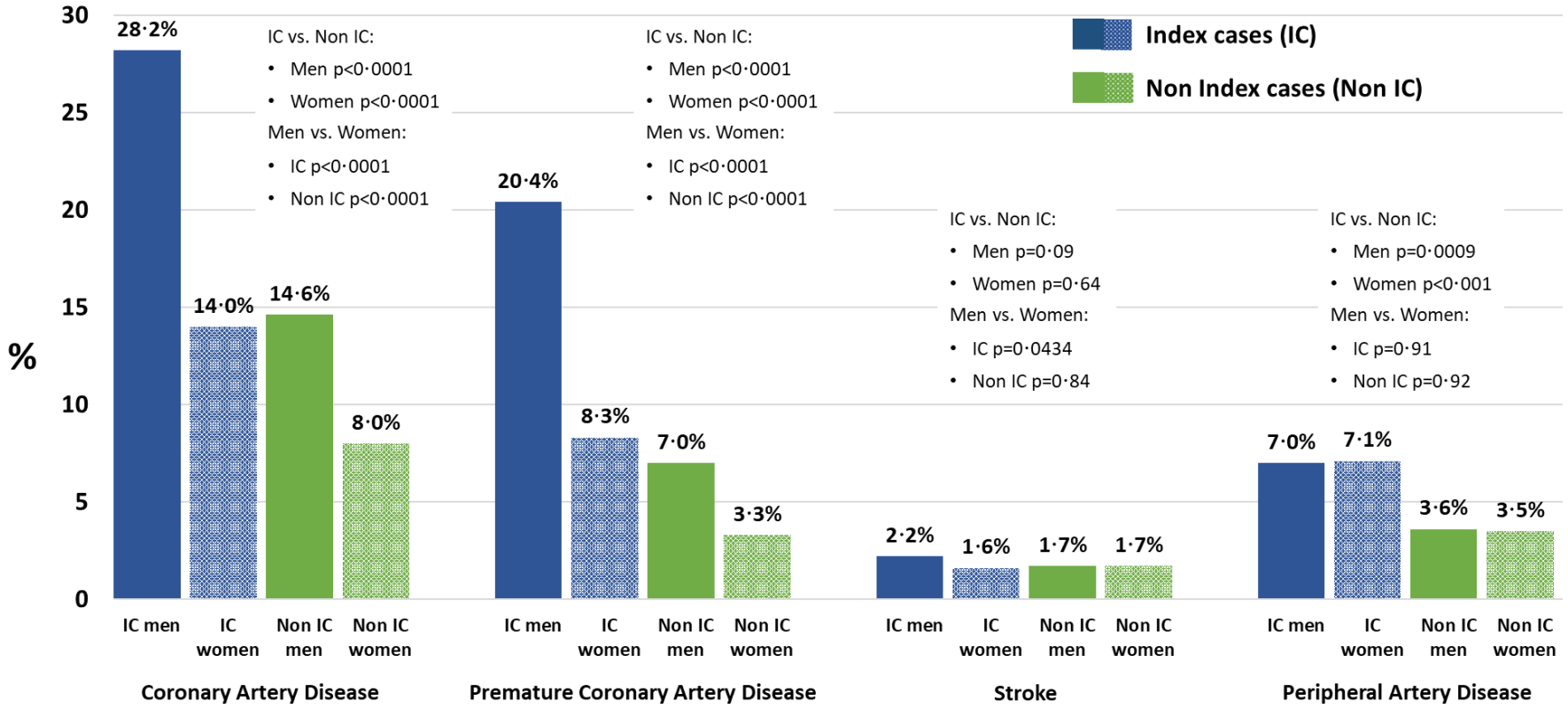
* Adjusted by age and sex. CI, confidence interval, LDL-C, low-density lipoprotein cholesterol; LLM, lipid-lowering medication; OR, odds ratio.

(C) Association of type of lipid-lowering medication taking with having an LDL-C <1·4 mmol/L



* Each one adjusted by age, sex and the other types of lipid-lowering medications. CI, confidence interval, LDL-C, low-density lipoprotein cholesterol; OR, odds ratio; PCSK9 inh, proprotein convertase subtilisin/kexin type 9 inhibitors.

Supplemental Figure 8. Cardiovascular Disease by index case and sex.



SUPPLEMENTAL TABLES

Supplemental Table 1. Characteristics of the individual registries contributing with data to the FHSC Registry at the time of the present analysis.

Country	Registry Name	Ref	Registry Inclusion Criteria	Registry Exclusion Criteria	FH Diagnosis Criteria for Inclusion	Period Included in the FHSC Registry	Data Source	Registry Geographical Coverage	Number of participants included in the present Study
AFRICA									
NIGERIA	The Benin FH Registry	-	Adults with LDL-C ≥4 mmol/L with a diagnosis of probable or definite HeFH according to DLCN criteria	Secondary dyslipidaemia	DLCN	2016 – 2019	Health screening clinic	Mid-Western Nigeria	5
SOUTH AFRICA	-	-	Genetically confirmed FH with Afrikaner founder mutations	Clinical FH not confirmed on genetic testing or those with other FH mutations	Genetic test FH Afrikaner mutation	Past 10–15 years	Lipid clinic	Johannesburg and surrounding areas	839
	-	-	Adults and children with a diagnosis of probable (LDL-C >5 mmol/L and dominantly inherited in family with premature CAD) or definite (tendon xanthoma with LDL-C >5 mmol/L) HeFH among patients referred for assessment of severe dyslipidaemia	Secondary hypercholesterolaemia	As defined in the registry inclusion criteria	1990 – 2014	Clinical notes and research lab records	Local (Cape Town)	
AMERICAS									
ARGENTINA	DA VINCI	-	Adults and children; clinical diagnosis of HeFH (DLCN score ≥6)	Secondary dyslipidaemia	DLCN	2015 – 2019	Primary care and specialist care (cardiology, lipidology)	Province of Buenos Aires	78
BRAZIL	Hipercol Brasil	1	Genetic diagnosis of FH	Secondary dyslipidaemia	Genetic	2013 – 2017	Cascade screening at a tertiary Hospital	National	905
CANADA	FH Canada Registry	2	Diagnosis of possible, probable or definite FH as per Simon Broome, DLCN or Canadian Definition for FH	Secondary hypercholesterolaemia	Simon-Broome, DLCN, or Canadian Definition of FH (Ref 3), depending on site and time of data acquisition	2014 – 2017	Lipid clinics	National	1,505
CHILE	-	-	Adults and children with a clinical (DLCN score ≥6) or genetic diagnosis of FH	-	DLCN; Genetic	2005 – 2018	Lipid clinic	Local (Santiago)	50
MEXICO	Registro Mexicano de HF	4,5	Adults and children with an LDL-C >4·9 mmol/L with a diagnosis of possible, probable or definite FH according to DLCN criteria.	Other types of primary dyslipidaemia. Secondary hypercholesterolaemia	DLCN	2017 – 2019	Lipid clinics	National	530
URUGUAY	GENYCO	6,7	Positive genetic test for a causative mutation of FH, and unaffected (non-FH) relatives	DLCN score <3. Secondary hypercholesterolaemia	DLCN	2004 – 2018	Primary care and specialist care	National	194
EASTERN MEDITERRANEAN REGION									

Country	Registry Name	Ref	Registry Inclusion Criteria	Registry Exclusion Criteria	FH Diagnosis Criteria for Inclusion	Period Included in the FHSC Registry	Data Source	Registry Geographical Coverage	Number of participants included in the present Study
EGYPT	Egyptian FH Research Forum Registry	8	Prior established diagnosis of FH. Premature atherosclerosis with possible, probable or definite FH diagnosis according to DLCN criteria	Secondary dyslipidaemia. Drug or substance abuse “in case of premature CAD”. Thyroid dysfunction	DLCN	2017 – 2019	Cardiology clinics	National	36
IRAQ	Iraqi FH registry	-	Adults and children with a diagnosis of possible, probable and definite FH according to DLCN criteria	Secondary hypercholesterolaemia including DM and CKD	DLCN	2018 – 2019	Primary care, lipid clinics	North (Erbil, Kirkuk) and Central (Baghdad, Balad, Diwaniyah) regions	15
KUWAIT	KtFH	9,10	Age 18-70 years old with an LDL-C ≥4·9 mmol/L and/or TC ≥7·5 mmol/L meeting the DLCN criteria for probable or definite HeFH	TG >5 mmol/L. Untreated hypothyroidism. Proteinuria ≥1 g/L. Obstructive liver disease. CKD. HIV infection. Taking immunosuppressant, steroid or psychiatric drugs. LDL-C <4·9 mmol/L after applying correction factors to account for LLM in those on LLM	DLCN	2017 – 2018	Cardiology and lipid clinics	National	27
LEBANON	-	-	Adults and children with a clinical diagnosis of FH according to MEDPED/WHO or DLCN criteria (probable and definite FH), or genetic diagnosis of FH	Secondary hypercholesterolaemia	MEDPED/WHO criteria, DLCN, Genetic	2012 – 2019	Lipid clinic	Several regions	13
OMAN	Oman FH	-	Genetic diagnosis of FH	TG >5 mmol/L. Untreated hypothyroidism. Proteinuria ≥1 g/L. Obstructive liver disease. CKD. HIV infection. Use of immunosuppressants, steroids or psychiatric medications	DLCN	2015 – 2019	Hospital records	National	39
PAKISTAN	Pakistan FH Registry	-	Adults and children with a clinical diagnosis of FH according to modified DLCN criteria (score ≥5)	Secondary dyslipidaemia	DLCN	2016 – 2019	Hospital records and primary care	Mainly Lahore and Islamabad	12
SAUDI ARABIA	Partially included in the Gulf FH registry	11,12	Genetic diagnosis of FH	Non-nationals. Obstructive liver disease. Hypothyroidism. CKD (>1·4 mg/dL or as defined by the investigator, or GFR <60 ml/min/1·73 m^2, or >60 with other markers of kidney damage e.g.proteinuria. Proteinuria >1 g/L. Taking steroids, immunosuppressants, or HIV drugs. TG >5 mmol/L	Simon-Broome	2015 – 2018	Cardiovascular Prevention Unit	National	238

