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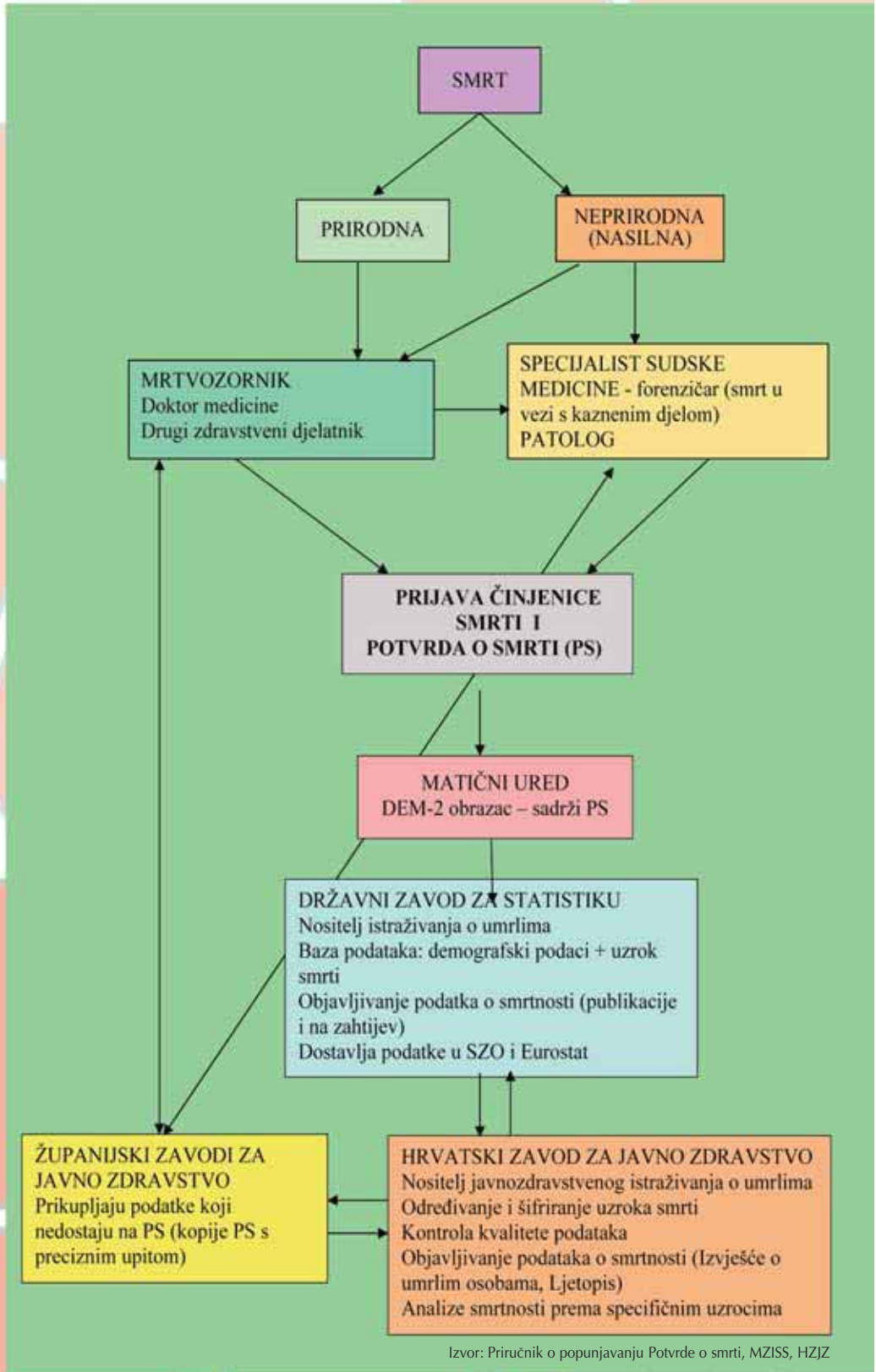
TABLE OF CONTENTS



Izvor: Priručnik o popunjavanju Potvrde o smrti, MZISS, HZJZ

Protok nacionalnih podataka o smrtnosti

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Izvorni znanstveni članak Original scientific paper

Izvori podataka za pokazatelje mortaliteta i morbiditeta kardiovaskularnih bolesti

Sources of information for indicators of mortality and morbidity of cardiovascular diseases

