BFHA 2020

EU 2020 HR

BETTER FUTURE of HEALTHY AGEING 2020

Theme C

Ageing and Health System Sustainability

BFHA 2020 · Sveučilište u Zagrebu Medicinski fakultet · EU 2020 HR

Liječ Vjesn 2020;142:Suppl 1:91–138
https://doi.org/10.26800/LV-142-Suppl1-4

Session C1: Demographic Challenges in the European Ageing Societies

Invited lecture

C1-I

Demographic Challenges in the European Ageing Societies

Gerda Neyer

Stockholm University, Sweden

Over the past two decades, the aging of the European population has received increasing attention from policy makers and researchers. In all member states of the European Union the share of the population over 65 has been rising. The 2018 Aging Report issued by the European Commission projects a further greying of the European population over the next half century. It predicts a further increase in the old age dependency ratio that necessitates major reforms to tackle pension, health care and long-term care expenditure.

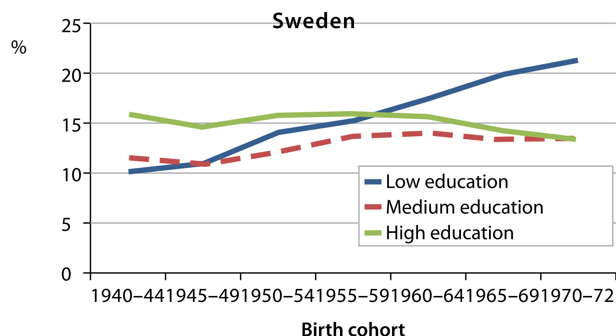
The old age dependency ratio varies across European countries. Differential longevity and migration dynamics account for some of these differences. A central factor driving the differences is fertility. Southern, Eastern, and the German speaking continental European countries have had persistently low or very low period total fertility rates (low = TFR 1.5 <1.7; very low = TFR < 1.5) during the past quarter century. These countries also experienced a drop to low or even very low levels of their completed cohort fertility rate (CFR) and thus a reduction in the average number of children per woman. In 2016, the CFR of women born in 1976 varied between 1.37–1.57 in Southern Europe and 1.90 – 2.23 in Northern Europe (European Demographic Datasheet 2018). Persistently low and very low fertility will have major effects on the population age structure, on the aging of society and on the old age dependency ratio in the future.

The consequences of low fertility for aging societies and the differences in fertility level across Europe have revived discourses on how to increase fertility. Several European countries have amended their family policies or introduced population policies to raise fertility. Whether and which policies will lead to sustainable fertility levels is still an open question. But some research results of recent fertility and societal developments and of links between policies and fertility may provide some guidance as to which directions policies might take.

Fertility and employment-supporting policies: Low period fertility (TFR) is partly due to an increase in age at first birth. This development implies that childbearing at higher ages becomes more important for fertility levels. Since women at higher ages are usually established in the labor market, employment related policies will become more relevant for fertility. Recent research results underline the relevance of reconciliation policies for childbearing: Women living in countries with high income-related parental-leave support are found to be more inclined to have a child than women living in countries with high flat-rate, employment-unrelated leave benefits. With social security and old-age pensions being increasingly tied to continual employment throughout an individual's working age, women's and men's childbearing decisions may become even more dependent on the possibility to reconcile work and childrearing.

Increasing female education, social inequality, and fertility: Among the younger cohorts of women ultimate childlessness (at age 40 and above) has been increasing across Europe, but there exist still differences in completed cohort fertility and childlessness by education. A common finding among older cohorts is that women with low education have the highest average number of children and are least likely to remain childless while it is the opposite for the highly educated. With the expansion of women's education during the past decades, this pattern has changed. In many European countries, fertility among low and middle educated women has converged; but highly educated women are still more often childless than lower educated women. In the Nordic countries, however, the pattern has reversed. Highly educated women have the lowest childlessness and tend to have a higher average number of children than low educated women. This reversal in fertility among highly educated women is commonly attributed to the Nordic family policies, their employment and gender-equality orientation. With rising education among women, such policies may become a pre-requisite for further fertility development in Europe. But the development also marks a new social inequality in fertility, with consequences for familial support and well-being among the low educated, to which policies need to respond in the future.

Increasing uncertainties and fertility: Declining and low fertility levels and higher childlessness among the



Jalovaara, M. et al. (2019). Education, Gender and Cohort Fertility in the Nordic Countries. *European Journal of Population* 35: 563–586.

Childlessness in % among Swedish women (at age 40) by 5-year birth cohorts

low educated may be associated with increasing economic insecurities and uncertainties about the future. The economic recession that hit Europe in 2008 has led to a drop in period total fertility levels in many countries. Research related has shown that the economic recession increased the perception of insecurity in the population and that this was associated with lower childbearing intensities. The perception of uncertainty may have led to fertility declines even in the Nordic countries, whose family policies are regarded as models to maintain sustainable fertility levels. With the uncertainties created by economic crises, the current pandemic, the restructurings of labor markets and welfare states, and the aging of European societies, there is a need to pay greater attention to the consequences that this may have for fertility development and design policies to tackle them.

Oral presentations

C1-O1

Croatian Priority During the EU Presidency – Healthy Ageing

Krunoslav Capak[1], Tomislav Benjak[1], Iva Pejnović Franelić[1], Ivana Pavić Šimetin[1], Dunja Skoko Poljak[2], Marija Bubaš[1]

[1] Croatian Institute of Public Health, Zagreb, Croatia
[2] Ministry of Health, Republic of Croatia

Today, most countries of the world are recording an increase in life expectancy, and the elderly account for a significant part of the global population. Globally, there were 703 million persons aged 65 or more in 2019 . Over the next three decades, the global number of persons aged 65 and over is projected to more than double, reaching over 1.5 billion persons in 2050. In 2018, one fifth of EU's population was aged 65 or more. By 2050, it is projected that the percentage of persons aged 65 or more will have increased to almost 30% of the EU's population. Like most European countries, Croatia belongs among countries with extremely aged population. The share of elderly population has surpassed 10% as early as 1971, while the trend of progressive ageing is continuing further. According to Censuses, Croatia experienced an increase in the share of 65+ population from 13.1% in 1991 to 15.6% in 2001. According to the 2011 Census, the share has continued to grow to 17.7% (758,633) inhabitants aged 65 or older. Such demographic changes have a major impact on sustainable development, which is one of the reasons why the ageing challenges must be taken into consideration in all policies. With ageing, health problems become more frequent and, consequently, the healthcare needs of the population increase. Thus, an increasingly ageing population puts strain on the sustainability of health and social services. At the same time, it is important to stress that active and healthy elderly citizens contribute positively to the economy. In Commissioner Kyriakides mission letter, President von der Leyen acknowledged that “”we are becoming an older society and need more complex and expensive treatments””. In line with the Treaty provisions, the Commissioner's task over the next five years is, according to this letter, to support Member States in constantly improving the quality and sustainability of our health systems in order to find ways to improve information, expertise and the exchange of best practices for the benefit of society as a whole. The Croatian Presidency proposes to continue this work and explore

how to best address the current demographic trends of population ageing by focusing on improving the use of available instruments and best practices at EU and Member States' level.

C1-O2

What Does *Healthy Age* Mean – Sociological and Anthropological Considerations

Marija Geiger Zeman, Zdenko Zeman, Sanja Špoljar Vržina

Institute of Social Sciences Ivo Pilar, Zagreb, Croatia

According to the statistics, the population aging is a fundamental demographic process on both global and national levels (Nejašmić and Toskić 2013; Puljiz 2016; United Nations/World Population Ageing 2015). That is why aging should be considered a "great theme of the modern world" (Puljiz 2000, p. 109) and inescapable challenges whose economic, political, social, cultural and demographic importance will only increase in the coming years and decades (Zrinščak 2012). Given that aging is a phenomenon in which biological, social and cultural processes are tightly intertwined (Zeman and Geiger Zeman 2015), the scientific approach to it demands interdisciplinary collaborations and mind openness beyond usual limitations and restrictions. It is indisputable that people neither do live nor get old in a social and cultural vacuum. Therefore aging – in spite of its universal nature – always should be viewed contextually (Sokolovsky 2009) and intersectional, and one should never forget the full spectrum of important influences manifested in micro, mezzo, and macro-level (Silverstein and Giarusso 2011). By taking into account both the context of aging in Croatian society and relevant literature, the authors put the question from the perspective of sociology and anthropology: „What does 'healthy age' mean?" (Hung, Kempen, De Vries 2010; Deepika and Manpreet 2015; Špoljar Vržina 2008, 2012). The authors emphasize importance of (a) finding valid answers to questions about potentials and boundaries of the idea of healthy aging; (b) getting new solutions for challenges posed by aging population in the contemporary national context; 3) creating locally based policies and programs for healthy aging that would take seriously into account both older persons' experiences and the knowledge of the professionals.

C1-O3

Legal Protection of Older Persons: Do We Need a Special UN Convention on the Rights of Older Persons?

Sunčana Roksandić Vidlička

Department of Criminal Law, UNESCO Chair Unit in Bioethics, Faculty of Law, University of Zagreb, Croatia

The presentation is based on the claim that all vulnerable groups, such as the older persons, children and people with disabilities, deserve increased social protection of their rights and interests. On the UN level, by means of special Conventions, protection is provided to children and people with disabilities, but not to older persons. Therefore, the author analyses whether there is a need to support the drafting and adoption of the United Nations Convention on the Protection of the Rights of the Older Persons. The presentation will also address the current state of regulation of special rights of elderly persons at the international, European and national level.

Poster presentations

C1-P1

Cognitive Impairment as Risk Factors for Falls

Lejla Ćorić, Marijana Bosnar Puretić, Mislav Budišić, Sara Drnasin, Lidija Dežmalj Grbelja, Marina Roje Bedeković

Department of Neurology, University Hospital Centre Sestre Milosrdnice, School of Medicine, University of Zagreb, Croatia

Epidemiological studies conducted in developed countries show that, one third of older adults experience a fall at least once a year. The incidence of falls increases with increasing patient's age. Patients with neurological diseases, such as Parkinson's disease, multiple sclerosis, stroke or Alzheimer's disease, experience falls significantly more frequently. These neurological diseases are known to be associated with early reduction of cognitive function but also with early development of risk factors for falls, among which the most common are postural instability, use of medication, neurocardiovascular instability – especially orthostatic hypotension, and adverse effects of environment. After experiencing a fall, the patient's quality of life is significantly reduced in most cases. Between 5-10% of falls result in severe injuries, such as head trauma or fractures. It is well known that even if serious injuries did not occur after a fall, in the patient's condition can be noticed the fear of a possible next fall, self-restriction of mobility, decreased activity, depression and social isolation. Not surprisingly, falls and injuries associated with falls are a significant problem not only for the individual but also for the social and health systems. Therefore, it can be concluded that modification of risk factors can prevent falls in patients with cognitive impairment. Clinical studies conducted in subjects with cognitive impairment and dementia, show that physical therapy may play a role in the prevention of falls. In addition, risk modification interventions in patients with cardiovascular risk factors and neurocardiovascular instability may have the effect on reducing the risk of falls.

C1-P2

The Correlation Between the Physical Activity and Health of Older Adults: Case of Lithuania

Asta Sarkauskiene, Leta Dromantiene, Zeneta Paskauske

Faculty of Health Science, Klaipeda University, Lithuania

Introduction and objectives. The rapid demographic ageing is a reality of Western Europe, where within 25 years half the population will be over 50, one quarter over 65 years old. According to statistics, in 2020 almost 20 percent of the population of Lithuania is 65 years old or over. This demographic transition requires more public attention to healthy aging (WHO, 2019). Objectives of study – active ageing strategies with the aim to reveal the links between physical activity and health of older people. **Methods.** The empiric data has been collected by applying quantitative research and semi-structured interview method. To evaluate the physical activity of older people, an adapted community questionnaire for healthy physical activity model for seniors (CHAMPS) was utilized, to assess health – the SF-36 questionnaire (Short form of health survey) and the Hygiene Institute adult lifestyle questionnaire were used. Disease classes were also presented according to the ICD-10-AM systemic list of diseases to determine if the elderly are suffering from these diseases. The study was conducted in January 2019, at Universities of Third Age in Telšiai and Klaipėda (Lithuania). 250 questionnaires were distributed during the survey, 123 of which were filled in correctly. Thus, the study included 123 persons, 8 of whom were men and 115 were women. All persons were elderly – 65 years old or over. The average age of respondents was 71.7 (± 4.9) years. **Results.** According to the results, older people most frequently tend to do light work at home (97.6%), read (95.1%), go for a walk in order to complete certain tasks (92.7%), spend time with friends and family (91.9%), attend various events (80.5%), use a computer (77.2%), go for an easy walk to exercise or for enjoyment (74.8%), attend church (67.5%), do stretches or flexibility exercises (65.9%), walk fast (62.6%), visit a senior centre (59.3%), and do hard work at home (59.3%). Older people are predominantly affected by connective tissue and musculoskeletal disorders (56.1%), circulatory system diseases (49.6%) and diseases of the eye and the ocular adnexa (46.3%). **Conclusions.** The analysis of study results revealed and confirmed direct relation between the physical activity and health of older people. Older people, who are more likely to attend group meetings, work hard in the garden and run slowly, complain less about endocrine, nutritional and metabolic diseases. More active people are less likely to complain of depressed mood,

anxiety, nervousness, fatigue and restrictions on social activities.

C1-P3

Demographic Determinants of the Split-Dalmatia County Population

Ivana Marasović Šušnjara

Teaching Public Health Institute of Split-Dalmatia County, Croatia

Introduction and objectives. The Split-Dalmatia County (SDC) is the second largest county in Croatia, accounting for 10.6% of the population of Croatia. It is located in the central part of Southern Croatia with three distinct geographical-social units: Coast, Islands and Hinterland. As population is a core value of socio-medical interest, the aim of this paper is to present the Split-Dalmatia County population demographic determinants between the two censuses. **Methods.** The demographic analysis was based on the published 2001 and 2011 Census results and on the vital (demographic) statistics data for the period 2001-2018. **Results.** According to the 2011 Census, the SDC had a total of 454,798 residents, 71.2% in the Coastal region, 6.6% on the Islands and 22.2% in the Hinterland, with extremely uneven population density (Coastal areas 379.4; Islands 34.2, and Hinterland 40.0 inhabitants / km2). SDC demographic trend between the two censuses was negative (-8,878), the Coastal region (-754), the Islands (312) and the Hinterland (-8,436). Total depopulation was accompanied by the natural depopulation. The rate of natural increase in SDC in 2018 was -1.8/1.000 (in 2001 it was 1.0/1.000). The overall depopulation was also due to the migration trends in SDC (inter-census difference -12.531), especially in the Hinterland (inter-census difference -8.686). Age structure analytical change indicators point to a significant aging of the population. (2011 Census: average age 40.8 years; age ratio 16.6%; aging index 73.6% vs. Census 2001: average age 38.1 years; age ratio 14.3%; aging index 56.1%). According to the 2011 Census, the Islands index was 123.1%. The aging process is largely due to the declining share of the young population (0-19 years) in the total population (in 2018 it was 20.42% versus the 2001 Census: 25.5%) and the share of the fertile contingent (women aged 15-49) of the total female population (in 2018 it was 42.62% versus the 2001 Census of 47.3%). **Conclusions.** Depopulation, population aging and uneven population density are characteristics of the SDC demography, which are particularly high in the Islands and the Hinterland. This demographic situation highlights the increased medical care needs and associated problems facing the health sector and society as a whole, and calls for urgent measures to remedy it.

C1-P4

Ageing as Main Driver of Healthcare Expenditures – Reality or Not

Josipa Meštrović Špoljar

Croatian Health Insurance Fund, Zagreb, Croatia

Introduction and objectives. The age structure of the EU population is projected to change in the upcoming decades. Despite to Eurostat and their projection of overall increase of EU population over 2016-2070, there will be quite differences in population trends across Member States, in half of them population is going to increase and in other half to decrease. Changes in population size and age profile depend on fertility rates, life expectancy and migration. Increasing life expectancy is a great achievement of overall economy and health care system. But it is also challenge for long-term sustainability of public finances because population ageing entails additional government expenditures. **Methods.** The Ageing report 2018, made by the Economic Policy Committee (EPC) and the Commission services, underlies macroeconomic assumptions and methodologies of the age- related expenditure projection for all EU Member States and also highlights future policy challenges for governments based on demographic trends. Each EU Member State filled the questioner regarding age/sex specific expenditure profiles and provided country-specific information such as relevant implemented reforms. Respective services calculated age/sex expenditure profiles for each projection year up to 2070 on the basis of twelve projection scenarios. Those scenarios included demographic and non-demographic variables like ageing and health status of the population, overall economic growth, new technologies, the organisation and financing of the health care system, and health care human and capital resource inputs. **Results.** Demographic changes of population, especially ageing, are phenomenon of modern society. Ageing is one of the challenges of fiscal sustainability because the costs are allocated asymmetrical while people are getting older, smaller cohort of the elderly spent more than numerically larger but younger cohort. Twelve methodologies defined for projection of public expenditure on health care, with demographic variables in focus, affects the increase of health care costs and the public finance sustainability in the peri-

od from 2016 to 2070. **Conclusions.** Aging and demographic changes are highly influential factors of health care costs growth and finances of health systems. They should always be observed in correlation with other supply and demand health care factors (such as non-demographic factors). Aligning the health care needs of the population with limited resources, as well as ongoing efforts to increase the efficiency and quality of healthcare services, should be high on the political and economic agenda for decision makers' reforms.

C1-P5

Liver Transplantation and Ageing

Anna Mrzljak, Danko Mikulić, Branislav Kocman

University Hospital Merkur, School of Medicine, University of Zagreb, Croatia

Introduction. Liver transplantation (LT) is one of the greatest success stories of modern medicine. The treatment initially reserved for younger patients has shifted to the present situation where most transplant centers do not have a strict age limit when waitlisting the patients. In parallel, the extension of organ donation criteria has resulted in the increasing use of organs from older donors. The benefits of LT are undoubtedly great, however the growing ageing population imposes new challenges for transplant professionals. **Methods and Objective**. The literature was reviewed to investigate the liver recipient and donor age trends, and to highlight the age-related aspects for major indications for LT, in terms of selection, allocation and post-transplant outcomes in elderly liver recipients. **Results.** In the last decade there has been a significant increase in the average age of donors and recipients in LT. Regardless of the liver disease, elderly candidates have more age-related co-morbidities that may significantly affect pre- and post-transplant mortality. However, the transplant benefit may be similar in older and younger recipients, provided that elderly are carefully selected. As hepatitis C virus burden is decreasing by the use of highly effective antiviral drugs, non-alcoholic fatty liver disease (NAFLD) is becoming one of the leading indications based on cirrhosis with or without hepatocellular carcinoma HCC in elderly population. Overall, LT from older donors has good outcomes, but are not as good as those from younger donors. As the transplant population ages, issues concerning long-term exposure to immunosuppression such as metabolic complications and malignancies impose growing burden to the transplant recipients. **Conclusion.** Liver transplant recipients and donors are getting older. There is no universal age limit for LT but frailty and co-morbidities are important to consider in elderly candidates. As the world's elderly population and the prevalence of metabolic syndrome continue to grow, NAFLD, as indication for LT is projected to increase. LT outcomes in elderly are good, but can be optimized by strategies that modify recipient co-morbidities, donor risk factors and utilize personalized allocation and immunosuppression schemes.

C1-P6

Challenges of Ageing and Sexual Health

Iskra Alexandra Nola[1], Tatjana Nemeth Blažić[2]

[1] Department for Environmental Health, Occupational and Sports Medicine, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

[2] Department for HIV, Sexual and Blood Transmitted Diseases, Croatian Institute of Public Health, Zagreb, Croatia

Introduction. Ageing related health is a new arising challenge and is high on the global list of public health priorities. Demographic projections say the global population aged 60+ years will double by 2050 (the proportion of 65+ in Croatia will be 26.8 %). People often stay sexually active at an elderly age, and globally sexually transmitted diseases (STD) is increasing in this population. However, sexual health among the elderly is often overlooked. Sexual health is an important aspect of health, and population egeing brings new challenges. An overview of current state of sexual health promotion among elderly in Croatia will be presented. **Methods.** Search for information on sexual health and sexuality in elderly, key words: Older people and sexual health, Older people and sexuality, Public health interventions/actions. The search included papers, scientific and professional publications and data from official national and county public health websites in Croatian language, in the period of last 5 years. **Results.** The search revealed numerous documents related to diseases common in elderly, but there was a small number of documents about sexuality in older adults, except for popular articles on the Internet with advice on how to maintain good sexual health in an old age. Valid sources, such as articles written by physicians are rare, and most of it debate on how sexuality in elderly is a taboo. Psychiatrists and psychologists are very engaged about this topic and these articles represent a valuable source of information. The official web page of the Public Health Institute of City of Zagreb, in terms of sexual health of aged people, was linked only to reproductive and urinary tract neoplasms. Preventive Activities in Croatia in 2015 included projects aimed to improve sexual health, but only in youth. We did not find any official document or national research that puts sexual health of older

people in focus. We found the topic of ageing and sexuality at the last and forthcoming Croatian Congress on gerontology and geriatrics, and two books that have been published recently. **Conclusion**. Despite implemented preventive programs targeting elderly in Croatia, none of them is dealing with their sexuality. Sexuality is part of healthy ageing and increased number of HIV infection and other STDs in older adults, may pose new problems in future. The stigma of sexuality in elderly, which makes them unwilling to share sexual issues and the lack of knowledge in health professionals, can contribute to delays in appropriate health services. One of the solutions is to strengthen education of healthcare professionals and include sexual health in geriatric care.