Country	Registry Name	Ref	Registry Inclusion Criteria	Registry Exclusion Criteria	FH Diagnosis Criteria for Inclusion	Period Included in the FHSC Registry	Data Source	Registry Geographical Coverage	Number of participants included in the present Study
	Part of the Gulf FH registry	10	LDL-C ≥4·9 mmol/L and/or TC ≥7·5 mmol/L and meeting the DLCN criteria for possible, probable and definite FH	TG >5 mmol/L. Untreated hypothyroidism, proteinuria ≥1 g/L, obstructive liver disease, CKD, HIV infection. Taking steroid or immunosuppressant or psychiatric medications. LDL-C <4·9 mmol/L after applying correction factors to treated LDL-C for patients on LLM	DLCN	2016 – 2019	Lipid clinic, hospital cardiology departments, tertiary hospitals	National	
UNITED ARAB EMIRATES	Part of the Gulf FH registry	10	Age 18-70 years old) with an LDL-C ≥4·9 mmol/L or TC ≥ 7·5 mmol/L, on or off LLM, and meeting the DLCN criteria for FH	TG >5 mmol/L. Untreated hypothyroidism. Proteinuria ≥1 g/L. Obstructive liver disease. CKD. HIV infection. Taking steroid or immunosuppressant or psychiatric medications. LDL-C <4·9 mmol/L after applying correction factor for patient on LLM	DLCN	2016 – 2018	Laboratory Information System of Hospital and Primary Care Clinics	National	12
EUROPE									
AUSTRIA	"Fass dir ein Herz" FH Registry of the Austrian Atherosclerosis Society	-	Diagnosis of FH according to clinical criteria (possible, probable and definite FH by DLCN for adults; possible and definite FH by Simon-Broome for children)	Secondary hypercholesterolaemia	DLCN (adults); Simon-Broome (children)	2016 – 2018	Primary care and specialist care (e.g. lipid clinics, cardiology, etc.)	National	248
BELGIUM	-	-	Age ≥18 years with a diagnosis of FH according to DLCN score ≥5, positive MEDPED or positive genetic testing	Combined genetic hyperlipemia. Mixed dyslipidaemia. Secondary hypercholesterolaemia	DLCN; MEDPED; Genetic	2000 – 2019	Lipid clinics	Wallonia and Brussel regions	667
BOSNIA AND HERZEGOVINA	-	13-16	LDL >5 mmol/l with diagnosis of FH by DLCN criteria	Members FH family with cardiovascular events independently of LDL values	DLCN	May-2015 to Jan-2019	Hospital records mainly, out hospital examinations, cardiology, primary care	Hospital one site	28
BULGARIA	FH Registry of the Bulgarian Society of Cardiology	17	Adults and children with a diagnosis of FH according to DLCN score >3	-	DLCN	2018	Lipid clinics	National	121
CROATIA	-	-	Adults with a clinical (probable or definite by DLCN criteria) and/or genetic diagnosis of FH	Mixed dyslipidaemia, secondary hypercholesterolaemia	DLCN	2016 – 2019	Lipid clinics, cardiology	North and west regions	72
CZECHIA	The Czech MEDPED database	18-20	Age >18 years with a genetic diagnosis (confirmed mutation causative) of HeFH	Secondary hypercholesterolaemia	Genetic	1998 – 2018	Czech MedPed centres (mainly lipid, internal medicine and cardiologist clinics)	National	1,991

Country	Registry Name	Ref	Registry Inclusion Criteria	Registry Exclusion Criteria	FH Diagnosis Criteria for Inclusion	Period Included in the FHSC Registry	Data Source	Registry Geographical Coverage	Number of participants included in the present Study
ESTONIA	-	-	Diagnosis of HeFH by DLCN criteria	Non-FH dyslipidemias	DLCN	2018	Hospital records	Local (Tallinn)	1
FRANCE	REFERCHOL	21-25	Adults and children with a clinical (DLNC ≥6 for adults) or genetic diagnosis of HeFH	DLCN <6, refusal to participate, secondary hypercholesterolaemia	DLCN, genetic (mainly genetic diagnosis)	Retrospective data without time limit to 2019	Specialist care (e.g.endocrinology, cardiology, internal medicine)	National registry, including overseas France	4,195
GERMANY	CaRe High	26,27	Adults and children with at least two of the following criteria: (i) LDL-C >4·9 mmol/L without LLM (LDL-C values on LLM are corrected for drug and dose) or TC >7·50 mmol/L; (ii) Tendon xanthomas; (iii) Family history of hypercholesterolaemia; (iv) Family history of MI before the age of 50 in grandparents, uncles or aunts, or before the age of 60 in parents, siblings or children; (v) First and second-degree relatives of FH patients	Apparent impairment of cognitive function; decompensated, acute psychiatric disease; acute, non-CVD; surgery within the last 3 months (not caused by CVD); chronic, non-cardiac diseases (e.g. severe CKD, dialysis, severe rheumatic arthritis, malignant disease within the last 5 years)	DLCN	2015 – 2018	Most data from lipid clinics; also, primary care and other specialist care (cardiology, nephrology)	National	457
GREECE	HELLAS-FH	28,29	Adults with a diagnosis of at least possible FH according to DLCN criteria, and children with a diagnosis based on the current EAS consensus statement on FH in children (Ref 30)	DLCN score <3. Any clinically significant disorder which, at the discretion of the investigator, would exclude the safe completion of the study or limit the assessment of endpoints (e.g. major systemic diseases, patients with short life expectancy)	DLCN	2016 – 2019	Lipid clinics	National	756
HUNGARY	fhreg·hu	31	Adults and children with a diagnosis of possible, probable and definite FH according to DLCN criteria	Secondary hypercholesterolaemias	DLCN	2016 – 2017	Population-based, primary care and specialist care (lipid clinics, cardiology)	National	86
IRELAND	-	-	Adults and children with a diagnosis of possible, probable and definite FH according to DLCN criteria	-	DLCN	2019	Lipid clinics	Local (Dublin)	7
ISRAEL	MEDPED Israel	32,33	Adults and children with a diagnosis of FH according to MEDPED criteria, including LDL-C >4·9 mmol/L, stigmata of FH, family history.	According to MEDPED	MEDPED, Simon-Broome, Genetic	1989-2018	Lipid clinic	Local	755
ITALY	LIPIGEN	34-36	Adults and children with a clinical (DLCN criteria) or genetic diagnosis of FH	Secondary hypercholesterolaemia	DLCN	2011 – 2018	Lipid Clinics	National	1,783
KYRGYZSTAN	-	-	Adults and children with a clinical diagnosis of probable or definite FH according to DLCN criteria	Secondary dyslipidaemia	DLCN	2017 – 2019	Primary care and hospital records	National	98

Country	Registry Name	Ref	Registry Inclusion Criteria	Registry Exclusion Criteria	FH Diagnosis Criteria for Inclusion	Period Included in the FHSC Registry	Data Source	Registry Geographical Coverage	Number of participants included in the present Study
LATVIA	Latvian Registry of FH	37	Adults with (i) definite or probable FH according to DLCN criteria, and (ii) first degree relatives of index cases with LDL-C >95th percentile	First degree relatives of index cases with LDL-C <95th percentile. Suspected or confirmed secondary hypercholesterolaemia. Suspected or confirmed primary hypertriglyceridemia or primary mixed hyperlipidemia	Index cases: DLCN. First degree relatives: LDL-C >95th percentile	2015 – 2019	Hospital Cardiology outpatient department	National	65
LITHUANIA	National Screening Programme for FH and Nationwide Primary Prevention Programme in Lithuania	38,39	Adults and children with a clinical or genetic diagnosis of FH according to DLCN criteria	Secondary dyslipidaemia	DLCN	2018 – 2019	Mostly cardiology prevention unit	National	39
MALTA	FH Malta	40	Adults with a diagnosis of possible, probable or definite HeFH according to DLCN criteria	Secondary dyslipidaemia	DLCN	2016 – 2018	Primary care and specialist care (lipid clinics, cardiology, diabetes clinic)	National	24
NETHERLANDS	StOEH	41,42	Adults and children in the cascade screening project in the Netherlands, with a positive genetic testing for HeFH	-	Genetics	1994 – 2014	Population based	National	19,529
NORWAY	FHNO-alfa	43,44	Adults and children with a clinical or genetic diagnosis of HeFH and at least two visits to the Lipid Clinic	Available data from only one visit. HoFH. Secondary hypercholesterolaemia	Mainly genetic diagnosis. A few with clinical FH based on physicians' discretion·	2014 – 2015	Lipid Clinic	Local (Oslo)	356
POLAND	PoLA-FH-Registry	-	Adults and children with a diagnosis of definite and probable FH according to DLCN criteria	DCLN score <6. Secondary hypercholesterolaemia	DLCN	2018 – 2019	Primary care and ambulatory clinics; population-based; hospitalization at different departments	National	1,433
	Polish FH Registry at Medical University of Gdansk	45-47	Adults and children with a clinical (definite by DLCN score >8) or genetic diagnosis of FH	Secondary hypercholesterolaemia	DLCN	2006 – 2014 2017 – 2019	Primary care and specialist care (lipid clinics, cardiology)	National	
PORTUGAL	Portuguese FH Study	48	Adults and children with a diagnosis of possible or definite FH according to Simon-Broome criteria	-	Simon-Broome	2015 – 2018	Primary care and specialist care (cardiology, internal medicine, endocrinology, paediatrics)	National	92

Country	Registry Name	Ref	Registry Inclusion Criteria	Registry Exclusion Criteria	FH Diagnosis Criteria for Inclusion	Period Included in the FHSC Registry	Data Source	Registry Geographical Coverage	Number of participants included in the present Study
RUSSIA	-	49,50	Before year 2015: Family history of FH and/or CVD in first-degree relatives aged <50 years men and <60 years in women. From 2015 onward: Age ≥18 years old with a clinical diagnosis (DLCN score ≥6) of FH and at least 2 visits to lipid clinics	HoFH. Age <18 years. Secondary dyslipidaemias, including severe obesity and DM	DLCN; Genetics	1984 – 2018	Population-based, lipid clinics, hospital records	Local (Moscow) and national registry	1,186
	RuFH	51	Age ≥18 years old with TC ≥7·5 mmol/L or LDL-C ≥4·9 mmol/L with a FH diagnosis according to DLCN or Simon-Broome criteria	Secondary hypercholesterolaemia, including untreated DM (HbA1c >8%) or hypothyroidism (TSH >1·5 ULN), renal failure (creatinine clearance <30 ml/min). Tumours within last 5 years	DLCN, Simon-Broome	2014 – 2017	Laboratory data set, primary care, lipid clinics	National	
SERBIA	-	52	Adults and children with a clinical diagnosis of possible, probable and definite HeFH according to DLCN criteria	Secondary dyslipidaemia	DLCN	2012 – 2017	Lipid clinics and hospital records	Central Serbia	-
SLOVAKIA	MEDPED FH Slovakia	53-57	Adults and children with a diagnosis of probable or definite HeFH according to any of DLCN, Simon-Broome or MEDPED criteria, with at least 3 clinical visits at a centre	Secondary hyperlipidaemias	DLCN; Simon-Broome; MEDPED	1998 – 2019	Lipid, Cardiology and Internal Medicine clinics	National	182
SLOVENIA	National Registry of FH and Rare Dyslipidemias	58,59	Young adults, adolescents, children and their parents (if diagnosed through child-parent screening); Genetically or clinically (Simon-Broome criteria) confirmed/very likely FH	Secondary hypercholesterolaemia	Genetic; if mutation negative: Simon-Broome	2017 – 2019	Hospital records (clinical, genetic) and primary care reports	National	66
SPAIN	SAFEHEART Registry	60-66	Age ≥18 years with a genetic diagnosis of FH	Unaffected (non-FH) relatives	Genetic	2013 - 2017	Lipid clinics (index cases, relatives) and primary care (relatives)	National	508
SWITZERLAND	MEDPED; DIAMOND; SAPPHIRE; at diagene Research Institute, Reinach	67	Adults and children with a clinically (Swiss Clinical Criteria for FH [modified DLCN criteria]) or genetically confirmed HeFH (OMIM #143890, #144010, #603776, #603813) and their relatives·	Molecularly confirmed pathogenic genetic variants other than those in the *LDLR* (*606945), *APOB* (*107730), *PCSK9* (*607786) or *LDLRAP1* (*605747) genes. Secondary hypercholesterolaemia	Swiss Clinical Criteria for FH (modified DLCN criteria); Genetics	1987 – 2019	Population-based, lipid clinics-based	National	9
TURKEY	A-HIT2	68,69	Age ≥18 years with a clinical diagnosis of at least possible FH according to DLCN criteria (DLCN ≥3)	TG ≥4·5 mmol/L or secondary hyperlipidemia	DLCN	2017 – 2018	Cardiology, Internal Medicine and Endocrinology outpatient clinics	National	489
UKRAINE	-	-	Adults and children with a diagnosis of FH according to either DLCN (score ≥3), Simon-Broome (possible, definite) or MEDPED criteria	Secondary hypercholesterolaemia	DLCN; Simon-Broome; MEDPED	2018 –2019	Primary care, Cardiology, hospital records	National	58