Verica Kralj*, Tanja Ćorić, Branimir Tomić, Vlasta Hrabak-Žerjavić

Hrvatski zavod za javno zdravstvo, Zagreb, Hrvatska

Croatian National Institute of Public Health, Zagreb, Croatia

SAŽETAK: *Pokazatelji zdravstvenog stanja i pružanja zdravstvene zaštite neophodni su za ocjenu zdravstvenog stanja na populacijskoj razini, poboljšanje zdravstvenog sustava i donošenje zdravstveno-političkih odluka s ciljem unaprjeđenja zdravlja stanovništva. Za izradu pokazatelja potrebni su kvalitetni i pouzdani izvorni podaci. Prema pokazateljima mortaliteta i morbiditeta prioritetni javnozdravstveni problem u Hrvatskoj su kardiovaskularne bolesti (KVB). Vodeći su uzrok smrtnosti, u muškaraca s udjelom od 42,6% i u žena s udjelom od 56,4% u ukupnom mortalitetu. U bolničkom pobolu KVB su u muškaraca na prvom mjestu s udjelom od 14,9%, a u žena su na drugom mjestu s udjelom od 12,5% u ukupnom broju hospitalizacija. Sveukupno više žena umire od KVB, a muškarci češće umiru u mlađoj dobi, međutim žene su rjeđe hospitalizirane.*

KLJUČNE RIJEČI: *pokazatelji, statistika mortaliteta i morbiditeta, kardiovaskularne bolesti.*

SUMMARY: *The indicators of health condition and providing medical protection are necessary for making assessment of health condition at the level of population, improvement of the healthcare system and making health-related and political decision with an aim to improve the citizens' health. Qualitative and reliable original data is necessary for the preparation of indicators. According to the indicators of mortality and morbidity, cardiovascular diseases (CVD) are the prioritized public health problem in Croatia. They are the major cause of mortality, in men with a share of 42.6% and in women with a share of 56.4% in total mortality. In CVD hospital morbidity, they are represented in men in the first place with a share of 14.9% and in women, they take the second place with a share of 12.5% in total number of hospitalizations. Totally, more women die of CVD and men die of CVD more frequently at younger age, however, women are hospitalized less frequently.*

KEYWORDS: *indicator, statistics of mortality and morbidity, cardiovascular diseases.*

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Izvori podataka

U epidemiološkim analizama kardiovaskularnih bolesti (KVB), odnosno pri izradi pokazatelja mortaliteta i morbiditeta možemo se koristiti različitim izvorima podataka.

To su:

— podaci o mortalitetu koji se sustavno vode u većini razvijenih zemalja svijeta, pridržavajući se pravila Međunarodne klasifikacije bolesti i srodnih zdravstvenih stanja (MKB) Svjetske zdravstvene organizacije (SZO);

— podaci o bolničkom i vanbolničkom morbiditetu iz rutinske zdravstvene statistike;

— podaci posebnih epidemioloških istraživanja;

— podaci populacijskih registara;

— podaci iz ostalih izvora (zdravstveno osiguranje, SZO i sl.).

Ovi podaci, nakon odgavarajuće statističko-analitičke obrade, služe za ocjenu zdravstvenog stanja na populacijskoj razini te daju pokazatelje za planiranje u okviru zdravstvenog sustava. Kako se posebna epidemiološka istraživanja KVB provode povremeno (a ne redovito) te na razini države ne postoji registar i u Hrvatskoj se, kao i u većini zemalja svijeta, za izradu osnovnih pokazatelja koriste podaci rutinske mortalitetne i morbiditetne statistike.

Sources of information

In epidemiologic studies of cardiovascular diseases (CVD) or when preparing the indicators of mortality and morbidity, we can use different sources of information.

These are the following:

— data on mortality that are systematically maintained in most of the developed countries in the world, complying with the rules of the World Health Organization (WHO) International Classification of Diseases and Related Health Problems (ICD)

— data on in-hospital and out-hospital morbidity from the routine health statistics

— data on special epidemiologic researches

— data on population registers

— data from other sources (health insurance, WHO etc.)

Following relevant statistical and analytical processing, this data is used for the assessment of health condition at the level of population and gives indicators for planning within the health system. Since special epidemiologic researches of CVD are conducted occasionally (not regularly) and since there is no register at the level of the state, the data on the routine mortality and morbidity statistics is used for the preparation of basic indicators, not only in Croatia, but in the most of the countries all around the world.