C1-P7

Work of the Second Instance Committee of the Division for Occupational Health of the Croatian Institute of Public Health from 2014 to 2019

Dominik Oroz, Marija Bubaš

Division for Occupational Health, Croatian Institute of Public Health, Zagreb, Croatia

Introduction and objectives. The data on workability assessments in the archives of the Division of Occupational Health of the Croatian Institute of Public Health are available from 2011 onwards. The aim of the study was to present the results of workability assessments in relation to the age of the employees within the process of appeals to the Second-Instance Committee of the Division of Occupational Health of the Croatian Institute of Public Health. The study provides a ground for discussion on the necessity for enhancing the promotion of health in the workplace and timely activities for preserving workability of workers almost facing the age 50+. **Materials and methods.** Workability assessment is most often performed at regular intervals in accordance with by-laws. In case the employer or employee is not satisfied with the assessment, an appeal is initiated with the Second-Instance Committee in charge. Appeal proceedings are initiated and conducted in accordance with legislation regulating the field of occupational medicine. In regards to legislation, the Second Instance Committee may, for example, evaluate workability as follows: capable, incapable, temporarily incapable and assessment cannot be made. In this study, we used the data and workability evaluations in the period from 2014 to 2019. **Results.** Over a period of 5 years, 153 workers were involved in the process of assessing their fitness to work. Men accounted for 81.05 % (N=124) and women 18.95 % (N=29) of the sample. The average age of the workers is 44.4 +/- 13.4 years. The majority, 57.52 % of workers were declared incapable, 24.84 % were declared capable and 17 % were temporarily incapable. The assessment could not be given in just one case. The average age of the incapable workers is 45.13 years, 48.08 of temporarily incapable and 40 years of capable workers. The incapable workers account for 43.14 % of all assessed workers with an average age of 49.5 years. In the group assessed as incapable for work, 25 % of the workers were declared incapable at a previous examination, and 75 % were declared incapable at a regular or/and an exceptional examination. Most of the incapable workers (40,9 %) are in the age group of 50-59 years, which is worrying because they are people who, given their experience, could contribute most with their work. **Conclusion**. Based on the results, it's noticed that most of incapable workers are in their 50s, who, in the case of unsuccessful vocational rehabilitation and job adjustments, lose their jobs and become unemployed or retire early. Workers need to be monitored more closely and thoroughly before the age of 50 and we need to work harder to prevent ill health"

C1-P8

Long-Term Care for the Elderly in Croatia

Urelija Rodin, Ana Ivičević Uhernik, Tanja Mišić, Ranko Stevanović, Mario Trošelj, Sandra Mihel, Željka Draušnik, Vesna Štefančić Martić, Marijana Radić Vuleta, Ivan Cerovečki, Danijela Fuštin

Public Health Division, Croatian Institute of Public Health, Zagreb, Croatia

Introduction and objectives. Croatian population is experiencing a trend of progressive ageing, as the share of the 65+ population has reached 20.1% in 2018, an increase of 2.3% compared with 2008. A generally increasing trend can be observed for the whole EU (EU average 19.7% in 2018, 17.1% in 2008). Many of elderly require ongoing support on long-term basis, for nursing health care and/or for assistance with basic and/or instrumental activities of daily living (ADL and IADL). Coverage by social protection against the costs of long-term care (LTC) in old age varies widely both across and within countries in the EU. The rising costs for LTC are becoming a challenge for all Member States (MS) and put LTC on the high position on EU's social protection agenda. Croatia is situated in country group with low public expenditure on LTC (EU average in 2016 1.6%, Croatia 0.7%). Aim of this analysis was to explore expenditure for health component of LTC and discuss about challenges for ensuring fiscal

sustainability for future LTC needs. **Methods.** Health expenditure data for Croatia in 2017, classified according to System of Health Accounts (SHA) methodology, were used for analysis. Expenditures for health component of LTC including palliative care were analysed according to providers and according to financing schemes which covered the costs. **Results.** Total expenditures in 2017 for health component of LTC were 761 million HRK presenting 3.1% of current health expenditures in Croatia. Public expenditures (including government and social insurance) form the major part (94.7%) of total expenditures for health component, followed by out-of-pocket expenditures (4.3%) and voluntary health insurances (1.0%). Share of expenditures divided according to the providers in total expenditures for health component of LTC was: 47.9% in hospitals (includes departments for chronic diseases), 21.7% in residential facilities (includes hospices, homes for elderly and homes for adults with mental disorders), 17.6% for formally provided LTC at home and 10.7% for informally provided care at home (includes expenditures for paid sick leave for providing care to sick family member). **Conclusions.** Population trend in Croatia indicates progressive ageing and future rising of LTC expenditures. The public expenditure for health component of LTC is only part of the full costs of LTC, without social beneficiaries, out-of-pocket for ADL and/or IADL and informal care costs. Unpaid informal care is not included in the fiscal sustainability analysis in the SHA. Elderly with similar LTC needs can face significantly different out-of-pocket costs, depending on which MS they live in.

C1-P9

Demographic Challenges and Long-Term Care the Elderly in Croatia

Sanja Ožić[1,2], Danijela Štimac Grbić[3,4], Anja Belavić[3]

[1] Postgraduate university study Health and Environmental Engineering, Faculty of Medicine, University of Rijeka, Croatia
[2] Zagreb Holding
[3] Croatian Institute of Public Health, Zagreb, Croatia
[4] Division for Organization of Health Care and Management, Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. Eurostat data (2019) showed that is in EU-28 almost three quarters (72.5%) of very old people (over 85 years) had long-standing illness or a health problem, and about two thirds (66.9%) of elderly people (75–85 years) and more than half (56.9%) of old people (65–74 years). Croatia is now ranked as the 14th fastest shrinking country in the world and have a very old population. For the EU, public expenditure on long-term care is projected to increase from 1.6% to 2.7% of GDP between 2016 and 2070. Rapid expansion in the number of very old people presses policymakers for quality and sustainable solutions for long-term care. **Methods.** Institutional and organizational documents have been analysed by the document analysis method. It included the review and evaluation of printed and electronic materials. The analytical process involved the selection, evaluation, interpretation and inference. **Results.** The long-term care services including high levels of public expenditure and coverage are characteristic of Northern European countries. Medium expenditure and coverage are characteristic of many Western countries and low expenditure and coverage by Mediterranean, Central and Eastern European countries. Croatia national-level data reveal large gaps in the provision of and access to long-term care. In 2014, less than 10 % of all elderly reported that they had made use of homecare services. The use of social services shows that of the 72,408 individuals who received the assistance and care allowance, half were over 65 years of age and two thirds received the full amount of the benefit. In 2015, 3,328 old persons received home help assistance. Also 9,287 old people have received the guaranteed minimum benefit amounting to 9.07% of all recipients of this benefit (1.16% of all old persons). Further 3,226 old people received the personal disability allowance amounting to 13.58% of all recipients of that benefit. An analysis of social protection expenditure showed that the largest part of social protection expenditure in 2016. belonged to the elderly services (34.2%). **Conclusion.** Planning for comprehensive and integrated long-term care for the elderly in Croatia needs to be discussed and promptly initiated. Recommendations go in three directions: a) developing tools and training packages to strengthen formal and informal caregivers; b) building sustainable workforce for ensuring the quality and capacity of integrated long-term care; c) increase capacity in long-term care: nursing homes, rehabilitation facilities and hospitals for long-term chronic care.

C1-P10

Local Community Answers to the Ageing Challenges

Romana Galić, Andreja Ninić, Antonija Bobić Lazić

City office for social protection and persons with disabilities, City of Zagreb, Croatia

Introduction and objectives. According to estimates from The Central Bureau of Statistics for 2018, 154,053 people over 65+, live in Zagreb, which means 19.2% of the total population. City of Zagreb, within

its strategic documents, recognized comprehensive care for elderly people as one of the most important social and public health priorities, whereby the City's activities are aimed at improving the material status of the elderly towards the development of various social services in the local community. **Methods.** In order to encourage the further development of social services, we have conducted several studies, the results of which show that awareness about programs and services is crucial for their use. The results also highlighted the need to actively promote the development of specific services such as those aimed at people with Alzheimer's and other dementias. **Results.** A significant step in the development of non-institutional services is the model of home assistance and day care services, whereas additional services are provided within the Local Community Support Program "Gerontological Centers of the City of Zagreb". This is a standard that was created in 2004 as a collaboration between City of Zagreb and Center for Gerontology Andrija Stampar Teaching Institute of Public Health. The vision of the Gerontology Centers is to adapt the local community to the needs of the elderly in order to improve their health and functional abilities. City of Zagreb also established The Mutual path Foundation, which opened apartment-type housing units in 2012, the first such alternative accommodation for elderly in Zagreb. We are particularly focused on providing appropriate services for people with Alzheimer's and other dementias (specialized departments, counseling services for informal carers, education for staff). In order to ensure access to information on rights in the field of social protection, health insurance and other relevant information, we print the publication The Guide for Senior Citizens of City of Zagreb. Also, aware of the accelerated technological development that requires creation of innovative digital solutions, in 2018 we launched the communication platform www.najmudriji.hr. **Conclusion.** Aware of the specific needs of the elderly people, we are developing a social policy towards providing specialized wards for people having Alzheimer's other dementia. Emphasis will certainly be placed on programs to prevent social exclusion, promote the health and safety of the elderly, as well as their involvement in public policy-making in order to secure a friendly local community for elderly people.

Session C2: Bioethics and Ageing

Invited lecture

C2-I1

Dignity-Enhancing Care for Older Adults: An Ethical Framework

Chris Gastmans

Catholic University Leuven, Belgium

The number of older adults continues to increase worldwide. Over the past decades, the growth of the aged population has been particularly notable for the oldest-old individuals, those who are 85 years and older. This group will continue to grow significantly over the next decades. Given that older adults are especially prone to suffer from dementia, many countries will be confronted with a rising number of people with dementia. It is estimated that the population suffering from dementia will double every 20 years to 42.3 million by 2020, 81.1 million by 2040, and 113 million by 2050.

These demographic evolutions result in important new responsibilities for older adults, in general, and people with dementia, in particular. How do they deal with the risk of become care dependent? What do they think about the quality of their life and about their subsequent end of life? What are their opinions about vulnerability and dignity in old age? What arrangements do they want to make with their family about the care they will need when they become more dependent? What do they consider to be 'good care' and 'good death' for older adults? What do they consider to be their own responsibility in 'preparing for the future'? Do they want to write advance directives in order to plan their life and death after they become incompetent? What do they think about legal regulations regarding patients' rights, advance directives, euthanasia, and assisted suicide, and what do these legal frameworks mean for their own situation?

In this presentation, we will propose a comprehensive clinical-ethical framework that addresses the above-mentioned questions about care for older adults in general and persons with dementia in particular. First, we briefly outline the general philosophical-ethical background from which we developed our framework. This is based on three aspects: lived experience, interpretative dialogue, and normative standard. Against this background, we identify three cornerstone concepts that must be observed in an ethical approach on care for older adults: vulnerability, care, and dignity. Based on these concepts, we argue that the

ethical essence of care for older adults is the provision of care in response to the vulnerability of a human being in order to maintain, protect, and promote his or her dignity as much as possible.

REFERENCES

1. *Gastmans C.* Dignity-enhancing nursing care. A foundational ethical framework. Nursing Ethics 2013;20(2), pp: 142-149.
2. *Gastmans C.* Dignity-enhancing care for persons with dementia and its applications to advance euthanasia directives. In: Y. Denier, C. Gastmans & T. Vandevelde (eds.) Justice, luck and responsibility in health care: philosophical background and ethical implications. Springer: Dordrecht, 2013, pp: 145-165.
3. *Jones DA, Gastmans C, MacKellar C (eds.)* Euthanasia and assisted suicide. Lessons from Belgium. Cambridge University Press: Cambridge, 2018.

C2-I2

Ageing Ethics and Challenges for Care

Renzo Pegoraro

Pontifical Academy for Life, Vatican

The considerable prolongation of life, in our societies, has made possible by: a broad improvement of the quality of life and advancements in the medical field. This phenomenon may be seen as an important "conquest", but it also gives rise to a new "challenge" on multiple fronts.

Questions:

The meaning to become old

The meaning to become "disabled" for the old person

The challenge for the family to take care for him/her

The role of society and institutions to help the family and the elderly

Ageing and quality of life

Ageing and "end of life"

Focusing on the question pertaining to assistance for the elderly had not so much an intention to provide an immediate "technical-medical" solution, rather to: create awareness of the problem in all its specificity and intensity – that is, in the particular way it is an issue by nature and then subsequently in the contingency of current social conditions; propose a cultural-ethical approach to the problem. When it comes to the social aspect, what is evident to everyone today is that the problems tied to care cannot be addressed in the manner that up until a decade or so ago was considered the norm. One cannot place all one's trust in the natural solution alone, namely the family. Furthermore, the specific nature of problems associated with care, and only in the field of health, often make it a matter that exceeds the resources that are to be found within a family context. Of course the family is and continues to be an indispensable reality, something that is with difficulty replaced by "something else". But a challenge such as the care of the elderly speaks to the community as a whole (beyond the particular and individual institutions, organizations, volunteer associations, etc.). The expectation of continuing population ageing prompts questions about welfare states' capacity to meet the needs of their population. The State, institutions and the family cannot avoid answering the challenge that arise from the needs of the elderly. Family, Nursing homes, Christian community and Civil Society as a global net able to give answers to the elderly needs, according the different situations: no autonomous elderly; active elderly. It is important to reaffirm the intrinsic and inalienable dignity of all human beings, regardless of their age, health or existential condition and to promote and sustain mutual relationships within families, according to the principle of subsidiarity and real solidarity. It is urgent to develop a socio-cultural model including social proposal to maintain dignity and meaning for the life of elderly and the medical and care support: an holistic and integrated approach.

Oral presentations

C2-O1

Ethical Challenges for Healthcare Professionals in Managing Elder Abuse

Luciana Caenazzo[1], Sarah Gino[2]

[1] Department of Molecular Medicine, University of Padua, Padova, Italy
[2] Department of Health Sciences, Università del Piemonte Orientale, Novara, Italy

Introduction and objectives. Abuse is a common challenging issue in both developed and developing countries around the world. It involves issues such as healthcare, justice, ethics, and human rights. Elder abuse is an example of human rights and freedom violation that leads to a serious loss of human dignity, independence and respect, and influences ethical principles such as autonomy, competency, beneficence, and non- maleficence. Different definitions have been provided for elder abuse over time: it may be defined to an act (or to the absence of a proper act) that will cause harm or suffering to an older person, and it occurs in a relationship that normally requires trust, and may be performed only once or several times. Elder abuse is an increasingly phenomenon that has created ethical issues for care teams, thus our objective is to determine the existing ethical challenges in this context. **Methods.** The present contribution is based on a critical review to determine the ethical challenges involved in elder abuse and was conducted collecting related documents, articles and sources. **Results.** Since awareness of abuse is influenced by knowledge, expertise and preparedness, the competence of health personnel who take care of abused subjects in conducting the examination and evidence collection is of fundamental importance to identify and report mistreatments and to support vulnerable populations such as the elderly. Intervention in case of elder abuse is accompanied by ethical challenges, because lack of professional principles leads to personal, legal and ethical concerns. **Conclusions.** The goals of elder abuse prevention are to prevent unnecessary suffering, maintain autonomy, and maintain quality of life. Within this context, classical principles of medical ethics will be discussed.

C2-O2

What Sort of Discrimination Among the Geriatric Population?

Hrvoje Tiljak[1], Hrvoje Jurlina[2], Nina Bašić Marković[3], Antonija Balenović[4]

[1] Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[2] Health Center Zagreb County, Samobor, Croatia
[3] School of Medicine, University of Rijeka, Croatia
[4] Health Center Zagreb – Center, Croatia

Introduction and objectives. Discrimination among different social groups start to be an important public concern in the 21st century. Special population groups attract attention as deprived groups of individuals discriminated according their specific characteristics. Health and social service in Europe have a long tradition of social awareness regarding the discrimination as well as promotion of anti-discrimination of any kind. Solidarity was early introduced and stayed essence to diminish differences between social groups. Such an approach demands adequate insight into different population group's needs. **Methods.** Health needs differ according to age. When talking about age-specific health needs one must take into account which age group is more vulnerable regarding health. What about senior citizens in Europe? What are their health and social needs? How they are met and are there sufficient resources for their specific needs? And finally, are there differences in social and health needs within seniors? Several problems of geriatric care and related discrimination options emerge when that age group is observed in detail. **Results.** First, seniority is defined as age over 65 and could last for 35 or more years. Specific periods could be recognized during that period of life: pre-retirement and early retirement period, empty-nest household period, deep age, etc. Assessment of seniors' needs based on a look at the group in total can lead to discrimination.

The second differentiation lays in individual health status when entering seniority. Noncommunicable chronic diseases represent often health problems in the elderly meaning life-long medication and health status monitoring. The healthy ageing project promotes early prevention of chronic diseases resulting by chronic disease absence. Two groups of seniors on different poles of scale (multimorbidity individual versus healthy individual) have different needs at the same age. That can also be the origin of discrimination in geriatric care. The third and most important difference represents the quality of inner-circle social support. Seniors living in common households together with inner or extended families have different needs than seniors who live alone without any family relationship.

Needs for nursing-home settlement or other kinds of social/medical nursing for seniors who live alone are evident and important. Seniors who live alone could experience the whole scale of discrimination in case of medical emergencies. **Conclusion**. The problem of seniors who live alone in case of an urgent deterioration of health status represents a critical geriatric problem that must be tackled with more attention.

C2-O3

Does Revascularisation Therapy for Acute Stroke Improve Functional Outcome in Elderly Patients?

Zdravka Poljaković[1], Svjetlana Šupe[1], Josip Ljevak[1], Marko Radoš[2], David Ozretić[2], Ivona Šomle[3]

[1] Intensive Care Unit, Department of Neurology, University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia
[2] Division of Neuroradiology & Vascular system, Department of Diagnostic and Interventional Radiology, University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia
[3] School of Medicine, University of Zagreb, Croatia

Introduction and objectives. Revascularisation therapy for acute stroke including thrombolysis and mechanical thrombectomy is now the standard care for acute ishemic stroke. However, in spite of numerous studies including elderly in the protocol, this group of patients still receive limited acute care considering modern revascularisation techniques. Furthermore, actual guidelines do differ age group of patients above 80 years considering inclusion criteria for thrombolysis. Elderly patients are more critically judged while considering inclusion/exclusion criteria for revascularisation therapy which bring us also to some ethical considerations in this growing group of acute stroke patients. In this presentation, we analysed and compared recanalisation rate and clinical outcome of our patients in 2 years period according to their age in order to check whether in our cohort age differences do influence these outcome measures. **Methods.** In our work we analysed 139 patients treated in UHC Zagreb during 2017 and 2018 for acute ishemic stroke due to large vessel occlusion by thrombectomy, preceeded or not with thrombolysis. We devided patients in three groups according to their age (less than 60, 61–75 and 76 and older) and analysed their recanalisation rate (using TICI system, and considering all TICI 2b and 3 as a complete recanalisation), as well as outcomes using modified Rankin scale at 90 days considering 0–3 as good outcome. We analysed mortality rate (mRS 6) and patients with bad outcome having mRS 4 and 5. The results were analysed and compared.

Results. From 139 patients 32 were younger than 60., 64 in the „middle“ age group, and 42 in the group of elderly patients (76 and older). Low recanalisation rate of TICI 2a and less had 14 patients (11%) which is a recanalisation rate according to the literature. However, the age differences in low recanalisation rate were not significant, namely low recanalisation rate had 36% of elderly patients, and 64% of middle age or younger patients. Considering clinical outcome, overall mortality in our group of patients was 13%. When we looked to the mortality rate in groups, the lowest mortality rate (3%) was in the youngest group of patients and the highest (17%) in the elderly. Bad outcome (mRS 4&5) had 5% of patients in the middle age group. **Conclusions.** According to the results of our study, it is not ethical to refrain from treating elderly people with modern revascularisation techniques in spite of higher mortality rate which is to expect in this group of patients anyway. The caution has to be aimed to the optimisation of patient selection, but not to the treatment selection or treatment withdrawal.

Poster presentations

C2-P1

Ageing of the Yugoslav Population: Andrija Štampar's and Branko Kesić's Detection of Demographic Changes in the Middle of the 20th Century

Stella Fatović-Ferenčić, Martin Kuhar

The Division for the History of Medical Sciences, Department of the History and Philosophy of Science, Croatian Academy of Sciences and Arts, Zagreb, Croatia

Introduction and objectives. The subject of gerontology aroused stronger interest among Croatian scholars only in the middle of the twentieth century, largely due to the demographic analyses brought by prominent Croatian public health experts Andrija Štampar and Branko Kesić. Our objective is to show their results in the context of the development of gerontology in Croatia. **Methods.** Our presentation is based on the analysis of vital statistics brought by Andrija Štampar in 1940, as well as his colleague and cooperator Branko Kesić in 1958. **Results.** Croatian public health pioneer Andrija Štampar was the first to anticipate future public health issues regarding the ageing population. In his book Hygiene and Social Medicine from 1940, Štampar analyzed demographic changes in several European countries, and showed how the decrease in birth rates and the prolongation of life would change "economic and social structure" and necessitate the introduction of "new social and health measures". Adding upon Štampar's analysis, the specialist of hygiene, social and occupational medicine Branko Kesić published in 1958 a chapter Ageing of the Yugoslav Population in the Symposium on Gerontology. Kesić noted that the age structure significantly differed between the 1931 and 1951 censuses, with the main changes being the higher life expectancy and a lower number of children. Štampar's and Kesić's analyses were the first to use census data aiming to warn about future demographic changes and their social, economic and health repercussions. **Conclusions.** Even though our public health experts focused their attention to the contemporary public health priorities such as infective diseases, sanitation etc., they did not neglect to spot the incoming demographic changes and their potential consequences. They agreed that medicine had to solve these problems not only because of its humanitarian roots, but also because of the social and economic reasons. Kesić's article thus added to Štampar's thoughts on the population structure from 1940, with a clear formulation of public health concerns that the changing vital statistics brought.