Country	Registry Name	Ref	Registry Inclusion Criteria	Registry Exclusion Criteria	FH Diagnosis Criteria for Inclusion	Period Included in the FHSC Registry	Data Source	Registry Geographical Coverage	Number of participants included in the present Study
UNITED KINGDOM	-	-	Clinical diagnosis of possible and definite FH according to Simon-Broome criteria.	Secondary dyslipidaemia	Simon-Broome	2018 – 2019	Lipid Clinics	Local (Manchester)	67
UZBEKISTAN	RUzFH	70	Adults and children with a diagnosis of FH according to a DLCN criteria score ≥5 Premature CAD, coronary revascularization, cerebral vascular disease or PAD were inclusion criteria	Age >75 years old. Statin intolerance. Chronic heart failure NYHA III-IV. CKD stage 4-5/5. Pregnant women	DLCN	2016 – 2019	Outpatient and inpatient departments of Cardiology	National (Tashkent and regional registries at Andijan, Khorezm, Kashkadarya)	122
SOUTH-EAST ASIA									
INDIA	-	71,72	Adults and children with a clinical (possible, probable or definite by DLCN criteria) and/or genetic diagnosis of FH	Secondary causes of dyslipidaemia	DLNC	2015 – 2019	Health Check Clinics in hospitals	Mumbai and New Delhi	68
THAILAND	Thai FH Registry	-	Adults with an LDL-C ≥4·9 mmol/L during workplace health check-up, having a DLCN score ≥3. Known FH adult cases as shown in hospital records	Secondary cause of hypercholesterolaemia	DLCN	2018	Workplace screening and hospital records	Local (Bangkok)	95
WESTERN PACIFIC									
AUSTRALIA	-	73	Adult index cases with a genetic diagnosis of HeFH	-	Genetic	2004 – 2017	Lipid Clinic	Western Australia	265
CHINA	Chinese FH Registry	74-76	Adults and children with a diagnosis of definite FH according to DLCN criteria	Secondary hypercholesterolaemia	DLCN	2015 – 2018	Primary care and specialist care (lipid clinics, cardiology)	National	202
	-	-	Adults and children with a diagnosis of FH according to the DLCN criteria.	Secondary hypercholesterolaemia. Abnormal liver or kidney function	DLCN	2005 – 2018	Atherosclerosis outpatient clinic	Local (Beijing)	
HONG KONG SAR	-	-	Adults with a genetic diagnosis of FH	Secondary hypercholesterolaemia	DLCN; Genetic	2011 – 2018	Lipid clinic	Local (Shatin)	-
JAPAN	-	-	Adults and children with a diagnosis of HeFH according to the JAS guidelines criteria	Secondary hypercholesterolaemia	JAS guidelines criteria (Ref 77)	2018 – 2019	Lipid clinics	National	253
	PROLIPID	-	Adults and children with established diagnosis of HoFH, or clinical (JAS guidelines criteria) or genetic (LDLR, APOB or PCSK9 mutations) diagnosis of FH	-	Genetic; JAS guidelines criteria (Ref 77)	2015 – 2018	Primary care and specialist care (lipid clinics, cardiology, metabolic clinic, etc·)	National	
MALAYSIA	MyHEBAT-FH	78-86	Adults and children; clinical (possible, probable and definite by DLCN or Simon-Broome) or genetic diagnosis of FH. Relatives of index cases without FH diagnosis	Secondary dyslipidaemia	DLCN; Simon-Broome	2006-2019	Primary care and specialist care	West Malaysia (North, South, East & West Coast and Central regions) and East Malaysia	742

Country	Registry Name	Ref	Registry Inclusion Criteria	Registry Exclusion Criteria	FH Diagnosis Criteria for Inclusion	Period Included in the FHSC Registry	Data Source	Registry Geographical Coverage	Number of participants included in the present Study
SINGAPORE	FHCARE	87	Diagnosis of possible and definite FH according to Simon-Broome criteria; family members who were genetically diagnosed with FH	Secondary hypercholesterolaemia	Simon Broome Criteria	2015 – 2019	Mainly lipid and cardiology clinics. Some from health screening	National	265
TAIWAN (Province of)	TAITAFH	88,89	Adults and children with a diagnosis of probable or definite FH according to DLCN criteria	Secondary causes of hyperlipidaemia	DLCN	2002 – 2018	Primary care and specialist care (lipid clinics, cardiology)	North regions	240
VIETNAM	VINAFH Registry	90,91	Adults and children with a clinical diagnosis of probable or definite FH (DLCN or Starr *et al* criteria [ref 84]) or a genetic diagnosis of FH (LDLR, APOB or PCSK9 mutations)	Secondary dyslipidaemia. Among those without genetic testing: possible or unlikely FH. With genetic testing: no mutation in *LDLR*, *APOB* or *PCSK9* genes	DLCN; Genetic; Starr *et al.* criteria (Ref 92)	2014 – 2018	Primary care, Cardiology and Hospital records	Northern regions	49

APOB: apolipoprotein B. CAD: coronary artery disease. CKD: chronic kidney disease. CVD: cardiovascular disease. DLCN: Dutch Lipid Clinics Network criteria. DM: diabetes mellitus. EAS: European Atherosclerosis Society. FH: familial hypercholesterolaemia. GFR: glomerular filtration rate. HeFH: heterozygous familial hypercholesterolaemia. HF: "hipercolesterolemia familiar" (familial hypercholesterolaemia). HIV: human immunodeficiency virus. HoFH: homozygous familial hypercholesterolaemia. JAS: Japanese Atherosclerosis Society. LDL-C: low-density lipoprotein cholesterol. LDLR: low-density lipoprotein receptor. LDLRAP1: Low Density Lipoprotein Receptor Adaptor Protein 1. LLM: lipid-lowering medication. MEDPED: Make Early Diagnosis to Prevent Early Deaths. MI: myocardial infarction. NYHA: New York Heart Association. OMIM: Online Mendelian Inheritance in Man. PAD: peripheral artery disease. PCSK9: Proprotein convertase subtilisin/kexin type 9. Ref: reference. TC: total cholesterol. TG: triglycerides. TSH: thyroid-stimulating hormone. ULN: upper limit of normal. WHO: World Health Organization.

A-HIT: A registry of familial hypercholesterolaemia in Turkey. **CaRe High**: Cascade Screening and Registry for High Cholesterol. **DA VINCI:** EstuDio Argentino PreValencIa eN HiperColesterolemia FamIliar. **DIAMOND:** DIAgnosis and Management Of familial hypercholesterolaemia in a Nationwide Design. **FHCARE:** Familial Hypercholesterolaemia – Case identification, Assessment and Reduction in adverse Events. **FHNO-alfa:** Quality of treatment project for FH, Oslo University Hospital. **fhreg.hu:** FH regiszter Hungary. **FHSC**: Familial Hypercholesterolaemia Studies Collaboration. **GENYCO:** Programa Nacional de Detección Temprana y Atención de Hipercolesterolemia Familiar (GENYCO – Genes y Colesterol). **HELLAS-FH:** Hellenic Familial Hypercholesterolaemia Registry. **LIPIGEN:** LIpid TransPort Disorders Italian GEnetic Network Study. **MEDPED:** Make Early Diagnosis to Prevent Early Deaths. **MyHEBAT-FH:** MalaYsian HEalth & WellBeing AssestmenT – Familial Hypercholesterolaemia. **PoLA-FH-Registry:** Polish Lipid Association – Familial Hypercholesterolaemia registry. **PROLIPID:** PROspective registry study of primary hyperLIPIDemia. **REFERCHOL:** French REgistry of Familial HypERCHOLesterolaemia. **RuFH:** Russian FH Registry. **RUzFH:** FH in the Uzbek population. **SAFEHEART Registry**: Spanish Familial Hypercholesterolaemia Cohort Study. **SAPPHIRE:** Swiss Awareness Program for Primary Hypercholesterolemia: Identification of Risk Elevation in Families with High cholesterol. **StOEH:** Stichting Opsporing Erfelijke Hypercholesterolemie. **VINAFH Registry**: Vietnam Familial Hypercholesterolaemia Registry.

Supplemental Table 2. Data available for variables included in the present study.

	Data available: absolute number and % respect to overall cohort			Comments
	Individual-level data merged into one FHSC dataset	**Aggregated data from France registry**	**Both, individual-level data and aggregated data, together**	-
	Overall, n=37,972	Overall, n=4,195	Overall, n=42,167	
Sex	36,835 (97·0%)	4,195 (100%)	41,030 (97·3%)	
Age at registry entry	37,845 (99·7%)	4,194 (99·97%)	Presented separately	
Age at FH diagnosis	30,560 (80·5%)	2,241 (53·4%)	Presented separately	
Hypertension	32,779 (86·3%)	3,809 (90·8%)	36,588 (86·8%)	
Diabetes mellitus	32,813 (86·4%)	3,866 (92·2%)	36,679 (87·0%)	
Body Mass Index	27,274 (71·8%)	3,361 (80·1%)	30,635 (72·7%)	
Smoking, current	33,869 (89·2%)	3,742 (89·2%)	37,611 (89·2%)	
Coronary Artery Disease	30,701 (94·5%) *	4,195 (100%)	34,896 (95·1%)	(*) Information on Coronary Artery Disease at baseline provided in datasets from countries = ARG, AUS, AUT, BEL, BIH, BRA, CAN, CHL, DEU, ESP, GBR, GRC, HUN, IND, IRL, JPN, KWT, LBN, LTU, LVA, MEX, MLT, MYS, NGA, NLD, NOR, OMN, POL, PRT, RUS, SGP, SVK, SVN, THA, TUR, TWN, UKR, URY, VNM and ZAF, n=32,505.
Premature Coronary Artery Disease	31,341 (95·7%) *	4,195 (100%)	35,536 (96·2%)	(*) Information on Premature Coronary Artery Disease at baseline provided in datasets from countries = ARE, ARG, AUS, AUT, BEL, BIH, BGR, CHE, CHN, CHL, CZE, DEU, ESP, GBR, GRC, IND, IRL, ITA, JPN, KWT, LBN, LTU, LVA, MEX, MLT, MYS, NLD, NOR, OMN, PRT, RUS, SAU, SGP, SVN, THA, TUR, TWN, UKR, URY, VNM and ZAF, n=32,745.
Stroke	28,853 (94·2%) *	4,195 (100%)	33,048 (94·9%)	(*) Information on Stroke at baseline provided in datasets from countries = ARG, AUS, AUT, BEL, BIH, BRA, CHL, DEU, ESP, GBR, GRC, HUN, IND, IRL, JPN, LBN, LTU, LVA, MEX, MLT, MYS, NGA, NLD, OMN, POL, PRT, RUS, SGP, SVK, SVN, THA, TUR, TWN, UKR, URY, VNM and ZAF, n=30,617.
Peripheral Artery Disease	8,024 (76·7%) *	4,195 (100%)	12,219 (83·4%)	(*) Information on Peripheral Artery Disease at baseline provided in datasets from countries = ARG, AUS, AUT, BEL, BIH, BRA, DEU, ESP, GRC IND, IRL, JPN, LBN, LTU, LVA, MEX, MLT, MYS, OMN, POL, RUS, SVK, THA, TUR, TWN, UKR, URY, VNM and ZAF, n=10,457.
Lipid-lowering medication	34,779 (91·6%)	4,195 (100%)	38,974 (92·4%)	
Total cholesterol	26,532 (69·9%; excluding NLD: 88·4%) *	3,790 (90·3%)	Presented separately	(*) NLD: available data 10,226 (52·4%). In NLD all cases are genetically confirmed FH
LDL-cholesterol	25,814 (68·0%; excluding NLD: 85·8%) *	3,907 (93·1%)	Presented separately	(*) NLD: available data 9,982 (51·1%). In NLD all cases are genetically confirmed FH
HDL-cholesterol	25,605 (67·4%; excluding NLD: 84·6%) *	3,737 (89·1%)	Presented separately	(*) NLD: available data 10,007 (51·2%). In NLD all cases are genetically confirmed FH
Triglycerides	25,597 (67·4%; excluding NLD: 84·6%) *	3,775 (90·0%)	Presented separately	(*) NLD: available data 9,999 (51·2%). In NLD all cases are genetically confirmed FH