Mortalitetna statistika u Hrvatskoj

Podaci mortalitetne statistike osiguravaju važne pokazatelje za ocjenu zdravstvenog stanja stanovništva. U Hrvatskoj sustav prikupljanja podataka o umrlim osobama reguliran je zakonima koji povezuju različite društvene sustave: državnu upravu, pravosuđe i zdravstvo. Sukladno Zakonu o službenoj statistici Državni zavod za statistiku (DZS) glavni je nositelj istraživanja o umrlim osobama. Na temelju tog istraživanja dobivaju se informacije o broju umrlih osoba i uzrocima smrti. Zakon o državnim maticama (NN 96/93) propisuje način na koji se činjenica smrti upisuje u maticu umrlih na temelju prijave i potvrde o smrti koju je ispunio liječnik ili drugi zdravstveni stručnjak ovlašten za utvrđivanje smrti. Zakon o zdravstvenoj zaštiti (NN 105/08), Pravilnik o načinu pregleda umrlih te o utvrđivanju vremena i uzroka smrti (NN 121/99, 133/99 i 112/00) i Pravilnik o obrascu potvrde o smrti (NN 112/93) propisuju izgled i sadržaj prijave i potvrde o smrti te rad imenovanih liječnika i drugih zdravstvenih djelatnika koji utvrđuju vrijeme i uzrok smrti. Potvrda o smrti je službeni dokument zdravstvene statistike koji uz demografske podatke sadrži informacije o uzroku smrti koji su temeljni izvor mortalitetne statistike. Kvaliteta mortalitetne statistike ovisi o podacima koje zdravstveni stručnjak ispiše na potvrdi o smrti. Uzrok smrti utvrđuje zdravstveni djelatnik na temelju svog najboljeg stručnog mišljenja. Na temelju podataka koji se nalaze na potvrdi o smrti određuje se i šifrira osnovni uzrok smrti.

U Hrvatskoj je od 1995. godine u primjeni Deseta revizija MKB (MKB-10) koja svojim Drugim sveskom propisuje sadržaj potvrde o smrti i način određivanja i šifriranja osnovnog uzroka smrti. Hrvatski zavod za javno zdravstvo (HZJZ) već više od trideset godina šifrira osnovni uzrok smrti primjenjujući propisanu metodologiju i pravila. Stoga 1995. godine uvodi šifriranje i obradu podataka o uzrocima smrti u svoja rutinska zdravstveno-statistička istraživanja, a od 2003. godine je nositelj javnozdravstvenog istraživanja o umrlima prema mjestu smrti i odgovoran je za kvalitetu podataka. Poslove šifriranja osnovnog uzroka smrti obavljaju liječnici specijalisti javnozdravstvenih djelatnosti u HZJZ[1].

U cilju postizanja što veće kvalitete mortalitetnih podataka HZJZ je razvio sustav naknadnog prikupljanja podataka koji nedostaju na Potvrdi o smrti u kojem sudjeluju županijski zavodi za javno zdravstvo (ZZJZ), zavodi za sudsku medicinu, toksikološki laboratoriji i bolničke ustanove. Na području svih županija razvijena je suradnja djelatnika ZZJZ i mrtvozornika što je omogućilo smanjenje udjela nepoznatog uzroka smrti i nepoznatog vanjskog uzroka kod nasilnih smrti (1997. godine udio nepoznatog uzroka smrti iznosio je 6,2%, a 2009. godine 1,1%)[2]. Kvaliteta podataka mortalitetne statistike, osim udjelom nepoznatog uzroka smrti, definirana je i udjelom obavljenih obdukcija u općem i bolničkom mortalitetu, a posebno udjelom kod nasilnih smrti. Zadnjih nekoliko godina udjel obavljenih obdukcija u općem mortalitetu iznosi oko 10%, u bolničkom mortalitetu oko 12%, a kod nasilnih smrti oko 50%. Udio od 50% izvršenih obdukcija kod nasilnih smrti ukazuje da se Zakon o zdravstvenoj zaštiti i Pravilnik o načinu pregleda umrlih te o utvrđivanju vremena i uzroka nejednako i nedostatno primjenjuju na području županija, jer