Session C3: Epidemiological Trends on Prevention of Age Related Frailty Syndrome and Diseases

Invited lecture

C3-I

Frailty – What Is and What We Can Do in Croatia?

Tomislav Benjak, Vesna Štefančić, Željka Draušnik, Ivan Cerovečki

Croatian Institute of Public Health, Zagreb, Croatia

Ageing is one of the biggest challenges that Europe is currently facing (WHO 2015). Demographic trends suggest that there will be an increase in age-related disability and dependence, which will ultimately impact not only on the wellbeing of the individuals affected, but also on the sustainability of health and social care systems. Nevertheless, recent data suggests that disability and dependency trajectories can be changed providing the opportunity for older adults to live longer healthy lives. For most older people, the maintenance of functional ability is of the highest importance. Healthy ageing is defined by the World Health Organization (WHO 2015) as the process of developing and maintaining the functional ability that enables well-being in older age. Therefore, identification of conditions preceding the development of disability and dependency is an essential prerequisite to effectively promote healthy ageing. Among the most important of conditions that contribute to functional impairment is frailty. Frailty is an identifiable decline in physiological systems that results in decreased reserves, confers extreme vulnerability to stressors and increases the risk of a range of adverse health outcomes such as disability, institutionalization, hospitalization and death (WHO, 2015). There is evidence that prevention and early management of frailty can avoid

many of the major negative health-related outcomes associated with ageing including functional decline and dependency (WHO, 2015). Nevertheless, although addressing frailty is a necessary step to enhance healthy ageing, frailty is not currently considered as a public health priority in many European Countries. Concern over this situation motivated the European Commission (EC) and many of the Member States (MS) to co-fund the first Joint Action (JA) on the prevention of frailty: ADVANTAGE JA. Croatian Institute of Public Health was partner in that Project. In light of fact that is first time that we have in use term fraility in Croatia, for begging, we have to start with education health professionals about all aspects of that term.

Oral presentations

C3-O1

Ageing and Health: Importance of the Topic for Europe and the Croatian EU Presidency

Danijela Štimac Grbić[1,2], Peter Allebeck[3], Tugce Schmitt[4]

[1] Croatian Institute of Public Health, Zagreb, Croatia
[2] Division for Organization of Health Care and Management, Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[3] Karolinska Institute, Stockholm, Sweden
[4] European Public Health Association (EUPHA), Brussels, Belgium

The ageing of the population, occurring worldwide, leads to increased prevalence of chronic diseases and disability. Yet, at the same time, it offers opportunities for long and healthy lives for people. This can be seen from two perspectives: on the one hand, people live longer and to a large extent healthier. Many people can work longer, travel for leisure and practice sports. On the other hand, the COVID-19 pandemic has reminded us that older people are especially in need of protection as they are more vulnerable to illness and diseases. It is therefore not very surprising that one of the current main public health topics worldwide is healthy ageing. The World Health Organization (WHO) defines healthy ageing as "the process of developing and maintaining the functional ability that enables wellbeing in older age".

Healthy ageing is expected to keep its importance in the coming decades in the Member States of the European Union (EU). According to Eurostat data, low birth rates and longer life expectancy are changing the shape of the population pyramid towards a much older population structure. This requires adequate social as well as public health responses in many countries. Thus, the Republic of Croatia has chosen the topic of healthy ageing as one of its priorities during its six-month presidency of the Council of the EU, from January 2020 to June 2020.

In an e-collection (https://academic.oup.com/eurpub/pages/ageing-and-health), we have put together articles on ageing and health, published in the European Journal of Public Health during the past three years and summarised their main findings. The oral presentation will give insights into this publication and suggest policy recommendations based on given evidence.

C3-O2

Implementation of the SEFAC Project in Four European Cities

Denis Juraga[1], Vanja Vasiljev[1], Lovorka Bilajac[1], Oscar Zanutto[2], Stefania Macchione[3], Anastasios Rentoumis[4], Athanasia Karanasiou[5], Tamara Alhambra[6], Jorge Garcés – Ferrer[6], Elena Curtopassi[7], Nigel Clark[8], Anthony Polychronakis[9], Siok Swan Tan[10], Ellen Rouwet[10], Sophie Korenhof[10], Hein Raat[10]

[1] Department of Social Medicine and Epidemiology, School of Medicine, University of Rijeka, Croatia
[2] European Project Department, Istituto per servizi di ricovero e assistenza agli anziani, Treviso, Italy
[3] Istituto per servizi di ricovero e assistenza agli anziani, Treviso, Italy
[4] Alliance for Integrated Care, Athens, Greece
[5] Vidavo, Thessaloniki, Greece
[6] University of Valencia, Polibienestar Research Insitute, Valencia, Spain
[7] Covenant on Demographic Change, Bruxelles, Belgium
[8] Age UK Cornwall & The Isles of Scilly, Truro, UK
[9] Municipality of Rotterdam, The Netherlands
[10] Department of Public Health, Erasmus University Medical Center, Rotterdam, The Netherlands

Introduction and objectives. Europe is facing an unstoppable epidemic of chronic non-communicable diseases. That burden represents a particular challenge for the national healthcare systems, regional governments, local stakeholders and policy makers. Lifestyle changes can reduce the incidence of chronic diseases so the SEFAC project introduces a novel approach to such changes in the community with engagement of social network of health and social care professionals as well as volunteers. The main objective of the SEFAC project (GA no. 738202) is encouragement of citizens in prevention and self – management of chronic non – communicable diseases. **Participants and Methods.** A total of 360 participants who are 50 years and older and are at risk of developing major chronic diseases or have a cardiovascular disease and/or type II diabetes mellitus attended the seven week workshop program in four European pilot sites: Cornwall, UK; Rijeka, Croatia; Rotterdam, The Netherlands; and Treviso, Italy. Mindfulness based workshops aimed at improving health, promoting healthy habits and healthy lifestyle. By integrating mindfulness into the workshops, participants had the opportunity to learn new skills for improvement of self – efficacy, self – esteem and improve their ability to self – manage their health. The SEFAC program was supported by SEFAC App that was developed to improve the outcome of the workshops. **Results.** Diversity of the SEFAC project in implementation in four European cities will be shown as well as similarities. Involvement of volunteers and social/health professionals by community alliances is shown to be valuable for the sustainability and visibility of the project. **Conclusions.** Community based approach as it is presented in the SEFAC project, is a challenge for every community, but taking into account all the cultural and traditional values, it is possible to implement SEFAC in every part of EU.

Acknowledgement: This research is part of the project '738202 / SEFAC' which has received funding from the European Union's Health Programme (2014 – 2020).

C3-O3

Moderate Alcohol Consumption and Healthy Ageing

Mladen Boban

Department of Basic and Clinical Pharmacology, School of Medicine, University of Split, Croatia

It is well established that excessive alcohol intake is associated with changes in brain structures, cognitive impairments, and an increased risk of all types of dementia. On the other hand, the vast majority of well-done prospective studies indicate that in comparison with non-drinkers, moderate, non-binge-drinking elderly subjects have lower risk of cognitive impairment. Moreover, numerous cohort studies have shown that moderate drinkers tend to have longer lifespan. In some studies, a protective effect of light-to-moderate alcohol intake has been seen primarily among consumers of wine. Here we will review up to date epidemiological evidence for a favorable association between moderate alcohol intake and cognitively healthy longevity. Further, taking wine as an example, we will give an overview on the biological rationale for a protective role of its moderate consumption on brain health.

Poster presentations

C3-P1

Assessment of Risk Factors Affecting the Occurrence of Functional Limitations in Elderly with Cardiovascular Diseases

Dijana Babić

Clinic for Cardiovascular Diseases Magdalena, Krapinske Toplice, Croatia

Introduction and objectives. The ability to perform basic and instrumental activities of daily living is a direct indicator of the level of functional capacity in old age, which is significantly affected by impaired mobility, the occurrence of cognitive-sensory deficits and chronic diseases. The purpose of this paper is to determine impact of sociodemographic and clinical risk factors on functional capacity measured by Groningen Activity Restriction Scale among elderly patients with cardiovascular disease. **Methods**. The Cronbach's alpha internal consistency coefficient was calculated for the total result. Differences in outcome with respect to age, gender, educational level, marital status, number of medications and medical diagnoses of participants were compared by t-test or one-way ANOVA. **Results**. Statistical analysis of data showed certain correlation of patient characteristics (age, gender, education) and complexity of health status with the results of assessment of existing limitations in performing basic and instrumental daily activities. **Conclusions.** The functional capacity of elderly with cardiovascular disease is under influence of a number of factors, including age, gender, educational level, as well as the number of comorbidities and medications. These factors should be taken into account when determining measures to prevent further functional decline.

C3-P2

Prevalence of Dementia in Croatia from 1995 to 2018

Ana Balorda[1], Marija Škrgatić[2], Ljilja Balorda[2]

[1] Department of Occupational Health, Croatian Institute of Public Health, Zagreb, Croatia
[2] Department of Social Medicine and Public Health, Institute of Public Health Zadar, Croatia

Introduction and objectives. Dementia is a neurological condition characterized by functional impairment and decline in multiple cognitive domains. In 2019 „Alzheimer's Disease International" estimates that there are over 50 million people living with dementia globally, predicted to increase to 152 million by 2050. Almost 62% of healthcare providers worldwide think that dementia is part of normal ageing, 40% of the general public think doctors and nurses ignore people with dementia. The prevalence of dementia is increasing. It is mostly demographically induced and with a lack of causal pharmacological therapies, preventive approaches are gaining in importance. Dementia is more common after the age of 65. It is important to identify the factors that may delay the onset, slow the progression, or prevent cognitive decline. The available evidence suggests that physical and intellectual activity and social engagement are the most helpful factors. **Materials and methods.** The aim of this paper is to present the prevalence of dementia in Croatia from 1995-2018. We analyzed prevalence data for Dementia F00-F03 (ICD 10) diagnosed by General/ Family Medicine teams from 1995-2018, according to the Croatian Health Service Yearbook, Croatian National Institute of Public Health. Descriptive statistical methods were used for data analysis. **Results.** In the observed period in Croatia, the prevalence of dementia had an increasing trend. In 2012 the rate was highest, 290/100.000 (12,444 patients) and lowest in 1996, 132/100.000 (5,858 patients). The average annual percent change (AEPC) was 3.4%. The overall increase in the prevalence rate, compared to the beginning of the observed period, was 91%. At the beginning of the observed period, one family medicine team cared for 3 patients with dementia, and at the end for 5 patients. In 20-64 age group rate ranged from 24-69/100,000; median 40/100,000; AAPC decreasing by -3.7%. In 65+ age group rate ranged from 611-1,524/100,000; median 1,253/100,000; AAPC increasing by 4.1%. **Conclusion.** In the observed period in Croatia, dementia prevalence had an increasing trend. There is a need to increase the public health awareness of dementia and improve the quality of health care, social care and long-term care support and services for people living with dementia and their families. Public health awareness campaigns for the elderly should include the promotion of physical activity, social connection, cognitive training, proper diet and management of cardiovascular risk factors. Early detection and better patient registration could be beneficial in shaping health policy and for the future development of dementia care.

C3-P3

Unintentional and Intentional Injuries Mortality Data for Women Aged 50+ in Zadar County from 1998 to 2018

Ana Balorda[1], Marija Škrgatić[2], Ljilja Balorda[2]

[1] Department of Occupational Health, Croatian Institute of Public Health, Zagreb, Croatia
[2] Department of Social Medicine and Public Health, Institute of Public Health, Zadar, Croatia

Introduction and objectives. Injury is a major cause of preventable death and disability. Most injuries can be prevented by identifying their causes and removing these, or reducing exposure to them. Unintentional injuries result typically from transport, workplace, home and leisure time accidents. Intentional injuries result from assault and self-harm. Falls are a common problem for older people and are often the reason for hospitalization or move to a nursing home. **Materials and methods.** Aim of this paper is to present unintentional and intentional injuries mortality data for women in Zadar County from 1998-2018 at age 50+. We analyzed mortality data of the Croatian Central Bureau of Statistics for External causes, V01-Y98 according to ICD 10. Descriptive statistical methods were used for data analysis. **Results.** In Zadar County from 1998-2018 there were 2,213 deaths from injuries: 61% men, 39% women. In total death's injuries share was 6% (7% M, 5% F). Falls, suicide and transport accidents make up 75% of all injuries (73% M, 78% F). In the observed period, men died mostly from suicide 27%, transport accidents 26% and falls 20%. In the same period from injuries, 864 women died: 49% from falls, 19% suicide, and 10% transport accidents. In 0-14 age group 1%, in 15-49 age group 12% and in 50+ age group 87%. In the 0-14 age group, the most common were transport accidents. In the 15-49 age group most common were: suicide 42%, transport accidents 39%, assault 11% and falls 3%. In 50+ age group most common were: falls 56%, suicide 16%, transport accidents 6%, assault 2%. In 50+ group Exposure to unspecified factor, code X59, was very high 8%. In the observed period, the age-standardized death rate (ASDR) for External causes of death for women of all age groups ranged from 22.3-40.5/100,000; median 31.5/100,000. The average annual percentage change (AAPC) in the mortality rate was -0.25%. In age group 50+ ASDR ranged from 17.7-32.6/100,000; median 24.6/100,000. AAPC in the mortality rate was 1.21%. The ASDR for falls ranged from 7.2-17.7/100,000; median 11.9/100,000, AAPC 2.05%; for suicide 1.6-8.3/100,000; median 5.0/100,000, AAPC -1.93%; median for transport accident was 2.0/100,000; AAPC 2.69%. **Conclusion.** In the observed period in Zadar County in age group 50+, overall trend in external causes of death had an increasing mortality trend. Falls and transport accidents had an increasing trend as well, while the suicide mortality rate decreased. Aging does not have to mean a loss of independence. Encouraging physical activities and proper nutrition can improve older people's ability to remain independent and reduce the risk of falling.

C3-P4

Injuries in the Elderly in Croatia

Ivana Brkić Biloš[1], Natalia Jadrijević[1], Maja Silobrčić Radić[1], Sandra Mihel[1], Verica Kralj[1], Mario Šekerija[1], Lara Meden[2]

[1] Croatian Institute of Public Health, Zagreb, Croatia
[2] Istria County Public Health Institute, Croatia

Introduction and objective. Although injuries are the leading cause of death in the first four decades of life, mortality rates of injury are the highest in elderly population.

The aim of this research is to present the burden of injuries in older age (persons 65 and older) population in Croatia. **Methods.** We used the data on injuries (ICD-10 codes V01-Y98, S00-T98) from routine mortality and morbidity statistics and database provided by the World Health Organization (Health for All database). Data were expressed as absolute numbers, percentage shares, as well as age-specific mortality rates using the revised mid-year population estimates and age-standardized mortality rates. **Results.** From 2001 to 2016 the age-standardized injury mortality rate in the elderly in Croatia showed an increasing trend (2001: 167.2/100,000, 2016: 192.6/100,000). The age-standardized injury mortality rate in the elderly in period 2001-2016 was higher than the EU and European Region rates. With 1,875 deaths and a share of 4.3%, injuries in older age (65+) in Croatia in 2018 held the fifth position behind cardiovascular diseases, neoplasm, endocrine, nutritional and metabolic diseases, and diseases of the respiratory system. In 2018, the overall injury mortality rate was: 73/100,000, but among elderly population (65+) was higher: 225.2/100,000. As to age specific overall injury mortality rates, they increase with age (age group 65-74: 86.7/100,000, age group 74-84: 242.4/100,000; age group 85+: 877.4/100,000). The male mortality rate of injuries was 247.1/100,000 and the female rate 210.3/100,000 among the population of 65+ in 2018. Falls, with 1,135 deaths and age specific rate of 136.3/100,000 were the leading external cause of death among elderly people, followed by suicides (30.7/100,000) and traffic accidents (16.7/100,000). The most

common somatic diagnosis in older people who died from accidental falls were fracture of femur and intracranial injury. More than half (62%) hospitalisation of elderly people treated for injuries in hospitals refers to injuries due to falls. **Conclusion**. Accounting for a large proportion of the overall mortality and morbidity, injuries present a major public health problem among elderly in Croatia. A systematic implementation of preventative programmes is required, especially those for falls and hip fracture prevention.

C3-P5

Current Health Status of People 60+ in Federation Bosnia and Herzegovina

Milka Dančević-Gojković[1], Senada Tahirović[2]

[1] Health Promotion and Medical Education, Public Health Institute of Federation Bosnia and Herzegovina, Sarajevo, Bosnia and Herzegovina
[2] Statistical Department, Public Health Institute of Federation Bosnia and Herzegovina, Sarajevo, Bosnia and Herzegovina

Introduction and objective. B&H is growing older. In 2018, there were about five people of working age (ages 15–64) for each person of retirement age and above (ages 65+); the proportion of older people (i.e., those aged 65 years or older) is almost 15% (14,6%) equal as youth 15% (0-14 years old). Retired people are 18,7% of total population of B&H inhabitants. Ratio of retired people (ex-workers) is equal as working population 1:1. The old-age dependency ratio in B&H (i.e., the ratio of people aged 65 years or older to people aged 15–64 years) is 42%. While the mean life expectancy at birth in F B&H increased, the healthy life expectancy is not even measured. We aimed to describe the current health status of aged population in Federation of B&H older population. **Methods.** Information on the prevalence of health problems among age 60+ in 2018 was obtained using regular health statistics, as hospital admission, and contacts with family doctors due to evident morbidity. **Results**. Reported diseases and conditions found among the population of 60+ are huge, as 40% in primary, and 42,5% of all inhabitants who were looking for health care in state health institutions of Federation B&H. Although the multimorbidity has not presented, the chronic morbidity and disability among the elderly are obvious at both, primary and secondary health care level. The widespread morbidity of cardiovascular and circulatory diseases is represent at all levels of health care, while some conditions leading to functional impairment due to complex health status deficit accumulation could be treated only in hospitals are not seen at primary level (example of malignant, or injuries). **Discussion**. This article summarises some leading diseases that could have relevance to practitioners caring for older adults, particularly at primary health level, and in the absence of gerontologist. Management could include a proactive individualised assessment, which improves quality of life by reducing treatment burden, adverse events, and unplanned high demand health care. **Conclusion.** This paper could open the discussion how to structure the future health care system in the absence of Strategic policy document of ageing in B&H, and in the area of community development of healthy ageing centres.

C3-P6

Pharmacoepidemiology of Benzodiazepine Use and Ageing in the City of Zagreb, Croatia

Marija Delaš Aždajić[1], Robert Likić[2], Antonio Kovačić[3], Danijela Štimac Grbić[4,5]

[1] Department of Dermatology and Venereology, University Hospital Centre Sestre Milosrdnice, Zagreb, School of Medicine, University of Zagreb, Croatia
[2] University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia
[3] Archdiocesan Theological Seminary, Zagreb, Croatia
[4] Division for Organization of Health Care and Management, Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[5] Croatian Institute of Public Health, Zagreb, Croatia

Introduction and objectives. A demographic trend of increased human life expectancy became common worldwide due to improved life standard and better access to health services. Nowadays, ageing population represents a significant global health challenge, especially considering the economic burden of age related diseases. The new concept of healthy ageing developed by the World Health Organisation emphasizes the importance of individual's functional ability in order to enable their ongoing well-being. The aim of this retrospective study was to assess benzodiazepine (BZD) utilization habits among outpatients in the city of Zagreb. **Methods.** Information on prescribed BZDs for the year 2015 in Zagreb, Croatia was obtained from the Croatian Health Insurance Fund. This data contained several social and health indicators of all patients who utilized BZDs more than 5 times in one year (drug classes N05BA, N05CD, N05CF according to the ATC Classification System). Descriptive statistic, parametric T-test and non-parametric Wilcoxon test were used to compare differences between groups in the study. The P value of <0.05 was considered statistically significant. Data analysis was performed by use of the R programming language v.3.5.1. **Results.**

Results of our analysis showed that significantly more women (472.741) than men (252.041) utilized BZDs in 2015 in Zagreb; however, men on average used more BZDs (mean ± SD; 11.97 ± 6.23) per year than women (11.24 ± 4.97) and the gender difference was statistically significant ($p<0.05$; 95% CI 0.70-0.76). There were no seasonal variations in BZD utilization. Additionally, there was no statistically significant gender difference in the order of drug prescriptions according to their chemical therapeutic subgroup. The most commonly prescribed BZDs were: diazepam, followed by alprazolam, oxazepam and zolpidem. We uncovered significant differences in BZD utilization between genders according to the first 10 clinical diagnoses for which the drugs were prescribed. Women tended to utilize BZDs at an older age than men, with a mean age of BZD utilization for women being 65.6 ± 15.1 (mean ±S D; median: 66) years vs 59.6 ± 15.3 (median: 60) years for males. **Conclusions.** Rational drug prescribing and utilization present important public health issues for most countries worldwide, especially in the elderly. The obtained results indicate high prevalence of BZD use among females, and prolonged BZD utilization among males in Zagreb. These results indicate the need for improved promotion of mental health as well as rationalization of BZD prescribing, particularly in older patients and for a prolonged period of time.