Data shown as absolute and relative frequencies [n (%)]. France registry (French Registry of Familial HypERCHOLesterolaemia, REFERCHOL): unable to share individual-level data due to regulatory restrictions. Results for coronary artery disease, premature coronary artery disease, stroke and peripheral artery disease are excluding data from Egypt and Uzbekistan, since both datasets have "having premature cardiovascular disease" (any) as inclusion criteria. FH, familial hypercholesterolaemia; FHSC, Familial Hypercholesterolaemia Studies Collaboration; HDL, high-density lipoprotein; LDL, low-density lipoprotein.

Country codes: ARE, United Arab Emirates; ARG, Argentina; AUS, Australia; AUT, Austria; BEL, Belgium; BGR, Bulgaria; BIH, Bosnia and Herzegovina; BRA, Brazil; CAN, Canada; CHE, Switzerland; CHL, Chile; CHN, China; CZE, Czech Republic; DEU, Germany; ESP, Spain; GBR, United Kingdom; GRC, Greece; HUN, Hungary; IND, India; IRL, Ireland; ITA, Italy; JPN, Japan; KWT, Kuwait; LBN, Lebanon; LTU, Lithuania; LVA, Latvia; MEX, Mexico; MLT, Malta; MYS, Malaysia; NGA, Nigeria; NLD, The Netherlands; NOR, Norway; OMN, Oman; POL, Poland; PRT, Portugal; RUS, Russia; SAU, Saudi Arabia; SGP, Singapore; SVK, Slovakia; SVN, Slovenia; THA, Thailand; TUR, Turkey; TWN, Taiwan; UKR, Ukraine; URY, Uruguay; VNM, Vietnam; ZAF, South Africa.

Supplemental Table 3. Aggregated results for quantitative variables at entry in the registry in the France registry.

	French Registry of Familial Hypercholesterolaemia (REFERCHOL)
	n = 4,195
Type of diagnosis	Clinical: 1,637 (39·02%), Genetic: 2,558 (60·98%)
Age at registry entry (years)	53·8 (39·7 – 65·1)
Age at FH diagnosis (years)	23·5 (15·2 – 37·2)
Body Mass Index (kg/m^2)	24·0 (21·3 – 27·1)
Total cholesterol (mmol/L)	7·16 (5·77 – 8·66)
LDL-cholesterol (mmol/L)	5·17 (3·85 – 6·62)
HDL-cholesterol (mmol/L)	1·32 (1·11 – 1·60)
Triglycerides (mmol/L)	1·06 (0·77 – 1·52)

France registry (French Registry of Familial Hypercholesterolaemia, REFERCHOL): unable to share individual-level data due to regulatory restrictions. Data shown as absolute and relative frequencies [n (%)] or median and interquartile range, as appropriate. Clinical diagnosis is made using DLCN clinical criteria. Lipid levels are presented overall, not stratified by patient taking and patients not taking lipid-lowering medication. FH, familial hypercholesterolaemia; HDL, high-density lipoprotein; LDL, low-density lipoprotein.

Supplemental Table 4. Cardiovascular Disease stratified by sex.

	Men	Women	p-value comparison men vs. women
Coronary Artery Disease	3,009 (21·5%)	2,060 (12·4%)	<0·00001
Premature Coronary Artery Disease	2,102 (14·6%)	1,186 (7·0%)	<0·0001
Stroke	269 (2·0%)	296 (1·9%)	0·41
Peripheral Artery Disease	234 (6·5%)	251 (5·7%)	0·17

Supplemental Table 5. Lipid lowering medication at the time of registry entry among patients in primary and secondary prevention of cardiovascular disease.

	Primary prevention	Coronary Artery Disease	Premature Coronary Artery Disease	Stroke	Peripheral Artery Disease
Taking LLM	15,561 (54·8%)	4,043 (82·7%)	2,632 (83·3%)	465 (86·4%)	393 (83·4%)

Supplemental Table 6. Type and dose of different classes of lipid lowering medication at the time of registry entry.

(A) Statins

Among those taking Statins (n=16,803)			
	n (%)	**Dose (mg/day) ***	**Information available on dose**
Simvastatin	4,390 (26·1%)	31·2 ± 15·0 40·0 (20·0 – 40·0)	n=2996
Pravastatin	628 (3·7%)	30·1 ± 15·7 30·0 (20·0 – 40·0)	n=437
Lovastatin	259 (1·5%)	38·3 ± 20·7 40·0 (20·0 – 40·0)	n=211
Fluvastatin	191 (1·1%)	45·1 ± 27·0 40·0 (20·0 – 80·0)	n=150
Atorvastatin	6,413 (38·2%)	39·3 ± 23·1 40·0 (20·0 – 40·0)	n=5356
Rosuvastatin	4,173 (24·8%)	24·2 ± 12·5 20·0 (10·0 – 40·0)	n=3726
Pitavastatin	126 (0·7%)	3·0 ± 2·9 2·0 (2·0 – 4·0)	n=123
Type of statin not specified	623 (3·7%)	-	-

(B) PCSK 9 inhibitors

Among those taking PCSK9 inh (n=527)			
	n (%)	**Dose (mg/week) ***	**Information available on dose**
Evolocumab	175 (33·2%)	73·4 ± 17·1 70·0 (70·0 – 70·0)	n=103
Alirocumab	108 (20·5%)	51·6 ± 18·3 37·5 (37·5 – 75·0)	n=85
Type of PCSK9 inhibitor not specified	244 (46·3%)	-	-

(C) Fibrates

Among those taking Fibrates (n=388), n (%)	
Clofibrate	3 (0·8%)
Bezafibrate	56 (14·4%)
Fenofibrate	89 (22·9%)
Gemfibrozil	79 (20·4%)
Type of fibrate not specified	161 (41·5%)

* Mean ± SD, median (IQR)

Supplemental Table 7. Type of statins by sex among participants taking statins.

	Men	Women	Mean difference (95% CI) Men vs Women	p-value
	n=7,791	n=8,780	-	-
Type unknown	276 (3·5%)	342 (3·9%)	-	-
Simvastatin	1,992 (25·6%)	2,320 (26·4%)	-	-
> Dose	31·4 ± 14·9	31·1 ± 15·1	0·37 (-0·71, 1·45)	0·51
Pravastatin	270 (3·5%)	300 (3·4%)	-	-
> Dose	33·1 ± 15·7	29·9 ± 15·6	3·16 (0·06, 6·25)	0·046
Lovastatin	113 (1·4%)	113 (1·3%)	-	-
> Dose	39·4 ± 19·8	37·2 ± 21·6	2·28 (-3·35, 7·90)	0·43
Fluvastatin	83 (1·1%)	99 (1·1%)	-	-
> Dose	47·0 ± 27·7	43·2 ± 26·4	3·85 (-4·96, 12·67)	0·39
Atorvastatin	3,022 (38·8%)	3,359 (38·3%)	-	-
> Dose	40·7 ± 23·1	38·1 ± 23·1	2·68 (1·44, 3·92)	<0·001
> Dose 80 mg/day	546 (21·5%)	525 (18·7%)	-	p=0·009
Rosuvastatin	1,991 (25·6%)	2,166 (24·7%)	-	-
> Dose	25·6 ± 12·5	22·9 ± 12·3	2·69 (1·89, 3·49)	<0·001
> Dose ≥40 mg/day	699 (38·8%)	578 (30·2%)	-	<0·001
Pitavastatin	44 (0·6%)	81 (0·9%)	-	-
> Dose	3·1 ± 2·8	3·0 ± 3·0	0·09 (-1·02, 1·20)	0·87
	Men	**Women**		
Atorvastatin 80 mg/day or Rosuvastatin ≥40 mg/day				
	1,245 (16·6%)	1,103 (13·1%)	-	<0·001

Data on dose are mean ± SD.

Supplemental Table 8. Combination therapy among participants taking lipid-lowering medication at the time of registry entry.

(A) Combination therapy including Statins, ezetimibe and/or PCSK9 inhibitors

Combination therapy including Statins, Ezetimibe and PCSK9 inhibitors	n (%) among those on Lipid Lowering Medication
Any (2 or 3 drugs)	3,691 (21·2%)
▪ 2 drugs (any two)	▪ 3,409 (19·6%)
o Statin + Ezetimibe	o 3281 (18·9%)
o Statin + PCSK9 inhibitor	o 98 (0·6%)
o Ezetimibe + PCSK9 inhibitor	o 29 (0·2%)
▪ 3 drugs	▪ 282 (1·6%)

Participants with information available on whether taking or not taking all the three drugs (statins, ezetimibe, PCSK9 inhibitors): n=17,368 (out of 20,829 on lipid-lowering medication).

(B) Combination therapy with fibrates

Combination therapy with Fibrates	n (%) among those on Lipid Lowering Medication
Fibrate + any 1, 2 or 3 of statins/ezetimibe/PCSK9 inhibitors	295 (1·6%)
▪ Fibrates + Statin	▪ 286 (1·5%)
▪ Fibrates + Ezetimibe	▪ 86 (0·5%)
▪ Fibrates + PCSK9 inhibitor	▪ 24 (0·1%)

Participants with information available on whether taking or not taking both statins and fibrates n=18,503 (out of 20,829 on lipid-lowering medication). Participants with information available on whether taking or not taking both ezetimibe and fibrates n=18,012 (out of 20,829 on lipid-lowering medication). Participants with information available on whether taking or not taking both PCSK9 inhibitors and fibrates n=17,256 (out of 20,829 on lipid-lowering medication).

Supplemental Table 9. Comparison of lipid levels between FH patients not on lipid-lowering medication and FH patients taking lipid-lowering medication, overall and stratified by geographical region.