Mortality statistics in Croatia

The mortality statistics data provide some important indicators for the assessment of health condition of citizens. In Croatia, the system of collection of data on dead persons is regulated by laws that link different social systems: state government, judicial system and healthcare system. According to Official Statistics Act, the Croatian Bureau of Statistics (DZS) is the main entity for researches on dead persons. According to this research, the information on a number of dead persons and causes of death are obtained. State Registries Act (Official Gazette 96/93) provides the manner of entry of the fact of death in the registry of dead persons based on the report and certificate of death completed by a physician or some other medical expert authorized for determination of death. Health Care Act (Official Gazette 105/08), Regulation of Manner of Examination of Dead Persons and Determination of Time and Cause of Death (Official Gazette 121/99, 133/99 and 112/00) and Regulation of Form of Death Certificate (Official Gazette 112/93) prescribe the appearance and contents of the report and certificate of death and work of appointed physicians and other medical staff that determine the time and cause of death. The certificate of death is an official document issued by medical statistics which besides demographic data contains the data on cause of death that is the fundamental source of mortality statistics. The quality of mortality statistics depends on data written by a medical expert on the certificate of death. The cause of death is determined by a medical employee based on his best expertise. According to data on the certificate of death, a basic cause of death is determined and coded.

The tenth revision of ICD (ICD-10) has been applied in Croatia since 1995 whereas the Second volume prescribes the contents of the certificate of death and manner of determination and coding of the basic cause of death. The Croatian National Institute of Public Health (HZJZ) has been coding the basic cause of death for more than thirty years thereby applying the prescribed methodology and rules. Therefore, in 1995 coding and processing of data on causes of death was introduced in the health and statistical researches and since 2003 it has been the main entity to conduct public and health researches on dead persons according to place of death and has been responsible for the quality of data. The activities relating to coding of the basic cause of death are conducted by doctors — specialists of the public health activities in HZJZ[1].

For the purpose of achieving better quality of the mortality results, HZJZ has developed a system of subsequent collection of data missing in the Certificate of death in which the county institutes of public health (ZZJZ), institutions for forensic medicine, toxicological laboratories and hospital institutes participate. In the territory of all counties, the cooperation between ZZJZ employees and coroners has been established which resulted in a reduced number of unknown cause of death and unknown external causes in case of violent death (in 1997 the percentage of unknown cause of death was 6.2%, and in 2009 it was 1.1%)[2]. The quality of mortality statistics data is, besides the percentage of unknown cause of death, defined by the percentage of conducted autopsies in general and hospital mortality, especially by the percentage of violent deaths. During the last few years, the percentage of conducted autopsies in general mortality is around 10%, in in-hospital mortality it is around 12% and in case of violent deaths it is around 50%. The percentage of 50% of conducted autopsies in case of violent deaths shows that the Health Care Act and Regulation of Manner of Examination of Dead Persons and Determination of Time and Causes is not equally

sukladno navedenim zakonima, uzrok nasilne smrti mora biti potvrđen obdukcijom.

Unazad deset godina međunarodne organizacije koje prikupljaju i analiziraju podatke zdravstvene statistike uložile su velike napore i materijalna sredstva da bi osigurale kvalitetne podatke koji su usporedivi na međunarodnoj razini. SZO ima posebno tijelo koje se bavi razvojem MKB i izradom službenih izmjena i nadopune koje se odnose na metodologiju šifriranja uzroka smrti. Eurostat (statistički ured EU) je za područje EU razvio standarde i instrumente za kontrolu kvalitete podataka statistike uzroka smrti koje bi sve zemlje članice trebale primjenjivati[3]. U cilju harmonizacije podataka mortalitetne statistike Eurostat je putem predpristupnih fondova (MB PHARE) osigurao sredstva za provedbu projekata koji bi trebali unaprijediti kvalitetu statistike uzroka smrti na način da osiguraju primjenu usvojenih standarda i preporuka. Tako je Hrvatska u tijeku 2009. i 2010. godine u sklopu MB PHARE-2006 projekta "Unaprjeđenje kvalitete statistike uzroka smrti" provela niz edukacija zdravstvenih djelatnika koji popunjavaju potvrdu o smrti i objavila "Priručnik o popunjavanju potvrde o smrti" i letak "Upute za popunjavanje medicinskog dijela potvrde o smrti". Priručnici i letci su distribuirani svim imenovanim mrtvozornicima na području RH, a dostupni su i na web stranici HZJZ (http://www.hzjz.hr/soc_medicina/letak_hzjz.pdf).