C3-P7

Secondary Use of Routinely Collected Health Data and Caring for the Elderly: A Case Study of Potentially Harmful Prescribing

Katarina Gvozdanović[1,2], Željka Draušnik[2,3], Darko Gvozdanović[2,4], Ivan Jurak[2,5], Kristina Fišter[2,6]

[1] School of Medicine, University of Zagreb, Croatia
[2] Croatian Society for Medical Informatics, Secondary Use of Biomedical and Health Data Working Group (SEKA)
[3] Croatian Institute of Public Health, Zagreb, Croatia
[4] Ericsson Nikola Tesla d. d., Zagreb, Croatia
[5] University of Applied Health Sciences, Zagreb, Croatia
[6] Department of Medical Statistics, Epidemiology and Medical Informatics, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. Elderly are the largest group of users of prescription medications. Over 20 % of the population in Croatia is older than 65 years and this proportion is expected to increase as the population is ageing. Due to the multi-morbidities, multiple concomitant medicines, and underlying metabolic and cognitive changes, drug prescribing in the elderly can result in adverse health outcomes and unnecessary costs for the health system. The objective of our work is to explore the potential of secondary use of routinely collected health data for generating the evidence in support of healthy ageing, using potentially inappropriate drug prescribing as a case study. **Methods.** The Central Health Information System of the Republic of Croatia (CEZIH) is the largest source of routinely collected health data in Croatia. Based on the published functional specification, we analysed CEZIH in terms of its structure and available data elements. As a measure of inappropriate drug prescribing, we chose the internationally accepted STOPP/START criteria (Screening Tool of Older People's Prescriptions and Screening Tool to Alert to Right Treatment) for prescribing in older people. We compared the data contained in CEZIH with the information needed for the implementation of the STOPP/START criteria. **Results.** The STOPP/START criteria provide 114 evidence based rules to avoid commonly encountered points of potentially inappropriate prescribing. The precondition to apply those rules is availability of information on patient age, prescribed medications, indications, medical conditions. ePrescription contains structured information for over 99% of medicines prescribed/dispensed in the primary care setting since 2011. The attributes available in ePrescription include brand name, active substance, dose, form, indication, date of prescription and dispensation, patient identifier which allows for application of 38 STOPP/START criteria. Additional information can be retrieved from the electronic healthcare record within CEZIH (64 criteria). **Conclusion.** Routinely collected electronic patient data in Croatia can be used to generate the evidence on inappropriate drug prescribing using STOPP/START criteria. Such analyses have been done in many countries to assess suboptimal prescribing practices, however, in Croatia, this has not been the case despite the importance of the issue. Secondary use is a complex process that requires accessible data, understanding of data sources, data structure and research methodologies. Interdisciplinary and inter-institutional collaboration is important to make the most of the results and to support regulatory actions and policy development.

C3-P8

Cardiovascular Diseases Mortality Trends in Croatia, 2001-2018

Verica Kralj, Mario Šekerija, Ivana Brkić Biloš, Maja Silobrčić Radić

Division for Epidemiology and Prevention of Noncommunicable Chronic Diseases, Croatian Institute of Public Health, Zagreb, Croatia

Introduction. In the last few decades mortality from cardiovascular diseases has been decreasing in many European countries. However, even with this substantial decrease, cardiovascular disease remains the leading cause of death in most developed countries, including Croatia. **Objective**. The aim of this study was to analyse trends in mortality rates due to cardiovascular diseases in Croatia between 2001 and 2018, using joinpoint regression, and to see if there are sex differences in the observed trends. **Methods.** The data on deaths from cardiovascular disease (ICD-10 codes I00-I99), by age group and gender, were obtained from the annual report of the Croatian Bureau of Statistics. We calculated the age-specific mortality rates using the revised mid-year population estimates, and rates were standardized using the age structure of Croatian Census 2011 population (HR11). We used Joinpoint Regression analysis to describe trends in mortality, with a maximum of 2 joinpoints and a Monte Carlo simulation to calculate p-values for a series of permutation tests. We applied the joinpoint analysis to the age standardized rates and their respective standard errors, for diagnosis group and each sex separately. **Results.** Cardiovascular diseases are the leading cause of mortality, contributing the most to the burden of disease and accounting for approximately 25,000 deaths per year. In 2018, 23,048 people died of cardiovascular diseases, among them 13,093 women and 9,955 men. They are a cause of death of 49% women and 38.3% men. Cardiovascular diseases are the second cause of death in persons younger than 65 years (malignant diseases are the leading cause), with 2,276 deaths and a proportion of 24.9% in mortality of this age group, respectively. There were 455 668 deaths due to cardiovascular diseases in Croatia in this 18-year period. Standardized mortality rates (ASR-E) for cardiovascular diseases in the 2001-2018 period decreased from 932.9 to 542.6/100,000 in men, and from 689 to 384.4/100,000 in women. Joinpoint analysis showed an APC (annual percent change) of -3.4% in men (CI=-3.6 to -3.1), and -3.5% (CI=-3.8 to -3.2) in women. **Conclusion**. Trends of mortality rates from cardiovascular diseases in Croatia show a continuous and significant decrease in this period. Mortality rates are falling more rapidly in women than in men. However, it is still the leading cause of death, and cardiovascular diseases mortality in Croatia remains above the EU average, and therefore it is necessary to monitor trends and work towards reducing preventable risk factors.

C3-P9

Ageing of Persons Treated for Psychoactive Drug Abuse

Ivana Pavić Šimetin[1], Maja Valentić[1], Dragica Katalinić[1], Danijela Štimac Grbić[1,2], Dijana Mayer[1], Ana Ištvanović[1]

[1] Croatian Institute of Public Health, Zagreb, Croatia
[2] Division for Organization of Health Care and Management, Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction. According to the Background paper commissioned by the EMCDDA for Health and social responses to drug problems: a European guide "Responding to the needs of ageing drug users" older people with drug problems are considered those aged 40 or over whose recurrent drug use is causing them harm or is placing them at a high risk of such harm. Older people with drug problems are likely to encounter negative life outcomes due to their drug use and they have characteristics and trajectories distinct from those of their younger counterparts. The issues relating to problem substance use among older people have received little attention, and have only recently been recognized. **Methods.** The Register of persons treated for psychoactive drug abuse was established within the Croatian Institute for Public Health back in 1978. We have investigated the data from Register focusing on the issue of ageing. **Results.** People treated for psychoactive drug abuse are getting older. In 2018, their average age was 38, for opioid users 40, while ten years ago, the average age of treated people was 30. According to the data from 2018, the older adults are prevalently methadone-treated opioid users, while one-third of the younger people are non-opioid users, and younger opioid users more often receive buprenorphine as a substitute therapy. Considering non-opioids, use of sedatives and hypnotics is more widespread in older people, while cannabinoids are more prevalent in younger ones. Older drug users are mostly treated on their own initiative or by referral from a primary care physician, while in younger patients a prominent role in referring to treatment also has a family, court, police and welfare centers. Hepatitis B and Hepatitis C are significantly more present among older people with drug problems. Considering the living conditions, in 2018 the the largest proportion of older drug users has lived with their parents (32.2 percent) and this number has been steadily increasing over the last 10 years.

Conclusions. The number of older drug users has been increasing in Croatia and older drug users have a unique profile, different from their younger counterparts. Healthcare services, policies and relevant strategies should pay particular attention to older people with drug problems, as the number of them is increasing.

C3-P10

Correlation Between Physical Activity and the Quality of Life of Older People

Nada Pjevač[1], Tomislav Benjak[2], Neda Pjevač[3], Mirjana Kujundžić Tiljak[4]

[1] Health Centre Zagreb – Centar, Croatia
[2] Croatian Institute of Public Health, Zagreb, Croatia
[3] Department of Educational Technology and Educational Multimedia Center (EMC), Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[4] Division for Medical Statistics, Department of Medical Statistics, Epidemiology and Medical Informatics, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

The aim of the study was to investigate the correlation between the physical activity and quality of life of older people. Respondents were movable, older citizens of 70-90 years (N=100). Results were obtained on the basis of the completed Quality of Life Index. Participants were divided into two groups considering the frequency of physical activities. In the 'active' group were participants who participated in some sort of physical activity two or three times a week for more than 30 minutes (n=56), and a group of inactive people included participants who were not physically active (n=44). There was a low but significant positive correlation frequency of doing physical activity and quality of life in the domain of health ($r=0.202; p<0.05$) and quality of life in the domain of performance ($r=0.198; p<0.05$). In keeping with the recommendations of the World health Organization, a number of research results, and the results of this research, which suggests an important connection between the frequency of physical activity and health domain of quality of life, constant physical activity must be an essential measure of primary health prevention of older people, although the results of this study do not indicate a statistically significant correlation between physical activity and overall quality of life.

C3-P11

Vitamin D in Fall Risk Prevention in the Elderly: Current Literature Review

Jasna Pucarin-Cvetković[1,2], Milan Milošević[1]

[1] Department of Environmental and Occupational Health and Sports, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[2] Division of Environmental Health, Croatian Institute of Public Health, Zagreb, Croatia

Introduction and objectives. Nutrition and nutritional status are very important for the elderly. A balanced diet taken in adequate amounts usually provides vitamins and minerals needed by the elderly; however, vitamin D, B1, B6 & B12 and folic acid deficiencies in this population are not uncommon. Vitamin D plays an important role in maintaining calcium and bone metabolism. The lack of vitamin D and calcium are associated with osteoporosis, osteomalacia, falls and fractures in old age. This study aims to investigate into the impact of vitamin D on prevention of falls in the elderly. **Methods**. For the purpose of this literature review, the PubMed database was searched using the following keywords: fall risk, vitamin D, older population. The search was narrowed down to the contributions published in the last 10 years. **Results**. The search yielded 7 publications that satisfied the inclusion criteria. Vitamin D deficiency in older age can range from the 30th to the 50th percentile. Vitamin D serum levels were inversely associated with the first fall risk. This effect was more prominent in patients who were vitamin D-deficient at baseline and those co-administered with calcium. The quality of the evidence is low to moderate due to the heterogeneity and publication bias. Interventional measures seem necessary to increase vitamin D status and subsequently decrease the risk of falls associated with fractures and other major injuries. However, evidence gathered insofar does not allow for the determination of benefits and harms of taking vitamin D or calcium supplements in order to prevent fractures in premenopausal elderly, since the data are limited and inconsistent. **Conclusions**. Based on the available literature, it can be concluded that the intake of vitamin D in the elderly is often insufficient and can be related to falls and fractures. Nevertheless, research in this regard should be continued. In order to improve nutrition and health of the elderly residing in the Republic of Croatia, their nutrition status should be monitored, and their dietary habits evaluated on a regular basis. Should such a need arise, and should the attending physician so recommend, vitamin D supplements should be administered, combined with an appropriate physical activity.

C3-P12

Trends in Lung Cancer Incidence and Mortality in Croatia in the 21st Century

Mario Šekerija, Marijan Erceg

Division for Epidemiology, Department of Medical Statistics, Epidemiology and Medical Informatics, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
Croatian Institute of Public Health, Zagreb, Croatia

Introduction and objectives. According to the international estimates the burden of disease regarding lung cancer in Croatia is high in comparison to other European countries (high incidence and mortality, low survival rates), and it is important to have an up-to-date insight to these issues. Many countries also report disparate trends in men and women. Our aim is to analyse incidence and mortality trends from lung cancer in Croatia, separately for men and women. **Methods.** The data on deaths from lung cancer (ICD-10 codes C33-C34), by age group and gender, was obtained from the annual report on deceased persons, prepared by the Croatian Institute of Public Health and Croatian Bureau of Statistics (CBS), while the data for cancer incidence was obtained from the Croatian National Cancer Registry. We calculated the age-specific incidence and mortality rates using the revised mid-year population estimates of the CBS, and rates were standardized using the age structure of Croatian Census 2011 population (HR11). We used a Joinpoint Regression analysis to describe trends in mortality, with a maximum of 2 joinpoints and a Monte Carlo simulation to calculate p-values for a series of permutation tests. We applied the joinpoint analysis to the age standardized rates and their respective standard errors, by sex. **Results**. Standardized incidence rates (ASR-HR11) for lung cancer in the 2001-2017 period decreased from 149.1 to 114.7/100,000 in men, and increased from 26.8 to 39.9/100,000 in women. Joinpoint analysis showed an APC (annual percent change) of -1.3% in men (95%CI=-1.7 to -1.0; p<0.001), and +2.6% (95% CI=1.7 to 3.4; p<0.001) in women. Standardized mortality rates (ASR-HR11) for lung cancer in the 2001-2018 period decreased from 131.9 to 107.6/100,000 in men, and increased from 20.2 to 33.8/100,000 in women. Joinpoint analysis showed an APC of -1.1% in men (95%CI=-1.2 to -0.9; p<0.001), and +2.7% (95% CI=2.3 to 3.1; p<0.001) in women. There were almost 50,000 deaths in 2001-2018 period due to lung cancer in Croatia. **Conclusions**. Trends in lung cancer incidence and mortality in Croatia are mostly similar to those in neighbouring countries, with a decrease of age-standardized incidence in men but a pronounced increase in women, mostly as a reflection of changing smoking habits in the past couple of decades. In the advent of possible major changes in these trends (the introduction of the first Croatian National Cancer Plan, the National Lung Cancer Screening Programme, the availability of new immunotherapies for certain subtypes of lung cancer, etc.) it is of utmost importance to have a starting point for future comparisons.

C3-P13

Elderly Cardiovascular Patients in Croatia

Iskra Alexandra Nola[1], Sonja Frančula-Zaninović[2], Matias Trbušić[3]

[1] Department for Environmental Health, Occupational and Sports Medicine, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[2] Health Centre Zagreb – Centar, Zagreb, Croatia
[3] Department of Cardiology, University Hospital Centre Sestre Milosrdnice, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. According to the international estimates the burden of disease regarding lung cancer in Croatia is high in comparison to other European countries (high incidence and mortality, low survival rates), and it is important to have an up-to-date insight to these issues. Many countries also report disparate trends in men and women. Our aim is to analyse incidence and mortality trends from lung cancer in Croatia, separately for men and women. **Methods.** The data on deaths from lung cancer (ICD-10 codes C33-C34), by age group and gender, was obtained from the annual report on deceased persons, prepared by the Croatian Institute of Public Health and Croatian Bureau of Statistics (CBS), while the data for cancer incidence was obtained from the Croatian National Cancer Registry. We calculated the age-specific incidence and mortality rates using the revised mid-year population estimates of the CBS, and rates were standardized using the age structure of Croatian Census 2011 population (HR11). We used a Joinpoint Regression analysis to describe trends in mortality, with a maximum of 2 joinpoints and a Monte Carlo simulation to calculate p-values for a series of permutation tests. We applied the joinpoint analysis to the age standardized rates and their respective standard errors, by sex. **Results**. Standardized incidence rates (ASR-HR11) for lung cancer in the 2001-2017 period decreased from 149.1 to 114.7/100,000 in men, and increased from 26.8 to 39.9/100,000 in women. Joinpoint analysis showed an APC (annual percent change) of -1.3% in men (95%CI=-1.7 to -1.0; p<0.001), and +2.6% (95% CI=1.7 to 3.4; p<0.001) in women. Stan-

dardized mortality rates (ASR-HR11) for lung cancer in the 2001-2018 period decreased from 131.9 to 107.6/100,000 in men, and increased from 20.2 to 33.8/100,000 in women. Joinpoint analysis showed an APC of -1.1% in men (95%CI=-1.2 to -0.9; p<0.001), and +2.7% (95% CI=2.3 to 3.1; p<0.001) in women. There were almost 50,000 deaths in 2001-2018 period due to lung cancer in Croatia. **Conclusions**. Trends in lung cancer incidence and mortality in Croatia are mostly similar to those in neighbouring countries, with a decrease of age-standardized incidence in men but a pronounced increase in women, mostly as a reflection of changing smoking habits in the past couple of decades. In the advent of possible major changes in these trends (the introduction of the first Croatian National Cancer Plan, the National Lung Cancer Screening Programme, the availability of new immunotherapies for certain subtypes of lung cancer, etc.) it is of utmost importance to have a starting point for future comparisons.

C3-P14

Motives of Alcohol Drinking in Different Age Groups of Adults in Croatia

Diana Jovičić Burić[1], Barbara Raguž[1], Ljiljana Muslić[1], Iva Pejnović Franelić[2], Sanja Musić Milanović[1,3]

[1] Health Promotion Division, Croatian Institute of Public Health, Zagreb, Croatia
[2] Department for International Cooperation, Croatian Institute of Public Health, Zagreb, Croatia
[3] Division for Epidemiology, Department of Medical Statistics, Epidemiology and Medical Informatics, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. In order to develop and maintain the functional ability that enables well-being in older age, one must consider healthy aging as a lifelong process. When talking about protection of health of the population alcohol drinking has been recognized as public health priority. However, changes in absorption, distribution and metabolism of alcohol and medications that occur with age, as well as high prevalence of noncommunicable diseases, ask for more focused interventions in early and middle adulthood related to alcohol drinking. In order to get a better insight in drinking motives during adulthood, this study aims to compare motives for drinking among different age groups of adult population in Croatia. **Methods.** The data were collected as part of Standardized European Alcohol Survey (SEAS) during EU JA RARHA project on representative household sample aged 18–64 in Croatia. The motives for drinking were measured by a 10-item scale. Participants who reported that drink alcohol (n=1171) were asked to assess on a 5-point scale how frequently they drank due to the reason described in the item. The FA confirmed four factors structure: motives related to pleasure, problems, needs to fit in with others and healthiness. The sample was divided into three age groups: Young or Early Adulthood (18–34), Middle Adulthood (35–49) and Late Middle Adulthood (50–64). Differences in motives for drinking between selected age groups were tested using parametric and non-parametric tests separately for each factor. **Results.** Statistically significant difference between the three age groups of participants was found in all four types of motives. The analysis showed statistically significant difference for motives related to pleasure, coping with problems and fitting in with others between participants in Young or Early Adulthood and both Middle Adulthood groups of participants. All age groups showed statistically significant differences in motives related to healthiness. Drinking because of healthiness was most frequently reported among participants in Late Middle Adulthood. **Conclusion.** The results showed that there is a difference in alcohol drinking motives between age groups. The Young/Early Adulthood age group drinks more often than the other two groups for fun, because alcohol helps them cope with problems and makes it easier for them to fit in. With aging, motives for drinking shift towards healthiness and belief that alcohol is a part of a healthy diet. The results confirm the need to consider not only patterns of drinking but also motives for drinking when planning public health interventions for specific age groups.

Session C4: Community Based Approaches and Medical Wellness for Healthy Ageing

Invited lecture

C4-I

Population Health Initiatives, Ageing and Health System Sustainability and Promoting Healthy Longevity

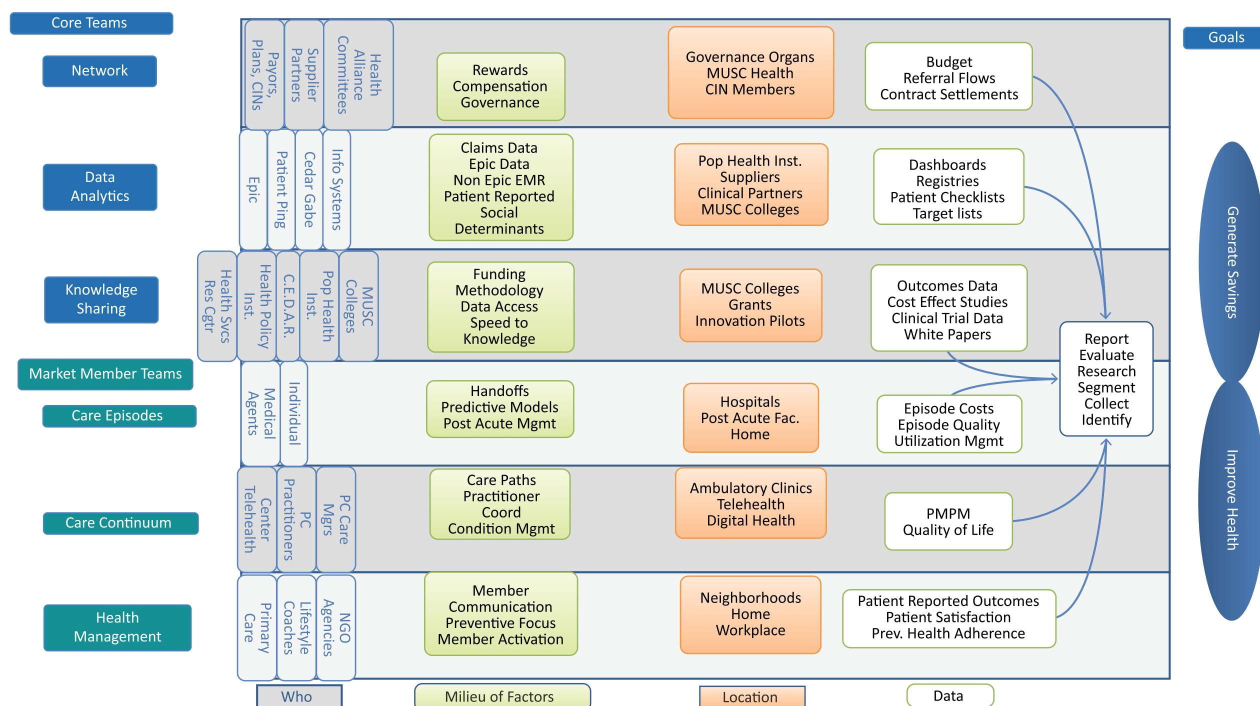
John E. Vena[1], Ronald W. Gimbel[2], Hermes J. Florez[3]

[1]Department of Public Health Sciences, Medical University of South Carolina, Charleston, USA

[2]Department of Public Health Sciences, College of Behavioral, Social & Health Sciences, Clemson University, USA

[3]Division of Epidemiology & Population Health Sciences, University of Miami Miller School of Medicine, USA

The future of public health and population health is dependent on: a commitment to broadening our understanding of biology and behavior; medicine, methods, and management; environment and economics; policy and programs; and a host of other things; and the renewal of a vision of health and well- being for the whole community. There must be a corresponding commitment to the values that shape that vision. Partnerships among public health scientists who work as part of public health teams in academic medical centers, federal agencies, state and local health departments and community and international organizations are keys to our future. We present here the concept of a Population Health Institute Task Force (PHI-TF) at the Medical University of South Carolina was formed to examine the benefits and barriers of a PHI at MUSC and MUSC Health. Population Health Institute provides an interdisciplinary inter-professional environment supporting improvements across four clinical domains: Improved Quality of Care; Improved Patient Experience; Improved Medical Provider Experience and Reduced Medical Expenses. The Population Health Institute facilitates the successful transition to value-based care, integrating efficient systematic approaches at all levels of the patient experience to maximize the potential for Healthy Aging. This healthcare landscape includes coordinating the delivery of



information, and insights to sub populations in the region. Community and clinical actions may include individuals segmented by age lifespans, socio-economic segment, health status and psycho-social segment.