	Overall cohort	Overall cohort excluding The Netherlands	By World Health Organization (WHO) region					
			Africa	Americas	Eastern Mediterranean	Europe excluding The Netherlands	The Netherlands	South-East Asia & Western Pacific
Total cholesterol (mmol/L)	-	-	-	-	-	-	-	-
Mean (95% CI) difference between patients not on LLM and patients taking LLM, p-value	1·03 (0·97, 1·09) p<0·0001	1·40 (1·32, 1·48) p<0·0001	2·44 (2·20, 2·70) p<0·0001	-0·15 (-0·35, 0·05) p=0·14	1·58 (0·99, 2·16) p<0·0001	1·59 (1·49, 1·68) p<0·0001	0·53 (0·47, 0·59) p<0·0001	1·13 (0·87, 1·39) p<0·0001
LDL-cholesterol (mmol/L)	-	-	-	-	-	-	-	-
Mean (95% CI) difference between patients not on LLM and patients taking LLM, p-value	1·06 (1·00, 1·11) p<0·0001	1·45 (1·38, 1·53) p<0·0001	2·50 (2·27, 2·74) p<0·0001	0·33 (0·14, 0·51) p=0·0007	1·11 (0·57, 1·65) p<0·0001	1·59 (1·50, 1·68) p<0·0001	0·51 (0·45, 0·57) p<0·0001	1·03 (0·77, 1·29) p<0·0001
HDL-cholesterol (mmol/L)	-	-	-	-	-	-	-	-
Mean (95% CI) difference between patients not on LLM and patients taking LLM, p-value	0·01 (-0·01, 0·02) p=0·38	0·01 (-0·01, 0·03) p=0·21	-0·05 (-0·10, 0·01) p=0·11	0·06 (0·02, 0·10) p=0·004	0·03 (-0·15, 0·21) p=0·76	0·00 (-0·02, 0·02) p=0·99	0·00 (-0·02, 0·02) p=0·98	0·01 (-0·05, 0·08) p=0·72
Triglycerides (mmol/L)	-	-	-	-	-	-	-	-
Mean (95% CI) difference between patients not on LLM and patients taking LLM, p-value	-0·03 (-0·04, 0·04) p=0·88	-0·06 (-0·11, -0·05) p=0·031	0·04 (-0·09, 0·17) p=0·53	-0·23 (-0·46, 0·01) p=0·057	-0·40 (-0·64, -0·16) p=0·001	0·00 (-0·06, 0·05) p=0·91	0·07 (0·02, 0·11) p=0·003	-0·05 (-0·38, 0·29) p=0·79

FH: familial hypercholesterolaemia; LLM: lipid-lowering medication.

Supplemental Table 10. LDL-C levels stratified by age among participants not on lipid-lowering medication, overall and by sex.

Participants not on LLM	Overall cohort	Cohort stratified by sex			
		Men	Women	Mean difference (95% CI) men vs women	p-value men vs women
By age above and below 50 years					
18 to <50 years	5·34 (4·23 – 6·65)	5·39 (4·22 – 6·70)	5·30 (4·23 – 6·61)	0·04 (-0·07, 0·16)	0·31
≥50 years	5·64 (4·57 – 6·93)	5·20 (4·19 – 6·40)	5·93 (4·86 – 7·17)	-0·64 (-0·82, -0·47)	<0·0001
By age above and below 55 years					
18 to <55 years	5·39 (4·28 – 6·70)	5·38 (4·24 – 6·65)	5·40 (4·31 – 6·70)	-0·06 (-0·16, 0·05)	0·52
≥55 years	5·61 (4·50 – 6·93)	5·12 (4·07 – 6·36)	5·86 (4·77 – 7·12)	-0·61 (-0·83, -0·40)	<0·0001

LDL-C levels are shown as median (IQR) unless otherwise specified. CI, confidence interval; LDL-C, low-density lipoprotein cholesterol; LLM, lipid-lowering medication.

Supplemental Table 11. Lipid-lowering medications and prevalence of cardiovascular disease in women stratified by age of 50 years.

	Lipid-Lowering Medication	Coronary Artery Disease	Stroke	Peripheral Artery Disease
Women				
- **Age <50 years**	5,029 (50·0%)	396 (4·4%)	38 (0·5%)	37 (2·0%)
- **Age ≥50 years**	5,888 (68·1%)	1,663 (21·7%)	258 (3·6%)	212 (8·5%)
p-value between both subgroups	<0·0001	<0·0001	<0·0001	<0·0001

Supplemental Table 12. Cardiovascular Disease stratified by Index Case status.

	Index Cases	Non-Index Cases	p-value for comparison Index Cases vs. Non-Index Cases
Coronary Artery Disease	1,721 (20·6%)	1,982 (11·2%)	<0·0001
Premature Coronary Artery Disease	1,035 (13·8%)	839 (5·0%)	<0·0001
Stroke	155 (1·9%)	304 (1·7%)	0·42
Peripheral Artery Disease	270 (7·1%)	62 (3·5%)	<0·0001

Supplemental Table 13. Cohort of non-index cases stratified by "the Netherlands" and the "Overall cohort excluding the Netherlands"

	NON-INDEX CASES (n=18,017)		
	COHORT EXCLUDING THE NETHERLANDS	**THE NETHERLANDS**	**p-value**
	n=2,448	n=15,569	-
Women	1,257 (56·4%)	8,241 (52·9%)	0·0022
Age at registry entry (years)	45·0 (33·0 – 58·1)	43·9 (32·0 – 57·5)	0·0194
Age at FH diagnosis (years)	41·1 (29·0 – 54·5)	43·9 (32·0 – 57·5)	<0·0001
Hypertension	497 (22·3%)	1,787 (11·5%)	<0·0001
Diabetes mellitus	156 (6·9%)	453 (2·9%)	<0·0001
Body Mass Index (kg/m^2)	25·4 (22·7 – 29·0)	24·5 (22·1 – 27·2)	<0·0001
Smoking	326 (14.8%)	4,873 (31·5%)	<0·0001
Coronary Artery Disease	391 (18·5%)	1,591 (10·2%)	<0·0001
Premature Coronary Artery Disease	157 (14·3%)	682 (4·4%)	<0·0001
Stroke	46 (2·2%)	258 (1·7%)	0·0772
Peripheral Artery Disease	62 (3·5%)	-	-
Lipid-lowering medication	1,256 (61·1%)	9,483 (60·9%)	0·8344
Total cholesterol (mmol/L)			
- **Participants not on LLM**	7·63 (6·61 – 8·90)	6·23 (5·35 – 7·19)	<0·0001
- **Participants taking LLM**	7·01 (5·53 – 8·59)	5·61 (4·87 – 6·60)	<0·0001
LDL-cholesterol (mmol/L)			
- **Participants not on LLM**	5·60 (4·68 – 6·90)	4·42 (3·61 – 5·31)	<0·0001
- **Participants taking LLM**	4·97 (3·49 – 6·34)	3·81 (3·09 – 4·74)	<0·0001
HDL-cholesterol (mmol/L)			
- **Participants not on LLM**	1·29 (1·10 – 1·60)	1·15 (0·92 – 1·42)	<0·0001
- **Participants taking LLM**	1·27 (1·06 – 1·53)	1·16 (0·93 – 1·42)	<0·0001
Triglycerides (mmol/L)			
- **Participants not on LLM**	1·22 (0·88 – 1·72)	1·17 (0·78 – 1·76)	0·0622
- **Participants taking LLM**	1·28 (0·88 – 1·81)	1·14 (0·78 – 1·70)	<0·0001

Data are shown as n (%) or median (IQR). FH, familial hypercholesterolaemia; HDL, high/density lipoprotein; LDL, low-density lipoprotein.

SUPPLEMENTAL REFERENCES

[1] Jannes CE, Santos RD, de Souza Silva PR, Turolla L, Gagliardi AC, Marsiglia JD, Chacra AP, Miname MH, Rocha VZ, Filho WS, Krieger JE, Pereira AC. Familial hypercholesterolaemia in Brazil: cascade screening program, clinical and genetic aspects. *Atherosclerosis* 2015;238(1):101-7. doi: 10.1016/j.atherosclerosis.2014.11.009.

[2] Brunham LR, Ruel I, Khoury E, Hegele RA, Couture P, Bergeron J, Baass A, Dufour R, Francis GA, Cermakova L, Mancini GBJ, Brophy JM, Brisson D, Gaudet D, Genest J. Familial hypercholesterolaemia in Canada: Initial results from the FH Canada national registry. *Atherosclerosis* 2018;277:419-24. doi: 10.1016/j.atherosclerosis.2018.05.040.

[3] Ruel I, Brisson D, Aljenedil S, Awan Z, Baass A, Bélanger A, Bergeron J, Bewick D, Brophy JM, Brunham LR, Couture P, Dufour R, Francis GA, Frohlich J, Gagné C, Gaudet D, Grégoire JC, Gupta M, Hegele RA, Mancini GBJ, McCrindle BW, Pang J, Raggi P, Tu JV, Watts GF, Genest J. Simplified Canadian Definition for Familial Hypercholesterolaemia. *Can J Cardiol* 2018;34(9):1210-4. doi: 10.1016/j.cjca.2018.05.015.

[4] Mehta R, Zubirán R, Martagón AJ, Vazquez-Cárdenas A, Segura-Kato Y, Tusié-Luna MT, Aguilar-Salinas CA. The panorama of familial hypercholesterolaemia in Latin America: a systematic review. *J Lipid Res* 2016;57(12):2115-2129. doi: 10.1194/jlr.R072231.

[5] Mehta R, Martagon AJ, Galan Ramirez GA3 Gonzalez Retana G, Martinez-Beltran M, Vargas Vazquez A, Vazquez-Cardenas A, Aguilar-Salinas CA. The development of the Mexican Familial Hypercholesterolaemia (FH) National Registry. *Atherosclerosis* 2018;277:517-23. doi: 10.1016/j.atherosclerosis.2018.06.007.

[6] Stoll M, Lorenzo M, Raggio V, Esperón P, Zelarayan M. Previniendo el infarto en el adulto joven: GENYCO, un registro nacional de hipercolesterolemia familiar. *Rev Urug Cardiol* 2011;26:16-26.

[7] GENYCO (de Genes y Colesterol). Comisión Honoraria para la Salud Cardiovascular (CHSCV). http://cardiosalud.org/informacion-para-equipo-de-salud/genetica/genyco [last accessed on 08 Aug 2019].

[8] Reda A, Elbahry A, Dawood E, Kamal S, Bendary M, Emil S, Naguib T, Sanad O, Bendary A. Preliminary Results of the Egyptian Familial hypercholesterolaemia Research Forum Registry. Abstract presented at the 87th European Atherosclerosis Society (EAS) Congress, Abstract number: EAS19-0056. May 2019.

[9] Bamimore MA, Zaid A, Banerjee Y, Al-Sarraf A, Abifadel M, Seidah NG, Al-Waili K, Al-Rasadi K, Awan Z. Familial hypercholesterolaemia mutations in the Middle Eastern and North African region: a need for a national registry. *J Clin Lipidol* 2015;9(2):187-94. doi: 10.1016/j.jacl.2014.11.008.

[10] Al-Rasadi K, Alhabib KF, Al-Allaf F, Al-Waili K, Al-Zakwani I, AlSarraf A, Almahmeed W, AlSayed N, Alghamdi M, Batais MA, Almigbal TH, Alnouri F, Kinsara A, Hammouda A, Awan Z, Kary H, Elamin OA, Zadjali F, Al-Jarallah M, Shehab A, Sabbour H, Amin H, Altaradi H. The Gulf Familial Hypercholesterolaemia Registry (Gulf FH): Design, Rationale and Preliminary Results. *Curr Vasc Pharmacol* 2018. [Epub ahead of print] doi: 10.2174/1570161116666181005125459.