Zbog izuzetne važnosti mortalitetnih pokazatelja za zdravstvo, ali i za državnu statistiku u cjelini, kao i obveza Hrvatske kao države u izvješćivanju prema međunarodnim organizacijama (UN, SZO, Eurostat) potrebno je osigurati kontinuirano unaprjeđenje kvalitete podataka. Jedan od važnih čimbenika koji utječu na kvalitetu podataka je dobra i učinkovita suradnja svih sudionika u procesu nastajanja podataka o uzroku smrti s obzirom da su pojedini dijelovi tog sustava u nadležnosti različitih državnih resora (shematski prikaz protoka nacionalnih podataka o smrtnosti prikazan je naslovnici ovog broja na hrvatskom jeziku, a na engleskom kao **slika 1**)[4]. Ipak, najznačajniji utjecaj na kvalitetu podataka mortalitetne statistike ima liječnik odnosno zdravstveni stručnjak koji popunjava potvrdu o smrti jer se na temelju tih informacija određuje i šifrira osnovni uzrok smrti koji je uz demografske podatke o umrloj osobi najvažniji dio mortalitetne statistike.

Statistika bolničkog i vanbolničkog pobola u Hrvatskoj

HZJZ prikuplja podatke iz zdravstvenog sustava cijele zemlje, iz zdravstvenih ustanova i ordinacija s čitavog područja Hrvatske, bez obzira na vrstu vlasništva i vrstu zdravstvenog osiguranja pojedinca. Podaci se prikupljaju na temelju Zakona o službenoj statistici (NN 103/03 i 75/09), Godišnjeg provedbenog plana statističkih aktivnosti Republike Hrvatske (NN 134/10) te Zakona o zdravstvenoj zaštiti (NN 150/08). Donedavni način prikupljanja informacija na individualnim obrascima i izvješćima u papirnatom obliku ustupio je mjesto razmjeni podataka u elektroničkom obliku. Iz bolničkog sustava dobivaju se podaci o hospitalizacijama kako u stacionarnom dijelu tako i u dnevnim bolnicama, a prikupljaju se na temelju individualnih zdravstveno-statističkih izvješća: Bolesničko-statistič-

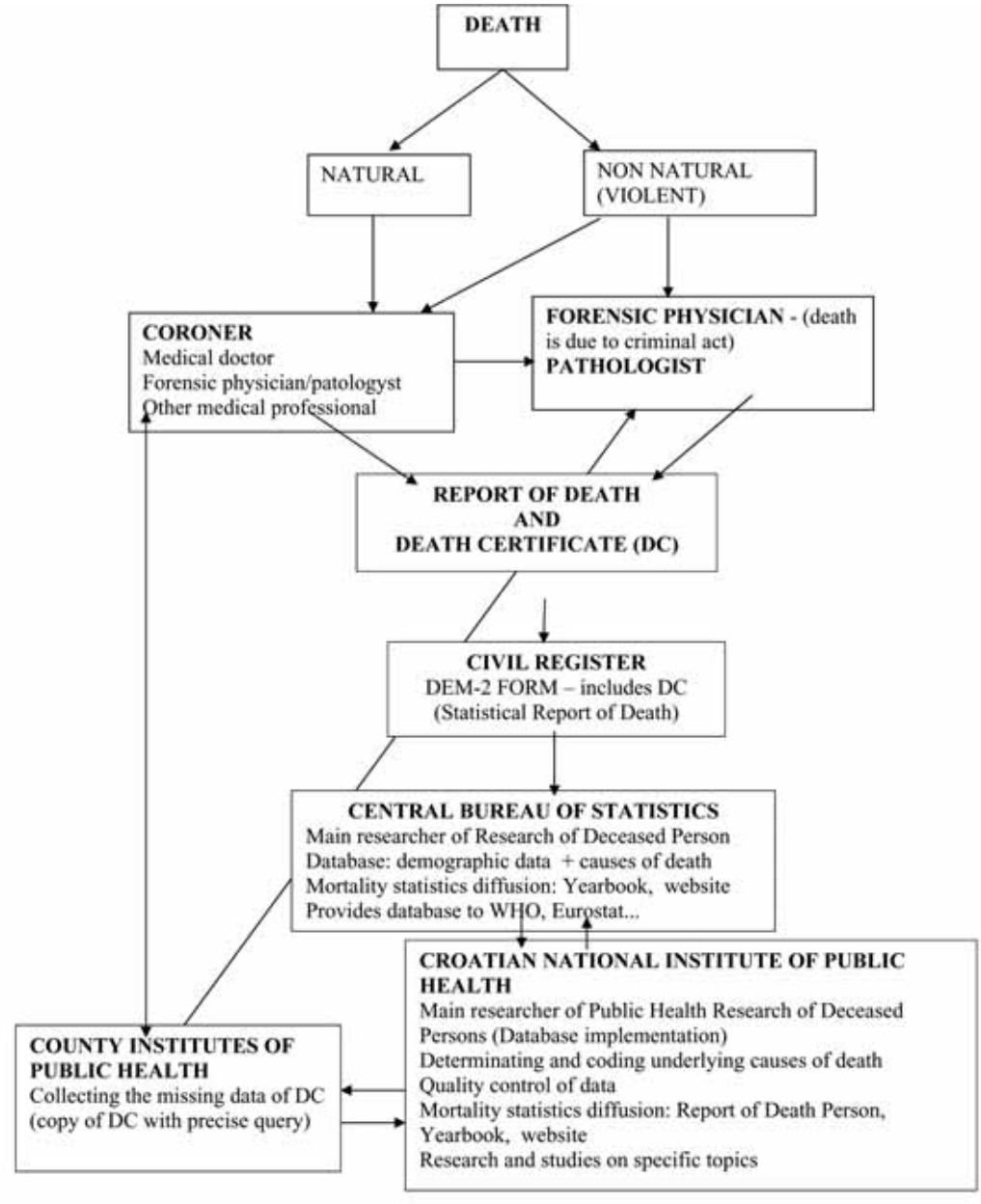
and sufficiently applied in the territory of the counties, because according to the above Acts, the cause of violent death must be confirmed by the autopsy.