A task force has recommended the creation of a Population Health Institute (PHI) and Medical Community/Neighborhood ICCE at MUSC. The current matrix and influence of actions approach has not yielded traction in the journey to pivot from volume to value. We are faced with additional delivery system acquisitions, affiliations and organic growth as well as new value-based agreements with requisite populations. An institute or centralized approach appears to be a best practice for MUSC Health to model. A PHI can facilitate improved coordination between and among MUSC, MUSC Health and external partners for funding and investment.

New patient touchpoints must be established. Patients within high acuity episodes require deft care coordination and real-time patient management. Patients with long term conditions and risk factors for adverse health will drive new initiatives to engage patients upstream from high periods of medical services consumption and decrease the overall cost of care from a longitudinal perspective. Additional supplier services and health care team member roles are required to operate these new touchpoints.

These new approaches, innovation incubation, pilot projects and robust evaluation processes require training and education beyond our current capabilities. A systematic model of skill and knowledge infusion must be established to instill the required set of workflows and patient interactions to drive out waste, care variation and replace current approaches with proven methods to improve health in the most efficient manner. A suggested mantra is to think big – start small – and move fast. Financial justification and project management must be coordinated across a complex group of departments and teams. Although challenging, this more centralized approach is considered critical to survivability as value-based contracting continues to grow in the U.S.

Seven key areas have been outlined to provide a framework for coordinating initiatives in support of population health within the organization. These areas may not evolve into formal workstreams although they serve as a roadmap for the PHI.

- Network and Systems
- Patient Empowerment
- Knowledge Gaining and Sharing
- Data Driven Decision Making
- Longitudinal Care
- Care Episodes
- Training and Education

Longitudinal care includes both episodes of care, treatment goals, disease prevention, patient goals and plans. The overall plan should be focused on the patient and include the patient's values and preferences. This long-range plan is dynamic and designed to integrate all parties in a synchronized approach to health.

Our vision: Coordinating innovative approaches to population health across the MUSC enterprise improving health in the daily lives of the populations we serve through coordinated, innovative approaches. As a world class innovator, is to drive improvements across the spectrum of population health approaches. The Population Health Institute will collaborate in university wide research efforts including data analytics, big data insights, predictive modeling, comparative effectiveness research, and novel delivery of care interventions.

The Population Health Institute facilitates the successful transition to value-based care, integrating efficient systematic approaches at all levels of the patient experience. This healthcare landscape includes coordinating the delivery of information, and insights to sub populations in the region. Community and clinical actions may include individuals segmented by age lifespans, socio-economic segment, health status and psycho-social segment.

In this session we will also provide a high-level overview of a rural health innovation partnership that will engender healthy ageing. This includes leadership commitment, county and region-wide health outcome data analysis, legislator and key stakeholder buy-in, joint pilot study programming, early successes, and lessons learned. In addition, we will review how we are addressing in South Carolina the challenges associated with increased lifespan and growth of the older population globally. Our team seeks to enhance the implementation of evidence-based interventions to reduce the burden of obesity and related conditions, such as diabetes, especially in minority older adults with less access to care. We will review lessons learned promoting healthy longevity with our multidisciplinary team in South Carolina.

REFERENCE

1. *Dykes PC, Samal L, Donahue M, et al.* A patient-centered longitudinal care plan: vision versus reality. J Am Med Inform Assoc. 2014;21(6):1082–1090. doi:10.1136/amiajnl-2013-002454.

Oral presentations

C4-O1

Increasing Wellbeing Through Co-production of Health Promotion Activities at the Local Level – the Role of Senior Councils

Iwona Kowalska-Bobko[1], Aldona Frączkiewicz-Wronka[2], Anna Kozak[2]

[1] Departament of Public Health, Institute of Public Health, Jagiellonian University Medical Collage, Krakow, Poland
[2] Department of Public Management, University of Economics, Katowice, Poland

Drawing on the literature review, analysis of documents and observation of practices, this paper sheds light on the role of Seniors Councils in increasing wellbeing through co-production of health promotion activities at the local level. Wellbeing is more than just happiness. It means developing as a person, being fulfilled, and making a contribution to the community. This last element makes that the co-production of public services – with all its capacity to increase the social capital and to address social needs and public expectation – has the potential to contribute to the wellbeing in every age group. Co-production is defined as the voluntary or involuntary involvement of public service users in any of the design, management, delivery and/or evaluation of public services. Due to the demographic changes and their consequences, particular attention should be paid to the wellbeing in old age. The significant role in this area can play Senior Councils which are active actors the field of social services and prevention and health promotion and important partners for the local governments. Many older people enjoy life, but a significant proportion struggle with loneliness, isolation, low-level mental health problems like depression or even more serious problems that lead to suicide. There is a wealth of evidence showing that physical health is closely associated with emotional wellbeing. This is particularly relevant for older people, who suffer much higher levels of chronic ill health than the rest of the population. The conducted analysis of documents and practices show that the co-production of health promotion activities by Seniors Councils and the local governments in Poland occurs, is conducive to the maintenance of health and prevention of disease, thus contributing to improve the wellbeing of seniors.

C4-O2

Health Promotion for Older People in Europe – the Results of Pro-Health 65+ Project

Stanisława Golinowska, Marzena Tambor

Department of Health Economics and Social Security, Institute of Public Health, Jagiellonian University Medical Collage, Krakow, Poland

Introduction. Population ageing has been affecting all countries across the European Union (EU). It poses significant economic and social challenges, especially in Central and Eastern European countries where ageing process it is very dynamic while policy response is often inadequate, resulting in poor health and low quality of life of older people. Health promotion has been proposed as a measure to delay health deterioration and enable senior citizens to live relatively healthy and independent lives, and it serves as a base for the EU healthy ageing strategy and consequent European countries' activities in this area. **Methods.** We present the results of an international project Pro-Health 65+ (2014-2017) on health promotion policies for older people in European countries. We include ten European countries, which represent three country groups of different economic development, population health status, and welfare state model: 1) Germany, Netherlands; 2) Italy, Portugal, Greece; 3) Poland, Czech Republic, Hungary, Bulgaria and Lithuania. The cross-country comparison was based on literature reviews, including national regulations, as well as information obtained from country experts through questionnaire prepared for the study purpose. **Results.** The results indicate that the aging of the population in European countries commonly spurs actions related to improving and sustaining the health of older people. In less affluent countries, adopting laws and policy strategies on public health and health promotion, has taken place. In wealthier countries, like the Netherlands and Germany, a number of practical measures aimed at older people already follow implemented regulations. Health promotion programs are undertaken by public entities – at the central, regional and local level, however, a considerable amount of activities is initiated and lead by non-governmental organizations. Further, we observe that organizational solutions for health promotion in European countries are not always clearly defined. There is also lack of resources, i.e. professional health promoters and funds, particularly in less affluent countries. Scarcity of evidence on effectiveness and efficiency of health promotion for older people as well as skepticism of health care professionals in this matter, have been also recognized as hindering factors. **Conclusions.** Adequate regulations, institu-

tions and funds are necessary to improve older people well-being through health promotion in European countries. More research to generate sound evidence, and education to prepare qualified health promoters are also crucial factors.

C4-O3

Community-Based Approaches Towards Healthy Ageing in Croatian Healthy Cities and Counties

Selma Šogorić[1], Silvije Vuletić[2], Josipa Kern[2], Dorja Vočanec[1]

[1] Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[2] Division for Medical Statistics, Department of Medical Statistics, Epidemiology and Medical Informatics, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[3] Department of Medical Statistics, Epidemiology and Medical Informatics, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. The Croatian Healthy Cities Network (CHCN) is, since 1990, organized and hosted within the Andrija Stampar School of Public Health (ASSPH) that provides academic knowledge and research tools to support local authorities, enabling them to put healthy cities concept into practice. Since the Consensus Conference held in Rijeka in 1996, when quality of life of the elderly was voiced as a priority in official local self-government document for the first time, until today there has been a continuity and dedication to the priority of healthy aging. In 2015, existing interventions carried out by the CHCN members were reviewed with the aim to evaluate their efficiency. **Methods**. CHCN had initiated the project 'Introducing academic standards in the process of selection of public health interventions'. The academic team developed a "matrix of program description" to gather data on activities, features, and results of each program carried out by CHCN members. **Results**. Information were collected on 60 existing local public health programs, 28 of which related to healthy aging. Strategic, educational and direct service interventions emerged as three main characteristic differences of programs according to which programs were grouped. Strategic programs included comprehensive healthy aging policy development and implementation with the emphasis on transparent policy making process and development of local government acts and procedures aimed at equalizing opportunities. Educational interventions aimed at increasing visibility and optimal usage of available resources and services, lifelong learning and modifying users' behaviour. Direct service interventions aimed at bringing services closer to users, improving accessibility and establishing continuity of care. These were provided within health care system, social welfare system and civil society, therefore strengthening social cohesion. Although implementation of a large number of programs was carried out their quality was uneven. Half of the programs were mono-competent as opposed to comprehensive programs, and thus achieved limited results. **Conclusion**. In order to create aging friendly environment healthy aging strategies and interventions should be devised comprehensively, contain a continuous needs assessment and evaluation, mechanisms to detect people in need and provide a wide range of services involving all relevant sectors (urban planning, culture, education, economy…).

C4-O4

Towards Sustainable Ageing: Overcoming Obstacles in an Industrial Environment

Efstathios Restemis

Municipality of Aspropyrgos, Greece

The Municipality of Aspropyrgos, Greece, well aware of the challenges of healthy ageing, has built its strategic plan, in three basic and broader pillars, in order to provide its citizens with longevity, quality of life and subjective happiness (positive psychology).

1. Free Medical Exams: covering a wide spectrum of nearly ALL known proactive and diagnostic exams, of nearly all medical faculties. E.g., breast cancer, Pap test, blood tests, otolaryngological exams, ophthalmic exams, spirometries, as well as special exams on the consequences of environmental pollution on human health, in cooperation with specific scientific bodies and national universities (Kapodistrian, West Attica)

2. Various Athletic Programs: In a recent cooperation with the Kapodistrian University and the Stavros Niarchos Foundation, a new program was launched under the name "Exercise is Medicine", focusing on the new accredited trend of mass exercise. Apart that, many conventional programmes are running, such as rhythmic gymnastics, aerobics, pilates, Swedish exercise, as well as special sea baths, accompanied with a strong aquatic exercise protocol.

3. Recreational Events & Life Long Learning. Traditional Dances, Theatrical Events, Visits in Museums, Theatres, Natural Beauty Spots, Choir, Exchange of

Cultural Associations, as well as a local, municipal Open University (lecturing every Monday), focusing on various themes, especially of informatory Medicine as well as Nutrition (Mediterranean Diet).

We do understand that although man has no responsibility of the notion of time itself, he/she has an absolute responsibility for its management, a management of multidimensional fabric. We do believe that our municipality is doing its best to institutionalize these management tools for its citizens, while motivating them, supporting them, and empowering them, to achieve a prosperous, vigorous, functional and gracious ageing.

Poster presentations

C4-P1

Healthy Aging Strategy of the City of Poreč-Parenzo

Nataša Basanić Čuš[1], Tihana Mikulčić[2]

[1] Healthy City of Poreč Project, Croatia
[2] Home for the elderly and disabled people Poreč, Croatia

City of Poreč joined the worldwide movement of healthy cities in the 1990s. Developing local policies for health and social well-being The Healthy City of Poreč identified local priorities for health and social security for years. The project Healthy City of Poreč is the base for the adoption of strategic documents (health plans) which contains local protection standards for all residents, especially for vulnerable groups. The plans for the health of the City of Poreč-Parenzo have been adopted at the level of the profession, the public and the executive. They are based on available indicators and a quantitative and qualitative methodology for researching community needs, relying on the Support Center of the Croatian Network of Healthy Cities, based at the Andrija Štampar School of Public Health, University of Zagreb. The elderly, as an age-developmentally vulnerable group, are one of Poreč's continuously and long-term identified priorities in the cycles of local health planning. Caring for the elderly and improving their community life were a priority in the planning period for 2006-2016. and in the new period of planning following the evaluation and implementation of the methodology for redefining health priorities in period 2017-2027. Poreč is a community that, unlike many in Croatia, has a positive natural increase. However, at the same time the number of the elderly over 65 is increasing. The share of the elderly, in the total population of Poreč, has increased according to the available indicators from the two censuses from 11.9% in 2001 to 14.69% in 2011. Based on years of comprehensive creation of conditions for a better quality of life for the elderly, in 2015. was created a local strategic document in Poreč called – Healthy Aging Strategy of the City of Poreč-Parenzo 2015-2020. It has become the backbone of the above standards for the health of the elderly in the City of Poreč. The elderly became a recognized vulnerable group in Poreč, in relation to which are developed and implemented local institutional and non-institutional programs (services) in the community as a protective contribution and support of the community to the process of healthy, active aging. At the end of the implementation timeline, the Strategy has been fully implemented

and its continuation is planned to improve the quality of life and health of the elderly in the community for the future period. The implementation of programs, activities and measures from the Strategy includes, among other programs, support for the development of volunteer assistance for the elderly in colaboration with international volunteer organizations.

C4-P2

Do Healthcare Professionals Age Healthy?

Hana Brborović[1], Ines Šarić[2], Željka Sokolović Pavić[2], Marija Bubaš[2], Milan Milošević[1], Roko Žaja[1], Ognjen Brborović[3]

[1] Department for Environmental Health, Occupational and Sports Medicine, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[2] Division of Occupational Medicine, Croatian Institute of Public Health, Zagreb, Croatia
[3] Division for Organization of Health Care and Management, Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. Healthcare became on of the most dangerous industries. The number of recognised occupational diseases and accidents at work for the healthcare are among the highest of all industries. The question remains, do healthcare professionals age healthy? **Methods.** Registry of Occupational Diseases and Registry of Accidents at Work were searched to identify relevant data on occupational diseases and accidents at work in healthcare and social services sector. Additionally, the occupational diseases data were searched to identify recognized occupational diseases for doctors and nurses in the 2009-2019 period. Various data sources were investigated to find information on work-related diseases as well as other types of chronic diseases for healthcare professionals. **Results.** In the 2009-2019 period, a total of 27 doctors had recognized occupational diseases. The average age was 48.19. The most common recognized occupational diseases were various acute infectous diseases, followed by occupational cancer and chronic hepatitis. In the same period a total of 73 nurses had recognized occupational diseases. The average age was 46.52. The most common recognized occupational diseases were various acute infectous diseases, chronic hepatitis and irritative contact dermatitis. A total of 1775 accidents at work were recognized for healthcare professionals (out of total 18 724) in 2018. The majority of accidents were falling down, as a result of moving with the outcome distortions, sprains and strains of the upper limbs, most commonly fingers. The data about work-related diseases as well as other types of chronic diseases for healthcare professionals were not publically available. **Conclusion.** Results provided do not necessarily show the actual numbers of occupational diseases and accidents at work. We found no data on the number of work-related diseases as well as other types of chronic diseases for healthcare professionals. Literature suggests that up to 95% of population suffers from some type of work-related diseases by the age of 55.

C4-P3

Healthy Ageing for Healthcare Professionals: A Transition to a New Role in Retirement

Lovela Machala Poplašen[2], Hana Brborović[1], Ognjen Brborović[3]

[1] Department for Environmental Health, Occupational and Sports Medicine, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[2] "Andrija Štampar" Library, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[3] Division for Organization of Health Care and Management, Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction. The aim of this review is to describe the impact of ageing for healthcare professionals and to provide guidelines to healthy transition to the retirement. Croatian healthcare professionals are aging and working in working sector that is in the top tree most hazardous due to occupational diseases and accidents at work. **Methods.** Literature review was made in PubMed database, searching only English and Croatian language articles with MeSH terms: Healthy Aging, Aging, Physicians, Chronic Diseases, Retirement, Occupational Diseases, combining with key words: healthcare workers, work ability, professional diseases. Registry of Occupational Diseases and Registry of Accidents at Work were searched to identify relevant data on occupational diseases and accidents at work in healthcare and social services sector. **Results.** The data from the 2018 Registry of Occupational Diseases report showed that out of 80 recognized occupational diseases, 27 of them were from the healthcare and social services sector making the highest rank. The average duration of exposure time was 20.35 years. 42.5 – 59 years of age. The data from the 2018 Registry of Accidents at Work report for the healthcare and social services sector showed that out of 1775 recognized accidents at work, the majority were healthcare professionals in the age group 51-61 (32-51%) and the following was the age group 41-50 (24.56%). No data were available on Croatian healthcare professional's other aspects of health (chronic or work-related). Our review showed that the clinical ability can be compromised with reduced muscle strength, visual and auditory deterioration, which are physical issues, related to

ageing. Accumulation of chronic diseases further reduces capacity. Cognitive decline is particular important, as good medical care requires considerable cognitive function. Here we present, the most significant recommendations how to make healthy transition in to the retirement: 1. Adjusting clinical practice to compensate for age, reducing work-load, consider slowing down in aspects of practice that require rapid cognitive processing, 2. Continuing late professional development – mentoring, teaching, contributing to professional organizations, 3. Health and well-being -maintaining a healthy lifestyle with regular health checkups, 4. Actively and positive assisting their members to transition successfully into changing work roles towards the end of their professional life, 5. Financial health continuing working in private health sector, working part time with reduced taxes. **Conclusion.** Based on literary review the most significant recommendations were emphasized to preserve health and work ability.

C4-P4

Multidisciplinary Approach to Healthy Ageing in the Work of a Public Health Nurse

Danijela-Lana Domitrović

Health Center Zagreb – Zapad, Croatia

Introduction and objective. Promoting health and preventative work by family doctors and nurses is needed to maintaining health, improving a healthy lifestyle, and changing harmful habits. The goal of this course of action is to improve health and preserve functional ability into old age. **Methods.** Mutual geroprophylactic measures are improving the health state of the elderly population, preventing early mortality, functional disability and sick aging. The nurse, according to the Health Care Plan and Program, provides insight into the family, as well as the entire community, their social, cultural, intellectual and spiritual approach to life, and other environmental factors. In day-to-day work, she detects high-risk individuals or people with symptoms or signs that may already have an impact on health and, based on subjective and objective data, evaluates and plans activities (individual and group) in collaboration with family doctors in other medical and non-medical institutions, organizations and associations. **Conclusion**. Multidisciplinary approach ensures affordable, effective, continuous and holistic care that contributes to improving the quality of healthy aging.

C4-P5

Music and Psychological Resilience in the Process of Healthy Ageing

Helena Dukić[1], Sarah Bjedov[2], Ivan Jakovljević[3], Miro Jakovljević[2,4]

[1] Centre for Systematic Musicology, University of Graz, Austria
[2] Department of Psychiatry and Psychological Medicine, University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia
[3] Pro Mente, Zagreb, Croatia
[4] School of Medicine, University of Zagreb, Croatia

Introduction and objectives. An interest for healthy ageing has been growing rapidly in the recent years. Healthy ageing, resilience, music and expression of movement are related phenomena. The objective of this abstract is to show our model for the process of healthy ageing through music and expression of movement. **Methods.** A narrative review. **Results.** These findings demonstrate our theoretical and clinical approaches. Resilience represents a very complex, multidimensional and dynamic process, highly important for understanding of salutogenesis and pathogenesis as well as healthy ageing. Resilience may be defined as a collection of protective factors that mediate the relationship between a stressful event, e.g. disease, and positive outcomes. Resilience is considered a modifiable process, gradually developed through the life span, by facing and overcoming of adversary events. Recent research has shown that the brain, due to its neuroplasticity, has the ability to change throughout our entire life, growing new cells and connections. Interventions to promote resilience and healthy ageing can be organized around three areas: 1. Developing disposition attributes of the individual such as healthy life style, physical activity and robustness; vitality, optimism and positive affectivity. 2. Practicing positive mutual interactions with supportive resource. 3. Strengthening self-efficacy and self-esteem, as well as having a purpose in life. Music, in particular, can help an individual build their resilience. Music making can enhance the function and structure of many brain areas in adults, proving that training-induced plasticity is not restricted to the developing brain. Even more interestingly, research has shown that daily music listening can improve auditory and verbal memory, attention and mood, thus contributing to the increase in psychological resilience in both children and adults. Passive music listening has been proven to increase levels of oxytocin in adults, and active music participation (like group singing and dancing) has shown the same results. Individual music listening as well as group music activities, such as choir singing or group dancing (a practice such as 5Rhythms) would not only be beneficial to building psychological resilience, but

would also promote bonding, social interaction, sense of well-being and improve auditory and verbal memory in older adults. **Conclusions**. This is our theoretical concept that we intend to execute through adequate models in practice.