[11] Al-Allaf FA, Alashwal A, Abduljaleel Z, Taher MM, Siddiqui SS, Bouazzaoui A, Abalkhail H, Aun R, Al-Allaf AF, AbuMansour I, Azhar Z, Ba-Hammam FA, Khan W, Athar M. Identification of a recurrent frameshift mutation at the LDLR exon 14 (c.2027delG, p.(G676Afs*33)) causing familial hypercholesterolaemia in Saudi Arab homozygous children. *Genomics* 2016;107(1):24-32. doi: 10.1016/j.ygeno.2015.12.001.

[12] Alnouri F, Athar M, Al-Allaf FA, Abduljaleel Z, Taher MM, Bouazzaoui A, Al Ammari D, Karrar H, Albabtain M. Novel combined variants of LDLR and LDLRAP1 genes causing severe familial hypercholesterolaemia. *Atherosclerosis* 2018;277:425-33. doi: 10.1016/j.atherosclerosis.2018.06.878.

[13] Češka R, Paragh G, Reiner Ž, Banach M, Tokgözoğlu L, Susekov AV, Rašlová K, Freiberger T, Vohnout B, Rynkiewicz A, Goudev A, Dan GA, Gaiţă D, Pojskić B, Pećin I, Kayıkçıoğlu M, Mitchenko O, Ezhov MV, Latkovskis G, Petrulionienė Ž, Fras Z, Tasić N, Mirrakhimov EM, Murataliev T, Shek AB, Tuka V, Tselepis AD, Moubarak EM, Rasadi KA. ScreenPro FH - Screening Project for Familial Hypercholesterolaemia in Central, Southern and Eastern Europe: Rationale and Design. *Vnitr Lek* 2017;63(1):43-8.

[14] Češka R, Freiberger T, Susekov AV, Paragh G, Reiner Ž, Tokgözoğlu L, Rašlová K, Banach M, Vohnout B, Rynkiewicz A, Goudev A, Dan GA, Gaiţă D, Pojskić B, Pećin I, Kayıkçıoğlu M, Mitchenko O, Ezhov MV, Latkovskis G, Petrulionienė Ž, Fras Z, Tasić N, Mirrakhimov EM, Murataliev T, Shek AB, Tuka V, Tselepis AD, Moubarak EM, Al Rasadi K. ScreenPro FH - Screening Project for Familial Hypercholesterolaemia in Central, Southern and Eastern Europe: Basic Epidemiology. *Vnitr Lek* 2017;63(1):25-30.

[15] Pojskic L, Pojskic B. Familial hypercholesterolaemia screening program in Bosnia and Herzegovina and cardiovascular morbidity. *Atherosclerosis* 2018;277:278-81. doi: 10.1016/j.atherosclerosis.2018.06.880.

[16] Pojskić B, Češka R, Freiberger T, Vaclová M, Bláha V, Urbanová Z. Familial hypercholesterolemia – global and Bosnian Herzegovinian challenge. Minex Trade, Zenika (2017). ISBN 978-9926-411-10-7 COBISS. BH-ID 24154630

[17] Petrov IS, Postadzhiyan AS, Tokmakova MP, Kitova LG, Tsonev SN, Addison J, Petkova RT, Lachev VI. Management of High and Very High-Risk Subjects with Familial Hypercholesterolaemia: Results from an Observational Study in Bulgaria. *Folia Med (Plovdiv)* 2018;60(3):389-96. doi: 10.2478/folmed-2018-0020.

[18] Tichý L, Freiberger T, Zapletalová P, Soška V, Ravčuková B, Fajkusová L. The molecular basis of familial hypercholesterolaemia in the Czech Republic: spectrum of LDLR mutations and genotype-phenotype correlations. *Atherosclerosis* 2012;223(2):401-8. doi: 10.1016/j.atherosclerosis.2012.05.014.

[19] Vrablík M, Vaclová M, Tichý L, Soška V, Bláha V, Fajkusová L, Češka R, Šatný M, Freiberger T. Familial hypercholesterolaemia in the Czech Republic: more than 17 years of systematic screening within the MedPed project. *Physiol Res* 2017;66(Supplementum 1):S1-S9.

[20] Tichý L, Fajkusová L, Zapletalová P, Schwarzová L, Vrablík M, Freiberger T. Molecular genetic background of an autosomal dominant hypercholesterolaemia in the Czech Republic. *Physiol Res* 2017;66(Supplementum 1):S47-S54.

[21] Rabès JP, Béliard S, Carrié A. Familial hypercholesterolaemia: experience from France. *Curr Opin Lipidol* 2018;29(2):65-71. doi: 10.1097/MOL.0000000000000496.

[22] Béliard S, Boccara F, Cariou B, Carrié A, Collet X, Farnier M, Ferrières J, Krempf M, Peretti N, Rabès JP, Varret M, Vimont A, Charrière S, Bruckert E; French FH Registry group. High burden of recurrent cardiovascular events in heterozygous familial hypercholesterolaemia: The French Familial Hypercholesterolaemia Registry. *Atherosclerosis* 2018;277:334-40. doi: 10.1016/j.atherosclerosis.2018.08.010.

[23] Béliard S, Millier A, Carreau V, Carrié A, Moulin P, Fredenrich A, Farnier M, Luc G, Rosenbaum D, Toumi M, Bruckert E; French FH Registry group. The very high cardiovascular risk in heterozygous familial hypercholesterolaemia: Analysis of 734 French patients. *J Clin Lipidol* 2016;10(5):1129-36.e3. doi: 10.1016/j.jacl.2016.06.007.

[24] Béliard S, Carreau V, Carrié A, Giral P, Duchêne E, Farnier M, Ferrières J, Fredenrich A, Krempf M, Luc G, Moulin P, Bruckert E. Improvement in LDL-cholesterol levels of patients with familial hypercholesterolaemia: can we do better? Analysis of results obtained during the past two decades in 1669 French subjects. *Atherosclerosis* 2014;234(1):136-41. doi: 10.1016/j.atherosclerosis.2014.02.021.

[25] Gallo A, Charrières S, Vimont A, Chapman MJ, Angoulvant D, Boccara F, Cariou B, Carreau V, Carrié A, Bruckert E, Béliard S; for the REFERCHOL investigators. SAFEHEART risk-equation and cholesterol-year-score are powerful predictors of cardiovascular events in French patients with Familial Hypercholesterolemia. *Atherosclerosis* 2020;306:41-49. doi: 10.1016/j.atherosclerosis.2020.06.011.

[26] Schmidt N, Grammer T, Gouni-Berthold I, Julius U, Kassner U, Klose G, König C, Laufs U, Otte B, Steinhagen-Thiessen E, Wanner C, März W. CaRe high - Cascade screening and registry for high cholesterol in Germany. *Atheroscler Suppl* 2017;30:72-6. doi: 10.1016/j.atherosclerosissup.2017.05.015.

[27] Schmidt N, Dressel A, Grammer TB, Gouni-Berthold I, Julius U, Kassner U, Klose G, König C, Koenig W, Otte B, Parhofer KG, Reinhard W, Schatz U, Schunkert H, Steinhagen-Thiessen E, Vogt A, Laufs U, März W. Lipid-modifying therapy and low-density lipoprotein cholesterol goal attainment in patients with familial hypercholesterolaemia in Germany: The CaReHigh Registry. *Atherosclerosis* 2018;277:314-22. doi: 10.1016/j.atherosclerosis.2018.08.050.

[28] Rizos CV, Athyros V, Bilianou E, Chrousos G, Garoufi A, Kolovou G, Kotsis V, Rallidis L, Skalidis E, Skoumas I, Tziomalos K, Liberopoulos EN. An insight into familial hypercholesterolaemia in Greece: rationale and design of the Hellenic Familial Hypercholesterolaemia Registry (HELLAS-FH). *Hormones (Athens)* 2017;16(3):200-4. doi: 10.14310/horm.2002.1749.

[29] Rizos CV, Elisaf MS, Skoumas I, Tziomalos K, Kotsis V, Rallidis L, Garoufi A, Athyros VG, Skalidis E, Kolovou G, Koutagiar I, Papagianni M, Antza C, Katsiki N, Ganotakis E, Liberopoulos EN. Characteristics and management of 1093 patients with clinical diagnosis of familial hypercholesterolaemia in Greece: Data from the Hellenic Familial Hypercholesterolaemia Registry (HELLAS-FH). *Atherosclerosis* 2018;277:308-13. doi: 10.1016/j.atherosclerosis.2018.08.017.

[30] Wiegman A, Gidding SS, Watts GF, Chapman MJ, Ginsberg HN, Cuchel M, Ose L, Averna M, Boileau C, Borén J, Bruckert E, Catapano AL, Defesche JC, Descamps OS, Hegele RA, Hovingh GK, Humphries SE, Kovanen PT, Kuivenhoven JA, Masana L, Nordestgaard BG, Pajukanta P, Parhofer KG, Raal FJ, Ray KK, Santos RD, Stalenhoef AF, Steinhagen-Thiessen E, Stroes ES, Taskinen MR, Tybjærg-Hansen A, Wiklund O; European Atherosclerosis Society Consensus Panel. Familial hypercholesterolaemia in children and adolescents: gaining decades of life by optimizing detection and treatment. *Eur Heart J* 2015;36(36):2425-37. doi: 10.1093/eurheartj/ehv157.

[31] Paragh G, Harangi M, Karányi Z, Daróczy B, Németh Á, Fülöp P. Identifying patients with familial hypercholesterolaemia using data mining methods in the Northern Great Plain region of Hungary. *Atherosclerosis* 2018;277:262-6. doi: 10.1016/j.atherosclerosis.2018.05.039.

[32] Reshef A, Nissen H, Triger L., Hensen TS, Eliav O, Schurr D, Safadi R, Gare M, Leitersdorf E. Molecular genetics of familial hypercholesterolaemia in Israel. *Hum Genet* 1996;98(5): 581-6.

[33] Durst R, Ibe UK, Shpitzen S, Schurr D, Eliav O, Futema M, Whittall R, Szalat A, Meiner V, Knobler H, Gavish D, Henkin Y, Ellis A, Rubinstein A, Harats D, Bitzur R, Hershkovitz B, Humphries SE, Leitersdorf E. Molecular genetics of familial hypercholesterolaemia in Israel-revisited. *Atherosclerosis* 2017;257:55-63. doi: 10.1016/j.atherosclerosis.2016.12.021.

[34] Casula M, Olmastroni E, Pirillo A, Catapano AL; on behalf of the LIPIGEN group. Evaluation of the performance of Dutch Lipid Clinic Network score in an Italian FH population: The LIPIGEN Study. *Atherosclerosis* 2018;277:413-8. doi: 10.1016/j.atherosclerosis.2018.08.013.

[35] Pirillo A, Garlaschelli K, Arca M, Averna M, Bertolini S, Calandra S, Tarugi P, Catapano AL; on behalf of the LIPIGEN group. Spectrum of mutations in Italian patients with familial hypercholesterolaemia: New results from the LIPIGEN Study. *Atheroscler Suppl* 2017;29:17-24. doi: 10.1016/j.atherosclerosissup.2017.07.002.

[36] Averna M, Cefalù AB, Casula M, Noto D, Arca M, Bertolini S, Calandra S, Catapano AL, Tarugi P; on behalf of the LIPIGEN group. Familial hypercholesterolaemia: The Italian Atherosclerosis Society Network (LIPIGEN). *Atheroscler Suppl* 2017;29:11-6. doi: 10.1016/j.atherosclerosissup.2017.07.001.