C4-P6

Quality Aging in Krapina-Zagorje County

Valentina Đurek[1], Martina Šarić[1]

[1] City of Zabok, Krapina-Zagorje County, Croatia
[2] Zagorje development Agency, Krapina-Zagorje County, Croatia

"We are helping the elderly" – (MI POmažemo Starijima – MIPOS) is a project that empowers and employs women to help the needy members of the Krapina-Zagorje County (KZC). The project promotes social justice and ensures a better quality of life for county residents. The project employs 55 women who provide home help services for 313 users, elderly people. The MIPOS project, in addition to the employment of women for a period of 24 months, also provided education in the field of a geo-nurse / caregiver. The Ministry of science and education has verified the mentioned programs and the women involved in the project have obtained a formal certificate of education that will provide them with easier employability after the completion of the project. This ensures that the long-term sustainability of the project is maintained. The overall objective of the MIPOS project is to achieve social cohesion and improve the quality of life in KZC, and the specific objective is to integrate disadvantaged women into the world of work. The analysis of the problem indicated that women are disadvantaged in the labor market and that it is necessary to focus resources on empowering them. One way to empower unemployed women is to invest in education that will improve their capacities, work potential and empower them to enter the labor market. The institutional sustainability of the project has been ensured through the strengthening of the capacity of the NGOs to provide social services. The project partners, primarily associations, have strengthened their administrative and implementation capacities and put in place a functional home assistance service for their beneficiaries that they will be able to use after the end of the project. The established system of control of beneficiaries and women who provide services, elaborated forms and implementation mechanisms remain permanently owned by the project partners and is used as an example of good practice in the local community, and disseminated to other stakeholders within and outside the KZC. The project created unique forms for monitoring women's work and identifying user needs. The wide partnership of local self-government units and associations in the KZC in the MIPOS project has fostered a sense of social sensitivity among citizens and created a platform for continuation of activities and designing of a new offer of social services. The established concepts of non-institutional assistance to end-users has emerged as an example of the good practice of broad partnership that has led to changes at the regional level.

C4-P7

SWOT Analysis of Retirement Club

Rea Janda, Ksenija Vitale

Department of Environmental and Occupational Health and Sports, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. Previous publications show various problems that people over 65 have to deal with. Some of them are loneliness, illness, financial problems etc. People at that age are also known to have health problems such as obesity, which increases the risk of chronic illness. For people over 65 there are retirement clubs in our community. Those clubs allow them to socialize with other people of similar age and make new friendships. They also go on trips around the country and beyond, mostly once a month and have constant physical activity, on average twice a week. The main objective of this paper is to critically examine the strengths and weaknesses of such community and to identify opportunities for improvements and obstacles that they may encounter. **Methods.** For this paper SWOT analysis was used. It involves identifying key strengths and weaknesses in the internal environment and opportunities and threats in external environment. Although it may not be possible to influence the external environment, it is important to know what opportunities and dangers are present in it. **Results.** Research has shown that such associations have many opportunities, especially if government organizations are involved. However, there are also several problems, mainly of a financial nature, which make some of the identified opportunities impossible. An additional problem is that people learn about such associations verbally and most often members come because one of their friends brought them. **Conclusion**. Based on the results obtained, associations can achieve better organization and apply for donations to get more people involved or to have more activities. Information on the workings of such associations could also be expanded and more people might be interested.

C4-P8

Demonstrating Models of Good Practice in Working with Older People by Implementing Healthy City and Healthy County Projects

Iva Josipović[1], Helena Glibotić Kresina[2], Nevenka Vlah[2], Jadran Mandekić[3], Karla Mušković[3]

[1] Primorsko Goranska County, Croatia
[2] Teaching Institute of Public Health of Primorsko Goranska County, Croatia
[3] City of Rijeka, Croatia

Introduction and objectives. Ageing is one of the greatest social, economic and health challenges of the 21st century. The share of people older than 65 in Primorsko-goranska county (PGZ), according to the last census (2011) was to 17.7% of the total population; in 2018 it was 18,91%, while in the city of Rijeka amounts 19,74%. Therefore, the goal of the Rijeka-healthy city and healthy county projects is to promote active, healthy, productive aging, preserve functional ability, improve health behavior, prevent risk factors in the occurrance of diseases and injuries retain the elderly in their place of residence through one of their priorities and with their own family, improving care and creating a" family spirit" in care institutions. **Methods.** Primorsko-goranska county has been an active member of Croatian Network of Healthy Cities since 2004. Rijeka has also been recognized internationally through membership of WHO Working Group of Healthy Aging and the Alliance for Demographic Change. In both projects, healthy aging was a priority. Numerous activities have been carried out to improve the quality of life of the elderly and are presented here. **Results.** Healthy county activities:

I. Health aspects: (health literacy program; cardiovascular disease prevention program for residents of PGZ)

II. Social aspects: (establishment of home communities; introducing EQALIN quality system into nursing homes; development of a guide for seniors PGZ-printed educational material; extending non-institutional care to organized home help and care activities; hello home care program for Kantrida nursery home; the festival of sports and recreational sports, thanks to which the first Olympiad for seniors was held).

Activities Rijeka-healthy city:

1. Creation and distribution of two 50+ publications
2. Provision of poverty relief assistance measures
3. Financing the work of 16 retirement clubs
4. Co-financing free exercise programs
5. Co-financing the work for the University for the third age
6. Implementation of IT literacy project
7. A healthy aging group formed

Conclusion. Health care of the elderly is an indicator of progress, but also of the failure of health care for the population as a whole,the responsibility of society is important, with special emphasis on ensuring active, healthy ageing, so the both projects have initiated changes in perceptions of ageing, creating new conditions for new models of active healthy ageing, encouraging the participation of elderly in the community and in the work place, improving and preserving the health, functional ability and quality of life of elderly.

C4-P9

Older Workers in the World of Work – Psychosocial Aspect

Helena Koren, Marija Bubaš

Division of Occupational Health, Croatian Institute of Public Health, Zagreb, Croatia

Introduction. Aging workforce is an important challenge for organizations across European Union. It is expected that the number of older workers will increase in the future, so it is necessary to devote more attention to this specific group of workers. Due to age related stereotypes, older workers are often perceived as less productive and less motivated to work, making more expenses than benefits for the companies. However, older workers, if encouraged and well managed, are valuable source of knowledge, expertise and experience. This article focuses on specific psychosocial issues that affect older workers' health, motivation, productivity and well-being at work. **Methods.** In this article a literature review approach is used to discuss main age-related factors and psychosocial issues specific for older workers. **Results.** Older workers experience some age-related changes, mainly in decline of physical or sensory capacities and cognitive abilities. However, they can compensate those age-related functionality losses with work experience and accumulated knowledge. Specific psychosocial issues affect older workers, more than other age groups, such as age stereotypes and discrimination, less education and career opportunities, low job autonomy, technological changes or job insecurity. On the other hand, older workers report higher work related well-being, have a more positive attitude towards their job and show higher job satisfaction. Older workers may perceive their work less stressful, mainly because they developed different coping strategies through the years of working experience, and are able to adapt these strategies depending on the requirements of particular stressful situation. **Conclusion**. Aging workforce challenges organizations

to develop and implement policies and practices that would keep workers healthy, motivated and productive. Rather than focusing on certain disabilities, such policies should aim at improving potentials of all age groups. Engaging and encouraging older workers to remain active and contribute to the world of work should be of interest to all, employers, organizations and society as a whole.

C4-P10

Healthy Ageing Promotion Throughout the Life-Course: Nurses as a Link Between Health System and Communities

Maja Lang Morović[1], Slaven Krtalić[1], Sanja Musić Milanović[1, 2]

[1] Division for Health Promotion, Croatian Institute of Public Health, Zagreb, Croatia
[2] Division for Epidemiology, Department of Medical Statistics, Epidemiology and Medical Informatics, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. Within the health promotion practice it is necessary to enable people to take care of their own health. This can be done through education, support, urban planning for health and other methods that will empower people to have all the tools, knowledge and the environments to remain their health far into the old age. By creating healthy habits through early childhood and ensuring support throughout the life-course, healthy ageing will be enabled in its full potential. One of the key links between public health system and the people are nurses. Nurses' role is therefore important in the promotion of healthy ageing and overall life-course health. The goal of this paper is to present possibilities for collaboration between health sector and communities with nurses as the key link between the two. **Methods.** Croatia Health Promotion National Program Healthy Living aims to ensure that people learn how to keep their health and have support in the environment for leading healthy lifestyles. Due to its comprehensiveness, Healthy Living is divided into five components: Health Education, Health and Physical Activity, Health and the Nutrition, Health and the Workplace and Health and the environment. All of these components focus on maintaining lifelong health, whereas three out of these five, Health Education, Health and Physical Activity and Health and the Environment, can be strengthened by including nurses into its implementation. **Results.** Within the Health Education Component, nurses are recognized as the health ambassadors from the earliest age. For this purpose, education material was created that is implemented by nurses in all day care centers in Croatia with the goal of teaching children the basics of healthy lifestyles. Further, in the Health and Physical Activity Component nurses are a link between health system and people with chronic illnesses who are not sufficiently physically active. The role of nurses is to motivate these insufficiently active, mostly elderly people to engage in regularly organized and professionally supervised walking activity. Finally, in the Health and the Environment component nurses are the key health professionals who have all sufficient resources to connect people of all age groups to participate together in organized health promotion activities in city parks. **Conclusion.** In order to efficiently promote lifelong health including healthy ageing nurses are an important link between communities and health system. By empowering nurses due to their role in the society, it will be easier to reach people of all ages before the onset of the disease and motivate them to pursue healthy lifestyles.

C4-P11

Care for Elderly Women with Cancer at the Everything for Her Centre for Psychological Support

Nika Lazić, Almenka Balenović, Ljiljana Vukota

Association EVERYTHING for HER (CSO), Croatia

Ageing itself poses great challenges for a person, but additionally being diagnosed with cancer creates stressful environment that reduces adaptive capacity of affected person and her family and friends. Mental health is also greatly affected in cancer patients who often feel lonely, fear for their future and often show symptoms of depression. The elderly have greater probability to be diagnosed with cancer. In Croatia in 2017, there have been 11,156 women diagnosed with cancer. The most common cancer sites were breast, colon and lung cancer. The total number of women with breast cancer in 2017 was 2,767, of which 1,335 were over 65 and as many as 1,716 were over 60 years old. With all the difficulties aging person can face, cancer is an additional burden for older women. With all the emotions that combined age and illness bring, they often lack appropriate family care and support. Even with a supportive family, they often face resentment as they become a burden to their family, also affected with the illness of their loved one. Additional problem at that age is that there is a great number of women who are either divorced or widowed, without any fam-

ily or with very narrow social network. Unfortunately, with still existing prejudice against the elderly and cancer patients, the situation gets more complicated. Many affected women need more specific psychosocial support which they find difficult to find, especially in the environment that does not encourage them to seek such support. In 2010, Association Everything for Her opened the doors of the Centre for psychological support for women dealing with cancer. Between 35% to 40% women participating in the Centre's programs are above 60 years old. Unfortunately, estimates for those in need of support is even higher. Older women are a very diverse group and our statistic shows that they are more or less involved in all of the Centre's programs: individual psychological counselling, support groups, specialized psychoeducational programs, attending expert lectures, engaging in complementary programs such as yoga, dance and volunteering on social and cultural events. Aim of our programs is enhancing the capacity to cope with the disease, adopting useful and healthy habits, expanding the social network and improving the quality of life. Our mission is to continue learning and improving our programmes to provide the best possible care for our participants and also to raise awareness in our society and reduce stigma of cancer patients.

C4-P12

Young Promoters of Healthy Ageing, Presentation of the MAMA Project, BE HEALTHY, PINK OCTOBER IN CROATIA

Dijana Mayer[1], Ivana Pavić Šimetin[1], Anja Belavić[1], Ljiljana Vukota[2]

[1] Croatian Institute of Public Health, Zagreb, Croatia
[2] Association EVERYTHING for HER (CSO), Croatia

In Croatia, according to data from the Cancer Registry for 2016, of the total women who have cancer 25% are breast cancer patients, 14% of colon and rectal cancer and 8% of lung cancer. From the gynecological cancers at the top lies cancer of the uterus and cervix with 9%. Croatia has three national early cancer screening programs (breast, colon and cervix) and it is extremely important to raise women's awareness of the importance of responding to free screening in all three programs. In 2019, all three national programs were included in the educational leaflet. Caring for women's health and informing them of the importance of a checkup is an important topic in society, and the Association EVERYTHING for HER would like to contribute to it. To help raise awareness for the need to respond to national programs, and to raise awareness of the need for regular checkups for women of all ages, the Association EVERYTHING for HER has designed the "Pink October Project" to inform women in detail about ways to care for their health and early detection of primary breast cancer as well as other cancers following this. The association implemented the project “"Pink October"” as a pilot project in October 2017 in Glina and Hrvatska Kostajnica, and then in 2018 in 28 schools (in 2019 in 31) across Croatia. 19590 educational leaflets were distributed to mothers by their children. Activities were well received in the school and in the community. The leaflet highlights the importance of timely gynecological examinations, self-examinations and breast examinations as well as HPV vaccinations. We are extremely proud of such a responsiveness of the schools and we are sure that, through this campaign, we have all together influenced the awareness of women in different generations about the importance of preventive examinations and care for their own health. Children were instructed to give the leaflet to their mother, and the contents of the leaflet were reviewed by the Croatian Institute of Public Health. Project is being implemented to help raise awareness of women's concerns about their own health. We are witnessing morbidity in women of all ages from malignancies, as well as the often late detection of the disease, which significantly reduces the chances of cure. One of the main concerns for a sick woman at that moment is what it is like to be with children. Children can have a positive influence on parents and encourage their more responsible behavior, which is why we designed the project incorporating children as a means for communicating preventative and educational messages to mothers and other female family members, in order to encourage them to have regular check-ups.

C4-P13

From CrossCare to Integrated Care – What Have We Learned From Interreg Slovenia Croatia Project

Andrea Miškulin, Saša Radić, Ivana Vasilj, Sanja Lulić, Marija Tufeković

Institution for Home Care Zagreb, Croatia

Health care systems with rising life expectancy, declining physical and mental health among elderly, declining family members care due to family members moving abroad, has increased the need on health and social system to provide institutional and community

long-term care. Principle 18 of the European Pillar of Social Rights stresses the right to affordable long-term care services of good quality, in particular, home-care and community-based services. Institution for home care Zagreb has a long tradition of establishing innovative services in emerging area of community based health care, such as "Hospital care in home", "Physical therapy and rehabilitation for people with disabilities in City of Zagreb", "Palliative care coordination center" in Zagreb city and in conjunction with The dental clinic provides free dental care at home. So, the City of Zagreb with Institution for home care Zagreb has envisioned and implemented a program through a European project to provide one of the components in developing innovative integrated ecosystem while ensuring delivery of services for better quality of life among the elderly citizens of Zagreb. This Program has been developed by the consortium of partners of an Interreg program area. Leading partner, Ljubljana Home Care Institution accompanied by Municipality of Ljubljana, Center for domestic help Maribor, Community Health Center Čakovec, City of Zagreb and Institution for home care Zagreb has developed an program through collaboration of professionals (doctors, physiotherapists, nurses, occupational therapists, social workers). Hence, they took the opportunity of CrossCare project to insure a new community based service for their citizens – home based occupational therapy, which is in accordance with relevant literature in the area of cost-effective solutions for changing health system (Rexe et al, 2013). Occupational therapy has proven to be relevant to improve functionality and health outcomes in areas such as falls prevention, musculoskeletal injury, stroke rehabilitation, mental disabilities, respiratory rehabilitation and home care, all relevant to eldelry citizens of Zagreb. More then 360 elderly persons have received occupational therapy services (direct one to one sessions in their home and local community) which have resulted in positive changes in occupational balance, reduced occupational deprivation and isolation, enabled daily functionality and raised their quality of life. With support of City of Zagreb this project will continue after the project stops, which ensures that Zagreb has services just like most (much reacher) European countries.

C4-P14

Knowledge and Attitudes Towards Influenza Vaccination Among Elderly in Eastern Croatia

Ivan Miškulin[1], Katarina-Josipa Siroglavić[2], Ivan Vukoja[3], Maja Miškulin[1]

[1] Department of Public Health, School of Medicine, Josip Juraj Strossmayer University of Osijek, Croatia
[2] Department of Public Health, Andrija Štampar Teaching Institute of Public Health, Zagreb, Croatia
[3] Department of Internal Medicine, General County Hospital Požega, Croatia

Introduction and objectives. According to European Center for Disease Prevention and Control data, seasonal influenza annually causes 40 to 50 million symptomatic cases in the European Union (EU), and 15 000–70 000 persons die of influenza sequelae. Most influenza-associated deaths in developed countries occur among elderly persons 65 years of age or older. At present, there is consensus among European countries regarding the routine seasonal influenza vaccination of elderly, however, vaccine uptake in many EU countries remains suboptimal. Since 2009, the EU target influenza vaccination coverage among elderly is 75% but none of the EU members achieved this target. The aim of this study is to investigate influenza vaccination coverage among elderly in Eastern Croatia and to evaluate their knowledge and attitudes towards influenza vaccination. **Methods.** This population cross-sectional questionnaire study was conducted in convenient sample of elderly (65 or more years) from Eastern Croatia at the primary health care setting during 2018/2019 influenza season. Response rate was 81.6%. **Results.** There were 48.0% males and 52.0% females. Median age of all study subjects was 73.0 years (interquartile range 69.5-79.0 years). The overall prevalence of influenza vaccination was 33.3%. The vaccination was statistically more frequent among females, old-old subgroup (85 years or older), those whose perceived socioeconomic status was better than average and those suffering from chronic diseases ($P=0.003$, $P=0.001$, $P<0.001$ and $P<0.001$, respectively). Females, those with higher education and those who have a partner had statistically better knowledge about influenza vaccination ($P=0.044$, $P=0.001$ and $P=0.036$, respectively). Females, those with higher education, those whose perceived socioeconomic status was better than average and those belonging to the old-old subgroup had statistically more positive attitudes towards influenza vaccination ($P<0.001$, $P=0.023$, $P<0.001$ and $P=0.005$, respectively). Among those with better knowledge about influenza vaccination and among those with more positive attitudes towards influenza vaccination there were statistically more elderly who were vaccinated during 2018/2019 influen-

za season (P<0.001 and P<0.001, respectively). **Conclusions.** Bearing in mind that elderly population makes up 19.4% of the Croatian population, and the fact that elderly are one of the risk group concerning the influenza severity it is essential to strive for achievement of the EU target influenza vaccination coverage. In order to achieve this, it is important to further improve influenza vaccination knowledge and attitudes among elderly in Croatia.

C4-P15

The Zagreb County – The Programme Home Care Assistance for the Elderly

Ivana Pašer

Zagreb County, Zagreb, Croatia

The Zagreb County is a regional (local) self-government unit in the Republic of Croatia, consisting of 9 towns and 25 municipalities. In the County's rural areas, a large number of the elderly and disabled live in single-person households. In that regard, in addition to the institutional care, the County promotes the development of the community-based non-institutional care for the elderly and disabled people, and the very Home Care Assistance for the Elderly and Disabled Programme has proved to be very successful. The Programme includes the services related to food, performing household chores, assistance in the maintaining of their personal hygiene, as well as in performing other daily activities. The Programme is intended for the elderly who have been socially isolated for many different reasons and live in the areas where there is no public transportation, live far away and do not have neighours around, do not have heirs or their children have moved out for work, their spouses are dead, and live within an area with poorly developed social attachments, with insufficient financial resources, often of poor health. For the users of the said Services, it is essential to maintain the level of independence and remain as long as possible in their homes, within the safe environment in which they have spent their whole life. The Home Care Assistance Social Service Programme is conducted in cooperation with State institutions, local self-government units, NGOs and others seeking to reach longevity and a healthy aging. Owing to the funding of the Zagreb County and in conformity with the Social Plan and the Community Action Plan, the Social Service Programme is currently implemented in the municipalities of Žumberak, Pisarovina and Pokupsko. It is also important to mention the programme named „Make a Wish" (cro. Zaželi), implemented by the Red Cross town nursing centres for the elderly on the territory of the municipalities of Sveti Ivan Zelina, Vrbovec, Ivanić-Grad, Dugo Selo, Samobor and Jastrebarsko and the respective municipalities. The Make a Wish (cro. Zaželi) Programme funding is supported by the European Social Fund. The Home Care Assistance Social Service and the Make a Wish (cro. Zaželi) Programme is conducted by a team of experts, programme managers, coordinators, nurses, elderly caregivers and other assistants. With the purpose of extending the network of non-institutional senior care services, the Zagreb County will provide support to all those who want their parents, grandparents and citizens to live contentedly in their homes, according to its means.