[37] Latkovskis G, Saripo V, Gilis D, Nesterovics G, Upena-Roze A, Erglis A. Latvian registry of familial hypercholesterolaemia: The first report of three-year results. *Atherosclerosis* 2018;277:347-54. doi: 10.1016/j.atherosclerosis.2018.06.011.

[38] Petrulioniene Z, Gargalskaite U, Kutkiene S, Staigyte J, Cerkauskiene R, Laucevicius A. Establishing a national screening programme for familial hypercholesterolaemia in Lithuania. *Atherosclerosis* 2018;277:407-12. doi: 10.1016/j.atherosclerosis.2018.06.012.

[39] Kutkiene S, Petrulioniene Z, Laucevicius A, Cerkauskiene R, Staigyte J, Saulyte A, Petrulionyte E, Gargalskaite U, Skiauteryte E, Matuzeviciene G, Kovaite M, Rinkuniene E. Lipid profile evaluation and severe hypercholesterolaemia screening in the middle-aged population according to nationwide primary prevention programme in Lithuania. *Atherosclerosis* 2018;277:267-72. doi: 10.1016/j.atherosclerosis.2018.06.008.

[40] Tilney M. Establishing a familial hypercholesterolaemia register - The first year. *Atheroscler Suppl* 2019;36:24-7. doi: 10.1016/j.atherosclerosissup.2019.01.005.

[41] Besseling J, Kastelein JJ, Defesche JC, Hutten BA, Hovingh GK. Association between familial hypercholesterolaemia and prevalence of type 2 diabetes mellitus. *JAMA* 2015;313(10):1029-36. doi: 10.1001/jama.2015.1206.

[42] Huijgen R, Kindt I, Fouchier SW, Defesche JC, Hutten BA, Kastelein JJ, Vissers MN. Functionality of sequence variants in the genes coding for the low-density lipoprotein receptor and apolipoprotein B in individuals with inherited hypercholesterolaemia. *Hum Mutat* 2010;31(6):752-60. doi: 10.1002/humu.21258.

[43] Bogsrud MP, Langslet G, Wium C, Johansen D, Svilaas A, Holven KB. Treatment goal attainment in children with familial hypercholesterolaemia: A cohort study of 302 children in Norway. *J Clin Lipidol* 2018;12(2):375-82. doi: 10.1016/j.jacl.2017.11.009.

[44] Bogsrud MP, Græsdal A, Johansen D, Langslet G, Hovland A, Arnesen KE, Mundal LJ, Retterstøl K, Wium C, Holven KB. LDL-cholesterol goal achievement, cardiovascular disease, and attributed risk of Lp(a) in a large cohort of predominantly genetically verified familial hypercholesterolaemia. *J Clin Lipidol* 2019;13(2):279-86. doi: 10.1016/j.jacl.2019.01.010.

[45] Chmara M, Wasag B, Zuk M, Kubalska J, Wegrzyn A, Bednarska-Makaruk M, Pronicka E, Wehr H, Defesche JC, Rynkiewicz A, Limon J. Molecular characterization of Polish patients with familial hypercholesterolaemia: novel and recurrent LDLR mutations. *J Appl Genet* 2010;51(1):95-106. doi: 10.1007/BF03195716.

[46] Mickiewicz A, Chmara M, Futema M, Fijalkowski M, Chlebus K, Galaska R, Bandurski T, Pajkowski M, Zuk M, Wasag B, Limon J, Rynkiewicz A, Gruchala M. Efficacy of clinical diagnostic criteria for familial hypercholesterolaemia genetic testing in Poland. *Atherosclerosis* 2016;249:52-8. doi: 10.1016/j.atherosclerosis.2016.03.025.

[47] Gałąska R, Kulawiak-Gałąska D, Chmara M, Chlebus K, Studniarek M, Fijałkowski M, Wasąg B, Rynkiewicz A, Gruchała M. Aortic valve calcium score in hypercholesterolemic patients with and without low-density lipoprotein receptor gene mutation. *PLoS One* 2018;13(12):e0209229. doi: 10.1371/journal.pone.0209229.

[48] Medeiros AM, Alves AC, Bourbon M. Mutational analysis of a cohort with clinical diagnosis of familial hypercholesterolemia: considerations for genetic diagnosis improvement. *Genet Med* 2016;18(4):316-24. doi: 10.1038/gim.2015.71.

[49] Susekov A, Meshkov A, Korneva V, Ershova A, Kuznetsova T, Konstantinov V, Rozkova T. Clinical Characteristics and LDL-C Achievement Rates in 506 FH Patients from 4 Russian Lipid Clinics. *J Clin Lipidol* 2016;10(3):698. doi: 10.1016/j.jacl.2016.03.070.

[50] Ershova AI, Meshkov AN, Bazhan SS, Storozhok MA, Efanov AY, Medvedeva IV, Indukaeva EV, Danilchenko YV, Kuzmina OK, Barbarash OL, Deev AD, Shalnova SA, Boytsov SA. The prevalence of familial hypercholesterolaemia in the West Siberian region of the Russian Federation: A sub-study of the ESSE-RF. *PLoS One* 2017;12(7):e0181148. doi: 10.1371/journal.pone.0181148.

[51] Ezhov MV, Duplyakov DV, Abashina OE, Kachkovsky MA, Shaposhnik II, Genkel VV, Gurevich VS, Urazgildeeva SA, Tregubov AV, Konovalova TB, Muzalevskaya MV, Voevoda MI, Bazhan SS, Makarenkova KV, Timoshenko OV, Ragino YI, Urvantseva IA, Cozhocar KG, Sokolov AA, Boeva OI, Bolotova EV, Kushnaryova YB, Kuznetsova TY, Korneva VA, Bogdanov DY, Chichina EE, Soloviev VM, Smolenskaya OG, Galyavich AS, Safarova MS, Popova AV, Malakhov VV, Ansheles AA, Nozadze DN, Semenova AE, Rozhkova TA, Solovéva EY, Gornyakova NB, Karpov YA, Kukharchuk VV. Results of the Russian research program on the diagnosis and treatment of patients with familial hypercholesterolaemia. High prevalence, low awareness, poor adherence. *Atherosclerosis and Dyslipidaemias An official Journal of the Russian National Atherosclerosis Society (RNAS)* 2017;2:5-15.

[52] Lalić K, Rajković N, Popović L, Lukač SS, Stošić L, Rasulić I, Lalić NM. The effects of 3-year statin therapy and the achievement of LDL cholesterol target values in familial hypercholesterolaemia patients: An experience from Serbia. *Atherosclerosis* 2018;277:298-303. doi: 10.1016/j.atherosclerosis.2018.08.014.

[53] Vohnout B, Raslová K, Gasparovic J, Franeková J, Fábryová L, Belosovicová M, Kovác G, Sebová C, Rajecová E, Stavný J, Babjak M, Donati MB, Iacoviello L. Lipid levels and their genetic regulation in patients with familial hypercholesterolaemia and familial defective apolipoprotein B-100: the MEDPED Slovakia Project. *Atheroscler Suppl* 2003;4(3):3-5.

[54] Gasparovic J, Basistová Z, Fábryová L, Wsólová L, Vohnout B, Raslová K; Slovak MED PED FH group. Familial defective apolipoprotein B-100 in Slovakia: are differences in prevalence of familial defective apolipoprotein B-100 explained by ethnicity? *Atherosclerosis* 2007;194(2):e95-107. doi: 10.1016/j.atherosclerosis.2006.10.015.

[55] Gabčová D, Vohnout B, Staníková D, Hučková M, Kadurová M, Debreová M, Kozárová M, Fábryová Ľ, Staník J, Klimeš I, Rašlová K, Gašperiková D. The molecular genetic background of familial hypercholesterolaemia: data from the Slovak nation-wide survey. *Physiol Res* 2017;66(1):75-84.

[56] Vohnout B, Fábryová Ľ, Klabník A, Kadurová M, Bálinth K, Kozárová M, Bugáňová I, Sirotiaková J, Rašlová K. Treatment pattern of familial hypercholesterolaemia in Slovakia: Targets, treatment and obstacles in common practice. *Atherosclerosis* 2018;277:323-6. doi: 10.1016/j.atherosclerosis.2018.06.857.

[57] Vrablik M, Raslová K, Vohnout B, Blaha V, Satny M, Kyselak O, Vaclova M, Urbanek R, Maskova J, Soska V, Freiberger T. Real-life LDL-C treatment goals achievement in patients with heterozygous familial hypercholesterolaemia in the Czech Republic and Slovakia: Results of the PLANET registry. *Atherosclerosis* 2018;277:355-61. doi: 10.1016/j.atherosclerosis.2018.08.008.

[58] Groselj U, Kovac J, Sustar U, Mlinaric M, Fras Z, Podkrajsek KT, Battelino T. Universal screening for familial hypercholesterolaemia in children: The Slovenian model and literature review. *Atherosclerosis* 2018;277:383-91. doi: 10.1016/j.atherosclerosis.2018.06.858.

[59] Klančar G, Grošelj U, Kovač J, Bratanič N, Bratina N, Trebušak Podkrajšek K, Battelino T. Universal Screening for Familial Hypercholesterolaemia in Children. *J Am Coll Cardiol* 2015;66(11):1250-7. doi: 10.1016/j.jacc.2015.07.017.

[60] Pérez de Isla L, Ray KK, Watts GF, Santos RD, Alonso R, Muñiz-Grijalvo O, Diaz-Diaz JL, Badimon L, Catapano AL, Mata P. Potential utility of the SAFEHEART risk equation for rationalising the use of PCSK9 monoclonal antibodies in adults with heterozygous familial hypercholesterolaemia. *Atherosclerosis* 2019;286:40-5. doi: 10.1016/j.atherosclerosis.2019.05.003.

[61] Ellis KL, Pérez de Isla L, Alonso R, Fuentes F, Watts GF, Mata P. Value of Measuring Lipoprotein(a) During Cascade Testing for Familial Hypercholesterolaemia. *J Am Coll Cardiol* 2019;73(9):1029-39. doi: 10.1016/j.jacc.2018.12.037.

[62] Pérez de Isla L, Alonso R, Muñiz-Grijalvo O, Díaz-Díaz JL, Zambón D, Miramontes JP, Fuentes F, Gómez de Diego JJ, González-Estrada A, Mata N, Saltijeral A, Barreiro M, Tomás M, de Andrés R, Argüeso R, Serrano Gotarredona MP, Navarro Herrero S, Perea Palazón RJ, de Caralt TM, Suárez de Centi LA, Zhilina S, Espejo Pérez S, Padró T, Mata P; SAFEHEART investigators. Coronary computed tomographic angiography findings and their therapeutic implications in asymptomatic patients with familial hypercholesterolaemia. Lessons from the SAFEHEART study. *J Clin Lipidol* 2018;12(4):948-57. doi: 10.1016/j.jacl.2018.04.003.

[63] Lázaro P, Pérez de Isla L, Watts GF, Alonso R, Norman R, Muñiz O, Fuentes F, Mata N, López-Miranda J, González-Juanatey JR, Díaz-Díaz JL, Blasco AJ, Mata P. Cost-effectiveness of a cascade screening program for the early detection of familial hypercholesterolaemia. *J Clin Lipidol* 2017;11(1):260-71. doi: 10.1016/j.jacl.2017.01.002.