C4-P16

City of Zagreb – Dementia Friendly Community

Ivana Portolan Pajić

City Office for Health, Zagreb, Croatia

Introduction. The City of Zagreb, in collaboration with institutions and civil society, has been sensitizing the public for many years to the growing problem of Alzheimer's disease and other dementias and their destigmatization. In an effort to promote further investment and enable people with dementia to live independently as long as possible, the City of Zagreb has signed a Registration and Process Agreement on December 14, 2017 to become "Dementia Friendly Community". With registration, the City of Zagreb joined European initiative and gained title "The City of Zagreb is becoming Dementia Friendly Community". This made the City of Zagreb the first such city in Croatia. **Policy context and objective.** The agreement was signed with the Croatian Association for Alzheimer's Disease, which in 2016 became part of the international Friends of Dementia initiative. The initiative was launched by the Alzheimer Society of London, the UK's leading dementia society. In doing so, the City of Zagreb has joined a growing number of world capitals that have already initiated this process. In order to meet the criteria of the agreement and create a working plan, a working group have been established to govern the development of the ""Dementia Friendly Community"", which brings together key stakeholders who are necessary for successful project implementation. The working group is composed of representatives of social care centers, physicians, neurology specialists, police, city administration, public transporta-

tion, firefighters and civil society. **Targeted population.** People with dementia as citizens (not only people defined by their dementia as 'patients'), their carers and families. **Highlights.** The working group has started with the Basic Education Program within the City of Zagreb's ""Dementia Friendly Community"" development program, and in the first cycle of the education the program brought together the employees of the Zagreb Electric Tram, the Zagreb Police Department, and the Zagreb Public Fire Department.

The actors who are in frequent contact with citizens were educated, and the aim of the training was to familiarize them with the basic concepts of the disease, how to identify a person with dementia and how to approach such a person. In addition to educating key actors who are in daily contact with citizens, an important segment that should be addressed is the care and care facilities for older people, such as hospices, nursing homes, and day care centers. With this in mind, the working group is in preparation of a handbook for "Dementia F".

C4-P17

Skin Cancer Has Become a Public Health Problem

Eva Rupert[1], Romana Čeović[2], Branka Marinović[2]

[1] Health Centre Zagreb – Zapad, Zagreb, Croatia
[2] Department of Dermatovenereology, University Hospital Centre Zagreb, School of Medicine University of Zagreb, Croatia

All over the world, the incidence and mortality rates of skin cancer have significantly increased over the last few decades and thus have become a public health problem. Despite increased public awareness of the risks of skin cancer and even though skin cancer is one of the most preventable malignancies, the incidence continues to rise worldwide. Ageing changes in skin are caused by intrinsic factors, which are genetically determined and extrinsic factors, which are environmental. Intrinsic or chronologic ageing leads to thinned epidermis, reduced pigmentation and fine wrinkles. By far the most common extrinsic factor is ultraviolet (UV) exposure which is referred to as photoageing. More than 90% of skin cancers are found in the areas of the body which are exposed to UV radiation. Both sun and indoor tanning devices are risk factors for the development and growth of melanoma and nonmelanoma skin cancers. Important determinants of both the degree of risk and the type of skin cancer are the various forms of UV spectrum and timing of sun exposure. The intermediate levels of cumulative or constant UV light exposure during lifetime are common in lifelong outdoor occupational exposure and result in development of actinic keratosis and squamous cell carcinoma. They occur in older population who had time to accumulate DNA damage in cells and in light- sensitive individuals with skin phototypes I and II who have less pigmented skin and a higher tendency to burn easily. On the other hand, intense intermittent UV exposure and particularly sunburns that occur in childhood and youth cause basal cell carcinoma (BCC) and cutaneous melanoma (CM). BCC tends to develop after the age of 50, however early onset of BCC is on the rise and results from frequent use of tanning devices. CM can occur at any age, especially at risk are everyone with a family history of melanoma or a personal history of bad sunburns. Avoiding overexposure to direct sunlight during the peak daylight hours to prevent sunburns, wearing protective clothing, and applying broad- spectrum sunscreen with a sun protection factor of 30 or higher are ways to protect the skin. Primary care physicians play an important role in skin cancer prevention and should be familiar with recommendations on behavioral counseling and sun- avoidance strategies, especially for patients with a history of personal or family skin cancer. Due to cumulative effects of UV radiation, appropriate age groups to target for sun protection intervention are children and young adults because only change in their behavior will result in decreased incidence of skin cancer and healthy skin ageing in later stages of life.

C4-P18

Healthy Ageing as a Part of the National Mental Health Development Strategy 2019-2030

Danijela Štimac Grbić

Division for Organization of Health Care and Management,
Department of Social Medicine and Organization of Health Care,
Andrija Štampar School of Public Health, School of Medicine, University of Zagreb,
Croatia
Department of Mental Health and Addiction Prevention,
Croatian Institute of Public Health, Zagreb, Croatia

Ministry of Health Commission for Developing National Mental Health Strategy 2020-2030 drafted the document during 2018 and 2019 year. The purpose of the strategy is to improve the existing ones and to develop new models of promotion, improvement and protection of mental health in order to reduce the occurrence of mental disorders and disabilities associated with them, and increase the availability of adequate care in the territory of the Republic of Croatia. The strategy is based on relevant international UN, WHO and EU documents and on the guidelines of the Twin-

ning project: “”Ensuring optimal care for people with mental disorders.”” The specific objective of the strategy is to protect the mental health of vulnerable groups, with particular attention to the elderly population with specific care needs. There is need for early recognition and treatment for mental disorders in elderly as well as prevention. Numerous studies have confirmed the importance of social integration as a factor in mental health: people with more frequent contact with family, friends and neighbors, people married, people involved in religious life or civic organizations or clubs are generally better at mental health than people who are more isolated . People who live in societies or communities that are better socially integrated and provide security for their members, as well as a quality and organized living environment and housing, will have a higher level of mental health. Accordingly, measures, drafted in Strategy, related to the protection of the mental health of the elderly include: conducting research and activities aimed at combating the stigma of vulnerable groups; participation in the promotion of active aging programs; encouraging activities to prevent violence against the elderly; actively supporting the development of mental health in old age, focused on individualized care, day care and local community care; promoting and supporting the families and carers of persons with mental health problems; prevention of deprivation of legal capacity through education of all participants in the process of deprivation of legal capacity; improving the professional competencies of healthcare professionals and associates in health and social care settings working with the elderly; developing the use of volunteering to assist the social inclusion of people with mental disorders. The strategy foresees the adoption of a special action plan for people with dementia.

C4-P19

IMPULS for 54+

Sonja Tošić Grlač, Valentina Biševac

Međimurje County, Croatia

The Impuls for 54+ project increases the social inclusion of people older than 54 from geographically isolated and deprived areas of Međimurje County using cultural and artistic activities as impulses for their activation. The project activities have enriched the quality of life of the involved people over the age of 54 and enabled their social inclusion. The mentioned group of people, for various reasons, have very limited access to cultural and artistic activities. Their issues are living in remote, geographically isolated rural areas with low financial income and limited mobility because they don’t own or can no longer drive their car. They find it difficult to move and need assistance for a difficult trip. Some of them live in single households and are uninformed about the cultural and artistic content available to them in their community, especially the content made to suit their interests/needs. They require free and accessible cultural and artistic content appropriate to their intellectual and perceptual capabilities – content in local expression that they can understand and comprehend. To strengthen their skills and enrich their quality of life, the offered content must also be highly stimulating. In response to the aforementioned issues of elderly people in Međimurje county, we have designed participatory cultural arts workshops in 4 areas. The elderly will be able to play the tambourine, sing, practice folklore dances and read in workshops as well as present art projects made by themselves at public performances and participate in cultural and artistic appearances (opera, performances, concerts). It is important to note that all the workshops have a strong local expression (Međimurje folklore / customs, local composers and writers). Transit, presenting the main obstacle to the elderly from participating in cultural and artistic activities in their community, will be organized. The aforementioned contributes to a more active participation of target group members in cultural arts workshops enhancing their social, cognitive, emotional and creative skills. The artistic projects designed and presented by the target elderly group members to the general public will increase their visibility and potential, therefore indicating the need for greater involvement of the elderly into the community and society in general. The project has been approved for funding under the call for Arts and Culture for the elderly and has been funded with 100% European Union funding by the European Social Fund.

C4-P20

Projects Related to Ageing in Horizon 2020, Framework Programme for Research and Innovation

Smiljka Vikić-Topić[1], Miroslav Rajter[2], Fran Borovečki[1], Slobodan Vukičević[1]

[1] Centre for Translational and Clinical Research, University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia
[2] Centre for Research, Development and Technology Transfer, University of Zagreb, Croatia

Introduction and objectives. The current population share of people in the age group of 75+ in EU28 in 2019 is 9.5% and has grown since 6.8% in 2001. Share increase in this age group is even bigger in less per-

forming countries such as Croatia (9.45% in 2019 and 5.3% in 2001), intensified additionally by emigration. Ageing population represents an evolving concern in many aspects of life. It influences economy, demography, intergenerational relationships, living arrangements, health care approaches and unsustainable health-care costs. All of these challenges triggered an increased interest in research of ageing in many disciplines. Advancement in medicine generated a plethora of new diseases among the ageing population that were not known before, comorbities being among the most challenging ones. Here we present the growing interest in the health research on this subject funded in EU programmes. We aim to determine the proportion of research on ageing within Horizon 2020 programme / Societal Challenges/Health (SC1). **Methods**. We searched the Calls for Proposals, projects and their results in the European Commission databases "Funding and Tenders" (https://ec.europa.eu/info/funding-tenders), "Cordis" (https://cordis.europa.eu/search/en), H2020 Dashboard (https://webgate.ec.europa.eu/dashboard/sense/app/93297a69-09fd-4ef5-889f-b83c4e21d33e) and others. **Results**. In Horizon 2020 Work Programme 2018-2020 – Health, demographic change and wellbeing (SC1) word "Ageing" is mentioned ninety-six times. Twenty-nine calls were dedicated to ageing (out of 295) and approximately one third of the funded projects are related to ageing (341/1039). We will present the number of projects, EC contribution and results coming out from these projects; publications together with their content analysis and intellectual property rights. We will show main areas of research, top funded projects, and geographical distribution of the participants. **Conclusions.** Ageing is a growing issue in various aspects and research fields. While research on ageing is present in the Horizon Framework Programme, the projects are scattered through various calls. The system for the monitoring of allocated funds, research topics, project results are overwhelming, but not harmonized nor easy to find. Based on the importance of ageing, but also other inter- and multi-disciplinary research fields, the systematic approach to tackle these issues are needed.

C4-P21

My Golden Split

Magda Vrvilo

Department of Social Welfare, Healthcare and Demography, Split, Croatia

"My golden Split" is project of city of Split for retired citizens in their golden years. Goal of this project is to help citizens, have better control of allocated funds and build a rightful system with social normes. Every month users get money from City of Split on their bank card which can spend in markets. Owners of this card can use different discounts for museum tickets, theatre tickets, sport matches, libraries etc. Main social normes to get card: total revenues under 2.000 kunas and owning only one property. Monthly, users get from one hundred to three hundred kunas on card. With this local goverment's project we hope to improve the quality of life and get more active use of social contents. Split is city on the sea and basic motive on the card – water anchor symbolizes choice of our citizens to stay in the city – calm and safe port.

Session C5: Healthcare System Organization in the Advent of Chronic Diseases Caused by Ageing

Invited lecture

C5-I

Can the Health System Be Better Organized to Meet the Challenge of Chronic Diseases and Ageing Disorders?

José Mª Martin Moreno

Department of Preventive Medicine and Public Health, University of Valencia, Spain

It is not difficult to understand how complex it is and will be for Europe to deal with one of the highest rates of ageing and chronicity in the world, nor to change the trend that confirms that around 90% of mortality in our country is due to chronic diseases.

Nor will it be easy to care for the growing number of Europeans with senile dementia and Alzheimer's, or even to halt the growth of obesity in adults and children, which will mean even more diabetes, cardiovascular disease and cancer.

In short, we face more chronic diseases and greater stresses on the sustainability of health systems.

If we focus on financing, a scenario of inertia due to inaction projects that the health budget will have to grow by around 45% by 2020 in order to meet the demand for care, which does not seem bearable for our economies. Hence the need for an orderly transformation of the care model that makes the sustainability of our health systems possible.

However, although there has been much talk of this in Europe in recent years, understanding the need to meet the challenge of chronicity, there seems to be a lack of energy and leadership to make something really effective happen to improve the situation.

In fact, in the context of the economic crisis, health systems have been managed with a multitude of actions to cut spending in a linear fashion, but without any real willingness to lead the necessary transformation of the health system to focus on the management of chronic patients. This is despite the fact that the transformation of the model is the only way to generate potential savings and improve quality in the health system.

One of the main reasons for the lack of transformative leadership is the current paradigm of what medicine is, focused on rescue, on the acute, on attending to the specific episode. Medical schools explain this, and practices are done in huge super-specialized third level hospitals. In addition, political logic is also caught up in it. Political leaders have fallen into this logic of immediacy by "rescuing" health care. They deal almost exclusively with "acute" health problems, moving from one crisis to another without thinking about the chronic structural problems of the system that require a medium-term transformation.

Thus, in the same way that it is necessary to complement clinical care for acute patients with a model more in line with the care of chronicity, in parallel it is necessary to complement a policy or management of health rescue with a management of medium-term transformation.

To achieve a good performance within the system, it is necessary to effectively transform the care model and manage the chronically ill more efficiently. There are also numerous similar examples in Europe and Spain with positive results in terms of potential for improving quality and sustainability. For example, the TELBIL study, carried out within the framework of the Basque Country's Chronic Care Strategy, shows that a model of telemonitoring of complex chronic conditions from primary care onwards achieves a substantial reduction in hospital admissions and stays. In Sweden, the county of Linkoping systematically achieves better health outcomes and efficiency than other counties thanks to this type of intervention.

Moreover, these profound changes in the sector cannot be achieved without the participation and involvement of health professionals. The examples of good results cited above are not only a technological achievement, but have been achieved through the active participation of health professionals. The more health professionals are involved in management and organizational issues, the better the quality and efficiency re-

Table 1. Management resources to lead the necessary reform of the health system in order to face chronic diseases and ageing disorders

- Transforming passive patients into active patients,
- Introducing new professional roles for case management.
- Articulation of integrated care pathways.
- Technologies that allow for the provision of services at a distance (e-health, m-health). Incentives and disincentives to reduce hospital admissions and readmissions.
- New forms of stratification of the population by risk (which allows better targeting of preventive or care interventions).
- New clinical decision support systems.
- New forms of recruitment aimed at contracting value rather than just activity.

sults obtained in an organization. The literature on the involvement of health professionals (medicine, nursing, pharmacy, etc.) confirms that it is no longer sufficient for clinicians to be excellent clinicians, but that active participation in management and organization is necessary to achieve good results. ASPHER may and should help preparing health system professionals to be better prepared.

Along with all of the above, it is essential to lead this transformation. The current fragmented model does not provide the quality, clinical safety and results expected, especially for chronic patients. It is increasingly understood that better management of these patients is not only a clinical challenge, but also an organizational and management challenge.

We must use tools to turn passive patients into active patients, which are already well known. This battery of tools allows the care model to be organized in a different way. The key will be to implement them in an aligned way.

In conclusion, there are effective resources and procedures that make it possible to transform health care to offer more quality to the chronically ill while making it more sustainable. To achieve both objectives, it now seems more logical to transform than to cut.

REFERENCES

1. *Bengoa R.* Transforming health care: an approach to system-wide implementation. Int J Integr Care. 2013;13:e039.
2. *Carretero S.* Mapping of effective technology-based services for independent living for older people at home. Seville: Joint Research Centre, Institute for Prospective Technological Studies, JRC Scientific and Technical Reports Series; 2014.
3. *Naylor MD, Hirschman KB, O'Connor M, Barg R, Pauly MV.* Engaging older adults in their transitional care: What more needs to be done? Journal of Comparative Effectiveness Research. 2013;2,pp:1–12.

Oral presentations

C5-O1

Clemson University-Medical University of South Carolina Rural Health Innovation Partnership to Improve Health Outcomes & Equity in South Carolina, USA

Ronald Gimbel[1], John E. Vena[2]

[1] Clemson University – Medical University of South Carolina, Charleston, USA
[2] Department of Public Health Sciences, Medical University of South Carolina, Charleston, USA

Introduction and objectives. South Carolina (SC), located in the southeastern region of the United States, is a state of nearly 5.1M people with about 32% at age ≥55 years. SC is not a wealthy state and the majority of its 46 counties are designated rural. Many of these rural SC counties suffer from a broad range of social determinants of health (e.g. high unemployment and poverty; lower income and education levels), a state-wide maldistribution of health professionals and facilities, poorly controlled chronic disease, a noteworthy proportion of uninsured or underinsured individuals, and health outcomes that dramatically impact healthy ageing. In this presentation the authors will provide: 1. Context for the rural health innovation partnership, 2. Comparison of health outcome data in target SC regions, 3. Overview of initial planning and implementation, 4. Planned state-wide expansion. **Methods**. We will provide a high-level overview of a rural health innovation partnership that will engender healthy ageing. This includes leadership commitment, county and region-wide health outcome data analysis, legislator and key stakeholder buy-in, joint pilot study programming, early successes, and lessons learned. We conducted a pilot study of four existing health programs employing mobile health vans, health extension agents embedded in agriculture offices and other community resources. Health extension agents began offering community-based classes in diabetes prevention and hypertension control. Partnership staff leveraged health outcome data and county-wide health outcome methodology that guided planning for regional program expansion. **Results**. The State legislature and the Medical University of South Carolina (MUSC) Health System (non-profit) provided seed funding for the Clemson University-MUSC rural health innovation efforts. MUSC Health also acquired four rural hospitals in spring 2019, in communities hampered by social determinants of health and poor

health outcomes. After > 18 months of pilot study collaboration, the partnership was formally launched (fall 2019) as Healthy Me – Healthy SC (HMHSC). With HMHSC came a commitment to regional partnership expansion using a hub & spoke model in rural communities, aimed at reducing unnecessary hospitalization, reducing cancer mortality, and reducing the premature death rate. Our presentation outlines key steps, lessons learned, and strategies to improve health outcomes and equity to support rural healthy ageing. **Conclusion**. The HMHSC partnership enhances healthy ageing in rural environments by supporting health services with innovation aimed at improving chronic disease burden and reducing premature death.

C5-O2

Formation of Endovascular Stroke Service Network in Croatia

David Ozretić[1], Marko Radoš[1], Ivan Jovanović[1], Danilo Gardijan[1], Zdravka Poljaković[2]

[1] Division of Neuroradiology and Vascular System, Department of Diagnostic and Interventional Radiology, University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia
[2] Intensive Care Unit, Department of Neurology, University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. Stroke is a third leading cause of avoidable deaths in European Union and leading cause of disability. Mechanical thrombectomy, a minimally invasive endovascular technique is a leading method of treatment in patients with ischaemic stroke caused by occlusion of a large vessel, and has become a one of the most effective medical therapies available (1 in 2.6 patients are helped, ie less disabled at 90 days). So, it is of paramount importance to make this technique available to all EU citizens, especially in countries with high stroke and death from stroke rates, such as Croatia. **Methods.** Interventional neuroradiology (INR) practice has been established at University Hospital Centre Zagreb in 2003, dealing primarily with haemorrhagic stroke. First patient with ischaemic stroke was treated with intra-arterial thrombolysis in 2007 and since then treatment techniques have been improved and more and more patients treated. In 2015 when mechanical thrombectomy has been established as effective therapy by multiple randomized trails, it became evident that INR service centralized in country´s capital will not suffice and that established means of transport will leave many patients outside diagnostic and therapeutic window of 6 hours. Our Department proposed a plan to Ministry of Health and Croatian Health Insurance Fund to establish a national stroke service network by training neurologists, interventional radiologists, nurses and technicians from university hospitals in other 3 major Croatian cities, together with out-hospital emergency personnel, that started with the beginning of 2018. **Results**. In early 2020 mechanical thrombectomy is performed in 4 university hospitals (2 in Zagreb, also in Split and Rijeka) and teams from University Hospital Osijek are under training. In 2019, about 300 patients underwent endovascular stroke treatment in two clinical hospitals in Zagreb, 80 in Split and 50 in Rijeka, but that is still halfway to achieve a target rate of 5% of all stroke patients that should be treated every year, as suggested by European Stroke Organization. **Conclusions**. Good planning and effective training are responsible that endovascular stroke treatment is today available to ¾ of Croatian population reducing mortality and permanent disability, but sustained effort is needed to cover the rest of the country and to maintain quality of outcome.

C5-O3

Healthy Ageing Through ICOPE and the Implementation of Lifestyle Interventions for Diabetes Prevention

Hermes Florez

Miller School of Medicine, University of Miami, USA

Addressing challenges associated with increased lifespan and growth of the older population globally, our team seeks to enhance the implementation of evidence-based interventions to reduce the burden of obesity and related conditions, such as diabetes, which are also growing worldwide especially in minority older adults with less access to care. We proposed to use the World Health Organization – Integrated Care for Older People (ICOPE) in a pilot study in South Carolina (SC), a state experiencing increased disability in the population associated with large prevalence of obesity and diabetes. We will use ICOPE health assessments of mental and physical function to adapt lifestyle interventions from the US Diabetes Prevention Program and the Look-AHEAD studies that have shown improvement in the quality of life and potential reduction of disability in people with or at high-risk for diabetes. Lessons learned promoting healthy longevity with our multidisciplinary team in SC could be applied in other populations, using easy to implement prevention strategies, overcoming challenges of access and potentially reducing healthcare costs, while we improve physical, mental, and social well-being for people as they age. The partnership of academic and public health leaders with the community and policy

makers will facilitate the future adoption in the State Plan on Aging and help us fulfill the promise of healthy longevity in SC and beyond.