[64] Pérez de Isla L, Alonso R, Mata N, Fernández-Pérez C, Muñiz O, Díaz-Díaz JL, Saltijeral A, Fuentes-Jiménez F, de Andrés R, Zambón D, Piedecausa M, Cepeda JM, Mauri M, Galiana J, Brea Á, Sanchez Muñoz-Torrero JF, Padró T, Argueso R, Miramontes-González JP, Badimón L, Santos RD, Watts GF, Mata P. Predicting Cardiovascular Events in Familial Hypercholesterolaemia: The SAFEHEART Registry (Spanish Familial Hypercholesterolaemia Cohort Study). *Circulation* 2017;135(22):2133-44. doi: 10.1161/CIRCULATIONAHA.116.024541.

[65] Kindt I, Mata P, Knowles JW. The role of registries and genetic databases in familial hypercholesterolaemia. *Curr Opin Lipidol* 2017;28(2):152-60. doi: 10.1097/MOL.0000000000000398.

[66] Pérez de Isla L, Alonso R, Mata N, Saltijeral A, Muñiz O, Rubio-Marin P, Diaz-Diaz JL, Fuentes F, de Andrés R, Zambón D, Galiana J, Piedecausa M, Aguado R, Mosquera D, Vidal JI, Ruiz E, Manjón L, Mauri M, Padró T, Miramontes JP, Mata P; SAFEHEART Investigators. Coronary Heart Disease, Peripheral Arterial Disease, and Stroke in Familial Hypercholesterolaemia: Insights From the SAFEHEART Registry (Spanish Familial Hypercholesterolaemia Cohort Study). *Arterioscler Thromb Vasc Biol* 2016;36(9):2004-10. doi: 10.1161/ATVBAHA.116.307514.

[67] Miserez AR, Martin FJ, Spirk D. DIAgnosis and Management Of familial hypercholesterolaemia in a Nationwide Design (DIAMOND-FH): Prevalence in Switzerland, clinical characteristics and the diagnostic value of clinical scores. *Atherosclerosis* 2018;277:282-8. doi: 10.1016/j.atherosclerosis.2018.08.009.

[68] Kayikcioglu M, Tokgozoglu L, Dogan V, Ceyhan C, Tuncez A, Kutlu M, Onrat E, Alici G, Akbulut M, Celik A, Yesilbursa D, Sahin T, Sonmez A, Ozdogan O, Temizhan A, Kilic S, Bayram F, Sabuncu T, Coskun FY, Ildizli M, Durakoglugil E, Kirilmaz B, Yilmaz MB, Yigit Z, Yildirim AB, Gedikli O, Topcu S, Oğuz A, Demir M, Yenerçağ M, Yıldırır A, Demircan S, Yilmaz M, Kaynar LG, Aktan M, Durmus RB, Gokce C, Ozcebe Oİ, Akyol TK, Okutan H, Sag S, Gul OO, Salcioglu Z, Altunkeser BB, Kuku I, Yasar HY, Kurtoglu E, Kose MD, Demircioglu S, Pekkolay Z, Ilhan O, Can LH. What have we learned from Turkish familial hypercholesterolaemia registries (A-HIT1 and A-HIT2)? *Atherosclerosis* 2018;277:341-346. doi: 10.1016/j.atherosclerosis.2018.08.012.

[69] Kayıkçıoğlu M, Tokgözoğlu L. The rationale and design of the national familial hypercholesterolaemia registries in Turkey: A-HIT1 and A-HIT2 studies. *Turk Kardiyol Dern Ars* 2017;45(3):261-7. doi: 10.5543/tkda.2017.25800.

[70] Shek A, Alieva R, Kurbanov R, Hoshimov S, Nizamov U, Abdullaeva G, Nagay A. Burden of familial heterozygous hypercholesterolaemia in Uzbekistan: Time is muscle. *Atherosclerosis* 2018;277:524-9. doi: 10.1016/j.atherosclerosis.2018.08.016.

[71] Ashavaid TF, Reddy LL. Familial Hypercholesterolaemia (FH): An Indian Scenario. *Asia Pacific Federation for Clinical Biochemistry (APFCB) News*, 2018;1:36-41.

[72] Reddy LL, Ashavaid TF. Familial hypercholesterolaemia (FH) awareness Amongst physicians in Mumbai, India. *J Assoc Phys India* 2018;66:66-9.

[73] Hooper AJ, Nguyen LT, Burnett JR, Bates TR, Bell DA, Redgrave TG, Watts GF, van Bockxmeer FM. Genetic analysis of familial hypercholesterolaemia in Western Australia. *Atherosclerosis* 2012;224(2):430-4. doi: 10.1016/j.atherosclerosis.2012.07.030.

[74] Wu X, Pang J, Wang X, Peng J, Chen Y, Wang S, Watts GF, Lin J. Reverse cascade screening for familial hypercholesterolaemia in high-risk Chinese Families. *Clin Cardiol* 2017;40(11):1169-73. doi: 10.1002/clc.22809.

[75] Peng J, Wu X, Wang S, Zhang S, Wang X, Liu Z, Hong J, Ye P, Lin J. Familial hypercholesterolaemia in China half a century: A review of published literature. *Atheroscler Suppl* 2019;36:12-18. doi: 10.1016/j.atherosclerosissup.2019.01.003.

[76] Liu Z, Peng J, Wang S, Jiang T, Zhang W, Zhang C, Chen Y, Meng K, Lin J. Percutaneous coronary intervention for a Chinese familial hypercholesterolaemia homozygous under the guidance of optical coherence tomography. *Atheroscler Suppl* 2019;36:19-23. doi: 10.1016/j.atherosclerosissup.2019.01.003.

[77] Harada-Shiba M, Arai H, Ishigaki Y, Ishibashi S, Okamura T, Ogura M, Dobashi K, Nohara A, Bujo H, Miyauchi K, Yamashita S, Yokote K; Working Group by Japan Atherosclerosis Society for Making Guidance of Familial Hypercholesterolaemia. Guidelines for Diagnosis and Treatment of Familial Hypercholesterolaemia 2017. *J Atheroscler Thromb* 2018;25(8):751-70. doi: 10.5551/jat.CR003.

[78] Abdul-Razak S, Rahmat R, Kasim AM, Rahman TA, Muid S, Nasir NM, Ibrahim Z, Kasim S, Ismail Z, Ghani RA, Sanusi AR, Rosman A, Nawawi H. Diagnostic performance of various familial hypercholesterolaemia diagnostic criteria compared to Dutch Lipid Clinic Criteria in an Asian population. *BMC Cardiovasc Disord* 2017;17(1):264. doi: 10.1186/s12872-017-0694-z.

[79] Pang J, Hu M, Lin J, Miida T, Nawawi HM, Park JE, Wu X, Ramli AS, Kim NT, Gonzalez-Santos LE. An enquiry-based on a standardised questionnaire into knowledge, awareness and preferences concerning the care of familial hypercholesterolaemia among primary care physicians in the Asia-Pacific region: The "Ten Countries Study". *BMJ Open* 2017;7(10):e017817. doi: 10.1136/bmjopen-2017-017817.

[80] Azraii AB, Ramli AS, Ismail Z, Abdul-Razak S, Mohd-Kasim NA, Ali N, Watts GF, Nawawi H. Knowledge, awareness and practice regarding familial hypercholesterolaemia among primary care physicians in Malaysia: The importance of professional training. *Atherosclerosis* 2018;277:508-16. doi: 10.1016/j.atherosclerosis.2018.08.018.

[81] Pang J, Chan DC, Hu M, Muir LA, Charng MJ, Florkowski CM, George PM, Lin J, Marais AD, Nawawi HM, Gonzalez-Santos LE, Su TC, Truong TH, Santos RD, Soran H, Tomlinson B, Yamashita S, Ademi Z, Watts GF. Comparative aspects of the care of familial hypercholesterolaemia in the "Ten Countries Study". *J Clin Lipidol* 2019;13(2):287-300. doi: 10.1016/j.jacl.2019.01.009.

[82] Chua YA, Razman AZ, Ramli AS, Kasim NA, Nawawi HM, MyHEBAT FH Study Investigators. Familial hypercholesterolaemia in the Malaysian community: Prevalence, under-detection and under-treatment. *J Atheroscler Thromb* 2021:57026. doi: 10.5551/jat.57026.

[83] Azraii AB, Ramli AS, Ismail Z, Abdul-Razak S, Badlishah-Sham SF, Mohd-Kasim NA, Ali N, Watts GF, Nawawi H. Validity and reliability of an adapted questionnaire measuring knowledge, awareness and practice regarding familial hypercholesterolaemia among primary care physicians in Malaysia. *BMC Cardiovasc Disord* 2021;21(1):1-7. doi: 10.1186/s12872-020-01845-y.

[84] Nawawi H. Familial Hypercholesterolaemia: A Predestined or Treatable Ticking Time Bomb? (2020). UiTM Press. ISBN 9789673636303.

[85] Nawawi H, Chua YA, Watts GF. The brave new world of genetic testing in the management of the dyslipidaemias. *Curr Opin Cardiol* 2020;35(3):226-33. doi: 10.1097/HCO.0000000000000721.

[86] Mohd Kasim NA, Chua YA, Nawawi H. Familial Hypercholesterolaemia: An Updated Overall Management. *J Clin Health Sc* 2020;5(2):19-38. doi: 10.24191/jchs.v5i2.11121.

[87] Pek SLT, Dissanayake S, Fong JCW, Lin MX, Chan EZL, Tang JI, Lee CW, Ong HY, Sum CF, Lim SC, Tavintharan S. Spectrum of mutations in index patients with familial hypercholesterolaemia in Singapore: Single centre study. *Atherosclerosis* 2018; 269:106-16. doi: 10.1016/j.atherosclerosis.2017.12.028.

[88] Hsiung YC, Lin PC, Chen CS, Tung YC, Yang WS, Chen PL, Su TC. Identification of a novel LDLR disease-causing variant using capture-based next-generation sequencing screening of familial hypercholesterolaemia patients in Taiwan. *Atherosclerosis* 2018; 277:440-7. doi: 10.1016/j.atherosclerosis.2018.08.022.

[89] Chang NT, Su TC. Investigating the association between familial hypercholesterolaemia and perceived depression. *Atheroscler Suppl* 2019;36:31-6. doi: 10.1016/j.atherosclerosissup.2019.01.007.

[90] Truong TH, Kim NT, Nguyen MNT, Pang J, Hooper AJ, Watts GF, Do DL. Homozygous familial hypercholesterolaemia in Vietnam: Case series, genetics and cascade testing of families. *Atherosclerosis* 2018;277:392-8. doi: 10.1016/j.atherosclerosis.2018.06.013.

[91] Truong TH, Do DL, Kim NT, Nguyen MT, Le TT, Le HA. Genetics, Screening, and Treatment of Familial Hypercholesterolemia: Experience Gained from the Implementation of the Vietnam Familial Hypercholesterolemia Registry. *Front Genet* 2020;11:914. doi: 10.3389/fgene.2020.00914.

[92] Starr B, Hadfield SG, Hutten BA, Lansberg PJ, Leren TP, Damgaard D, Neil HA, Humphries SE. Development of sensitive and specific age- and gender-specific low-density lipoprotein cholesterol cut-offs for diagnosis of first-degree relatives with familial hypercholesterolaemia in cascade testing. *Clin Chem Lab Med* 2008;46(6):791-803. doi: 10.1515/CCLM.2008.135.