C5-O4

European Union Legal and Policy Instruments for Improving Treatment and Prevention of Chronic Disease

Tomislav Sokol

European Parliament

Ageing of the population is a major issue in the European Union. As such, chronic diseases related to this phenomenon will put a major strain on the organisation and financing of national health care systems in Europe. In this context, it is important to stress that health care in the European Union belongs to the primary competence of the Member States. This is prescribed by Article 6 of the Treaty on the Functioning of the European Union (TFEU), according to which the EU may carry out actions to coordinate, support or supplement the actions of the Member States related to the protection and improvement of human health. Furthermore, according to Article 168 of the TFEU, EU action must respect the responsibilities of the Union Member States for the definition of their health policy and for the organisation and delivery of health services and medical care. These responsibilities include the management of health care services and the allocation of the resources related to them. However, this does not mean that European Union is powerless to improve treatment and prevention of chronic disease affecting the population of the Member States.

The aim of this presentation is to lay out legal and policy instruments the EU has at its disposal to tackle the issue of chronic disease. It will show that these instruments can be divided into two major groups: regulatory and financial ones. Some of the regulatory instruments, like proposed regulation on health technology assessment, are already in the process of being adopted through ordinary legislative procedure. Additionally, existing legislation like the Transparency Directive and Directive on Cross-border Health Care have shown many deficiencies and are ready to be amended in the coming years. Financial instruments, including Horizon Europe, cohesion policy and InvestEU, may also provide an important added value for improving quality and accessibility of health care provision in the European Union.

Poster presentations

C5-P1

Balneology for Healthy Aging

Damir Andabaka, Jagoda Doko Jelinić

Department of Water Balneology, Department of Environmental and Occupational Health and Sport, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

People in the world are living longer, and the number of older adults in the population is growing. 10% of the total population in the world are aged 65 or over, and this figure is expected to be over 16% in 2050. The European Union recognized the importance of the problem and named 2012 the European Year for Active Ageing and Solidarity between Generations. It also indicated that active ageing is not only about a higher quality of life for individuals, but also offers many benefits for the whole of society. Anti-aging medicine is another popular concept related to aging. It focuses on stopping the aging process, with the efforts aimed in turning back "to the young age". All around the world is mostly the subject of plastic surgery, cosmetic medicine and complementary and alternative medicine. Balneological treatments have been being used widely in many countries for treating certain pathologies mostly the rheumatic diseases for centuries and could be a tool for healthy aging. Balneology implements treatment methods developed in balneology and physical medicine. Modern balneology aims to combine tradition with modernity. Balneology might be an effective tool in the prevention, treatment and rehabilitation of the diseases that occurs frequently in elderly. And finally, balneotherapeutics may complement and support other treatment options for elder population. Literature search by keywords "balneology and aging" provided several studies that uses balneotherapy, hydrotherapy and physical therapy for treatment of elderly people with some chronical diseases. Studies monitored effects of balneotherapy on knee osteoarthritis, low back pain, musculoskeletal diseases and osteoarthritis. All studies showed improvement of patients, reducing pain, positively contributes to functionality and quality of life. Balneotherapy is an effective treatment modality in elderly patients with osteoarthritis of the knee and low back pain, and its benefits last for at least 3 months after treatment.The evidence on the positive effects of balneological factors and interventions on the elderly people indicates that balneology and spa tradition could be a tool for healthy ageing.

C5-P2

Value for Money in Spending on Pharmaceutical in Croatia

Ana Bobinac

Faculty of Economics and Business, University of Rijeka, Croatia

Introduction and objectives. Spending on pharmaceuticals in Croatia makes up a considerable share of total healthcare expenditure under the mandatory and voluntary health insurance (at least 23% but depending on the costs included in the calculation, it could reach almost 30%) as well as about 1.5% of the GDP (2019). A large share of pharmaceutical expenditure is devoted to treating chronic diseases whose incidence and prevalence increases with age. Since the Croatian population is aging, the trend of healthcare spending on chronic diseases, including medicines, is expected to grow. One the other hand, innovative technologies designed to elevate the burden of chronic diseases are becoming increasingly more expensive. Since the Croatian healthcare budget is limited (i.e., less generous than many other EU members and already bearing arrears amounting to several million Euro), it is important to analyse whether and how the "value for money" is being considered in medicines' pricing and reimbursement decisions. **Methods.** Policy documents related to the process of medicines' pricing and reimbursement were reviewed, as well as publicly available data on medicines expenditure in Croatia. **Results.** A closer look at the health financing situation reveals trends that could cause concern if not addressed in due time: while significant funds flow into curative care, there is not much information on quality of care and "value for money" spent on different interventions, including medicines. Value-for-money analysis of medicines proposed for reimbursement, such as cost-effectiveness analysis, is not requested as a part of the submission dossier nor is it conducted by the bodies involved in pricing and reimbursement decision-making. Health economic assessment is limited to Budget impact analysis focusing only on HIF's costs. Value-for-money analysis requires high-quality, reliable and available local epidemiological, outcomes and costing data – all currently unavailable in Croatia (e.g.,no patient registries or real-world outcomes data) with few clinical trials conducted to facilitate the provision of local outcomes data. The appraisal process is not guided by formal multi-criteria decision analysis nor are the conclusions of formal appraisals publicly available. Although HIF manages a limited budget, there is no process of prioritization when appraisal recommendations or reimbursement decisions are formed nor do these rely on a broader set of healthcare funding priorities. Priorities seem to be internalized in the reimbursement decisions with no formal criteria. Value-based pricing is currently not implemented with few managed entry agreements tying treatment outcomes to prices and payments.

C5-P3

Health of the Elderly in Croatia at the Primary Healthcare Level in 2018 Seen Through the Croatian Central Healthcare Information System (CEZIH)

Željka Draušnik, Vesna Štefančić Martić, Sandra Mihel, Ana Ivičević Uhernik, Urelija Rodin, Mario Trošelj, Ivan Cerovečki, Danijela Fuštin, Ranko Stevanović

Public Health Division, Croatian Institute of Public Health, Zagreb, Croatia

Introduction and objectives. There is a hypothesis that primary healthcare usage in Croatia is higher among the elderly compared to other citizens. The Croatian Central Healthcare Information System (CEZIH) is predefined by the Healthcare Data and Information Act and its main role is the storage of the data and information for standardized processing at the primary, secondary and tertiary healthcare level. General practitioners (GPs) that have a contract with Croatian Health Insurance Fund, regularly exchange e-messages with basic data on patients and exact visits (incl. diagnoses, diagnostic therapeutical procedures, referrals and prescriptions). All the other healthcare providers are also obliged to ensure a certain level of medical data exchange through CEZIH. The objective of this paper was to present the health of the elderly in Croatia at the primary healthcare level through the analysis of the data from CEZIH. **Methods.** The data for 2018 were collected through CEZIH and analysed with a special focus to elderly (aged 65 years and more) and the use of primary healthcare services, number of contacts with GPs (check-ups, visits, phone calls, counselling, etc.), referrals and prescriptions. **Results.**In 2018 there were 42.513.507 contacts with GPs registered in Croatia. Elderly aged 65 or more had 17.549.551 contacts with GPs (41,3% of total number of GPs contacts), almost 21 contact per person on average (1,7 times more than the average for the population aged 64 and less who had 12,5 contacts per person). Among the elderly, the total number of contacts decreases with the increase in age groups: age group 65-74 (51,6% of all elderly) had 8.420.053 contacts (19,8% of total number of all GPs contacts), age group 75-84 (36,1% of all elderly) had 6.948.351 contacts (16,3% of total number of all GPs contacts), age group 85 or more (12,3% of all elderly) had 2.181.147 contacts (5,1% of total number of all GPs contacts). The elderly acquired 3.851.002 referrals (on

average 4,6 per elderly person) mostly for the diagnostics tests (43,5%) and acquired 26.805.886 prescriptions (on average 32 per person), mostly for beta adrenergic receptor blockers. **Conclusions.** Data available through CEZIH show that elderly in Croatia acquire more than 41% of all GP contacts. The connection of the data at the individual level through CEZIH creates many possibilities for further data analysis and provides great potential for creating prerequisites for improving the development of health indicators for the elderly. These indicators are necessary for a creation of evidence-based public health policies for elderly in Croatia.

C5-P4

Self-Reported Unmet Needs for Health Care Among Urban and Rural Elderly Population in Croatia

Ana Ivičević Uhernik[1], Sandra Mihel[1], Vesna Štefančić Martić[1], Željka Draušnik[1], Mario Trošelj[1], Urelija Rodin[1,2], Danijela Fuštin[1], Ivan Cerovečki[1], Vlasta Dečković-Vukres[1], Ranko Stevanović[1]

[1] Public Health Division, Croatian Institute of Public Health, Zagreb, Croatia
[2] Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. Aim of this research was to analyze self-reported unmet needs for health care among urban and rural elderly. **Methods.** Data from the European Health Interview Survey wave 2 conducted in Croatia in 2014/15 on a sample of 5,446 respondents aged 15 years and older, out of which 1,453 were 65 years old and older, were used for analysis with weighting applied in order to achieve representativeness of the results at the national level. **Results.** Unmet needs for health care were higher among elderly (aged 65 years and more) compared to younger population (15-64 years) for all analyzed causes – long waiting lists (27,7% vs. 19,2%), distance from health care providers including transportation problems (8,3% vs. 3,7%) and financial constraints (10,5% vs. 6,8% for medical care, 7,3% vs. 5,1% for dental care, 8,3% vs. 4,7% for prescribed medication). When compared to the elderly living in urban settings, rural elderly reported more unmet needs due to distance from health care providers including transportation problems (9,6% vs. 7,3%) as well as more financial constraints in approach to prescribed medication (8,9% vs. 7,8%), but also reported less unmet needs due to long waiting lists (19,0% vs. 34,2%) as well as less financial constraints in use of medical care (8,7% vs. 11,8%) and dental care (4,3% vs. 9,3%). **Conclusions.** Elderly in general reported more unmet needs for health care compared to the rest of population which points out the importance of focusing on health needs of this particular age group. More problems due to distance and transportation reported by elderly living in rural settings, emphasize the need to improve options for transportation and increase availability of health care providers in rural areas. More unmet needs for health care due to long waiting lists as well as more unmet needs for medical and dental care due to financial constraints among urban elderly might reflect the existence of the real greater unmet needs of that population, but they could also be influenced by differences in perception of their own needs for health care among urban and rural elderly. Unmet needs for prescribed medication due to financial constraints could be considered as more objective indicator as medication had to be prescribed by medical doctor and is not to that extent influenced by differences in self-perception of their own needs, which points out again a less favorable position of rural elderly. Considering the health and social care needs of the increasing numbers of elderly in Croatia is the prerequisite of ensuring that all people and communities receive the quality services they need without financial hardship.

C5-P5

Role of Non-governmental Organizations in Public Health and Healthy Ageing on the Example of the Andrija Štampar Association of People's Health

Ino Kermc[1,2], Filip Njavro[1], Maksimilijan Mrak[1], Jakov Ivković[1], Danko Relić[1], Ivan Vukoja[1,3]

[1] Andrija Štampar – Association of People's Health , Zagreb, Croatia
[2] Health Centre Zagreb – Centar, Zagreb, Croatia
[3] General County Hospital Požega, Croatia

Europe is facing demographic changes causing the need for different solutions in long term care. Healthy ageing is the process of developing and maintaining the functional ability that enables wellbeing in older age. That also means easing the burden on healthcare and social care systems. Governments are still not including enough of non-governmental organizations (NGO's) as partners in creating healthy aging policies. There are different ways in which NGO's contribute to healthy ageing process. Some of them organize various workshops and activities in which the elderly participate and thus directly promote health, some of them teach people through various forms of educational activities and raise awareness of the importance of health promotion. Some serve as a place to maintain or create social interaction at an older age, which is extremely

important in maintaining health. They all play a significant role in the design and testing of various health promotion programs. Furthermore, working directly with the elderly provides them with an irreplaceable end user feedback. We recognized the need for interventions and potential of NGO's in Croatia and founded Andrija Štampar – Association of People's Health in 2009. Since then we have organized free counseling and lectures for the general population, many workshops and public health actions to raise awareness of the importance of disease prevention and health promotion and increasing responsiveness to national prevention programs. By designing, organizing and implementing numerous projects, we have formed a network of experts in the field of public health and healthy ageing. Our next step is the creation of an Advisory Center for synergistic cross-sectoral cooperation, an institution that brings together experts in different health-related fields who could advise, influence and create new standards in public health activities, especially tackling the hot topic of healthy ageing. Through their work and successful projects, NGO's necessarily create a network of quality experts. It is extremely important to harness this knowledge and experience and transfer it into the broader framework of policy, regulation and law formation. By doing so, we could significantly improve the healthy ageing process.

C5-P6

How to Live Longer Well with Alzheimer's Disease

Ninoslav Mimica

Department of Biological Psychiatry and Psychogeriatrics,
University Psychiatric Hospital Vrapče, School of Medicine, University of Zagreb, Croatia

Alzheimer's disease is pretty common today among elderly. Almost one third of people in future will be concerned old, and the age is the most common risk for developing dementia, e.g. Alzheimers. Today the society is aware of neurocognitive disorders and people are diagnosed much earlier than before. So, while persons are diagnosed earlier they also spend more years with the fact that they have Alzheimer's disease. For sure, if the people with dementia (PwD) do not have post-diagnostic support their life will not be easy. Modern management of dementia considered multi-professional approach involving also non-pharmacological treatment. Of course, PwD need standard treatment with antidementives, but various individually tailored therapies like art, music, dance, pat, occupational etc. therapies are essential. For PwD the best thing is that they remain at work and at home as long as possible. That means that they will need adequate understanding and support in their surroundings to be capable to act in this setting. Among every family, if possible, the unformal caregiver should be recognised and this person should be trained and advised. This can be done in academic or NGO settings. Also, family doctors should advice carers to think about themselves due to avoid burn-out syndrome, and to protect their health. When the stage of dementia progresses PwD would be advised to attend the Day care centre. Nursing home should be considered for PwD with advanced dementia, if palliative mobile teams are not available. All these strategies should be planed and available in different parts of country and this is only possible if the national action plan/strategy to fight dementia exists and is implemented. In Croatia, we are still lacking such kind of officinal state plan although there is an initiative of Croatian Alzheimer Alliance (HAA) for several years ago. HAA has now 31 members, e.g. different societies or NGOs who are working for better life of PwD and supporting the need of developing national dementia strategy. A lot of dementia friendly activities have already been developed in Croatia, but this is still the beginning. Much more can be done in the future for better life of PwD and their families.

C5-P7

EU Financial Period 2021-2027 Is Approaching – Is Croatia Ready for the Negotiations and Projects?

Dorja Vočanec[1], Iva Lukačević Lovrenčić[1], Maja Banadinović[2], Marko Marelić[3], Aleksandar Džakula[1]

[1] Division for Organization of Health Care and Management, Department of Social Medicine and Organization of Health Care, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[2] Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia
[3] Department of Medical Sociology and Health Economics, Andrija Štampar School of Public Health, School of Medicine, University of Zagreb, Croatia

Introduction and objectives. The beginning of Croatian negotiations for the EU financial period 2021-2027 is approaching. The new Cohesive policy puts emphasis on five policy objectives set as investment priorities. For health care, the most important is "a more social Europe", founded on the European Pillar of Social Rights. Due to the population ageing , increasing life expectancy and burden of non-communicable diseases, the enabling condition pertaining to health care priorities is a defined strategic policy framework for health and LTC. The fulfillment criteria include mapping of health and LTC needs, ensuring efficiency, sustainability, accessibility to services and measures to promote home and community based services. The aim of this research was to analyse capacities of the Croatian health care sector for LTC needs mapping and priority setting for the new

EU financial supports. **Methods.** Desk research, as a suitable first tool in policy analysis, was conducted for assessing Croatia's readiness for the upcoming negotiations concerning EU fulfillment criteria for the enabling condition for health. Three topics were in focus of the research: consistency of the terminology within the existing national strategic documents; availability of population needs assessment data and appropriateness of the information about health system performance. **Results.** Current national strategic policy framework for health includes National Health Care Strategy 2012-2020, Strategic Plan for Human Resource Development in Health Care 2015-2020 and Strategic plan of Ministry of Health 2020-2022. Terminologically, LTC was not recognized as a distinct entity but some of the existing services suit LTC definition. For reporting state and trends of health and health care routinely collected data were used. Structure and output indicators, referring to system performance and health outcomes were set. Process indicators were not set. Population needs, including LTC, were not shown. The connection between needs analysis and selected priorities was mostly unclear. **Conclusions.** Current national strategic framework for health is not in line with the new EU fulfillment criteria for health. Since the time frame of national strategic policy framework for health is near its end, there is an opportunity to make needed adjustments, namely mapping of health and LTC needs. Routine collection of population and health data which can serve as a basis for required health and LTC mapping is in place. Croatia being one of the countries taking part in the development of the methodology for the mapping as a part of EC Health Infrastructure Mapping project should be considered as an advantage.

C5-P8

Age Distribution and Clinical Outcomes of Hospitalized Patients in General County Hospital Požega

Ana Vukoja[2], Ivan Vukoja[1], Matea Vujnović[3], Pero Hrabač[4], Ivan Miškulin[5], Željko Glavić[6]

[1] Department of Gastroenterology and Nephrology, General County Hospital Požega, Croatia
[2] Department of Controlling, General County Hospital Požega, Croatia
[3] Legal Affairs Department, General County Hospital Požega, Croatia
[4] Department for Computer Science, School of Medicine, University of Zagreb, Croatia
[5] Department of Public Health, School of Medicine, Josip Juraj Strossmayer University of Osijek, Croatia
[6] Directorate, General County Hospital Požega, Croatia

Introduction and objectives. Healthcare systems are facing challenges related to sustainability, and costs become higher from year to year. New costs may be associated with new therapeutic options and diagnostic challenges, but mostly with demographic changes associated with an aging population. According to the 2011 census report, there were 17,94% of those over 65 years old in Požega-Slavonia County. In total of 10016 hospitalizations during 2019 at General County Hospital Požega, 4134 referred to age of over 65, representing 41,27% of total hospitalizations. Considering this difference, we decided to investigate whether there was a difference in the length of hospitalization between the older and younger than 65 and whether there was a difference in clinical and treatment outcomes. **Methods.** In the study, we used hospital information system data, analyzing the total number of hospitalized patients in 2019. We distributed the number of hospitalized patients according to the determined age distribution in 5 age groups. Under 18, 18 to 30 years old, 31 to 50 years old, 51 to 65, and finally, older than 65. The length of hospitalization based on age was analyzed and treatment outcomes determined by the system for healed patients, unchanged outcome, improvement, worsening, and death. Kruskal Wallis test was used for statistic analyze. **Results.** There was a total of 10016 hospitalizations during 2019 at General County Hospital Požega, without gender distribution. There were 836 hospitalizations of younger than 18, 1182 hospitalizations 18 to 30 years old, in range of 31 to 50 years old there were 1575 hospitalizations, 2289 hospitalization of people aged 51 to 65, and 4134 hospitalizations at age older than 65 years. There was no significant difference in duration of hospitalization depending on age. Duration of hospitalization in younger than 65 was 4,73 days, and 5,98 days in older than 65 ($p=0,514$). Treatment outcomes determined by the hospital information system show better outcomes within younger than 65, such are healed patients outcome 48,84% ($p=0,001$). In older than 65 there were statistically higher prevalence of death clinical outcomes 9,24 % ($p=0,001$). There was no statistical significance in outcomes such as unchanged condition and improvement of clinical condition. **Conclusion.** Hospitalization length does not depend on patients age, therefore health care costs are not related to the length of hospitalization older than 65 years. Increased mortality in the elderly should be considered in light of demographic characteristics, and not as separate information.

C5-P9

Propensity Score Matching to Determine the Impact of Metformin on Mortality in Older Veterans with Diabetes

Hermes Florez, Juliana Ferri-Guerra, Daniela Pirela, Raquel Aparicio-Ugarriza, Jorge Ruiz

Miller School of Medicine, University of Miami, USA

Introduction. Diabetes (DM) is associated with an accelerated aging that increases morbidity and mortality. Data from the UKPDS showed that metformin may lead to lower risk of overall mortality in middle aged adults with type 2 DM (T2DM) but the evidence is less clear in older adults. The study aim was to determine whether metformin is associated with reduced mortality in older US Veterans with T2DM compared with other antidiabetic medications or insulin. **Methods.** Retrospective comparative cohort study analysis using propensity score matching (PSM) to control for confounding by indication. From June 30, 2011 to June 30, 2014, community dwelling Veterans aged 65 years and older with T2DM who had new prescriptions for metformin were matched with those with new prescriptions for insulin and other oral antidiabetic drugs (OAD) using PSM with one-to-one nearest neighbor matching without replacement and followed until June 30, 2019. Matching covariates used to calculate the propensity score included baseline age, gender, race, level of glycemic control, DM duration and complications, BMI and frailty with a tolerance level of .02. At the end of follow up, data on all-cause mortality was aggregated and the association of metformin vs. insulin and OAD with all-cause mortality was determined using a Cox regression model. **Results.** A total of 352 Veterans with T2DM were included in the study (176 taking metformin and 176 taking insulin or OAD). After matching, all the baseline clinical characteristics were comparable between the two groups. Patients were 80.1% White, 89.2% non-Hispanic, 97.4% male, mean age was 69.18(SD= 7.69) years. Over a median follow-up period of 2151 days (IQR=685.75), 112 deaths occurred (metformin n=43, insulin and OAD, n=69). Compared with those taking insulin/OAD, Veterans taking metformin had a lower mortality risk, adjusted hazard ratio (HR)=.57 (95%CI:.39-.84), p=.005. **Conclusions.** These results suggest that metformin may reduce all-cause mortality in older Veterans with diabetes. Further studies may be needed to assess the impact of metformin on quality of life and potential benefits on specific morbidity and mortality in this population.