In the past ten years, the international organizations that collect and analyze the medical statistics data have made great efforts and invested large amounts of funds to ensure quality data comparative at the international level. The WHO has a special entity engaging in development of ICD and preparation of official changes and amendments relating to methodology of coding of causes of death. Eurostat (EU bureau of statistics) has for the area of EU developed standards and instruments for the control of quality of data of statistics of cause of death to be applied by all member states[3]. For the purpose of harmonization of data on mortality statistics, Eurostat has through pre-accession programs (MB PHARE) provided funds for the implementation of projects that should improve the quality of statistics of cause of death in the manner to ensure the application of adopted standards and recommendations. This is how Croatia conducted during the year 2009 and 2010 within the MB PHARE-2006 project "Improvement of quality of statistics of death" a great number of trainings of medical staff that complete the certificate of death and publicized "Handbook of Completing the Certificate of Death" and the leaflet "Instruction for Completing the Medical Part of Certificate of Death". The handbooks and leaflets are distributed to all authorized coroners in the territory of the Republic of Croatia and are available at the website of HZJZ (http://www.hzjz.hr/soc_medicina/letak_hzjz.pdf; Croatian language only).

Due to special importance of mortality indicators for healthcare, the state statistics in whole and the obligation of Croatia as the country to submit reports to international organizations (UN; WHO, Eurostat), it is necessary to ensure continuous advancement of quality of data. One of important factors that affect the quality of data is a good and efficient cooperation of all participants in the process of origination of data on cause of death since specific parts of this system fall within competence of different state departments (chart of flow of national data on mortality is shown in the cover page of this issue in the Croatian language and in the English language as **Figure 1**)[4]. However, the most important impact on the quality of data on mortality of statistics is exerted by the physician or medical expert that completes the certificate of death, since such information is the basis for determination and coding of the basic cause of death which is, besides the demographic data on a dead person, the most important part of the mortality statistics.

Statistics of in-hospital and out-hospital morbidity in Croatia

HZJZ collects data from health system from the entire country, from medical institutions and doctor's offices from the entire area of Croatia, irrespective of the type of ownership and type of health insurance of an individual person. The data is collected according to Official Statistics Act (Official Gazette 103/03 and 75/09), Annual Implementation Plan of Statistical Activities of the Republic of Croatia (Official Gazette 134/10) and Health Care Act (Official Gazette 150/08). The former method of collection of information in specific forms and reports in the paper format is replaced by exchange of information in electronic format. The data on hospitalization is received from hospital systems not only in stationary department, but also in daily hospitals and is collected on the basis of specific health and statistical reports: Patient-statistical form (PSF)



Source: Priručnik o popunjavanju Potvrde o smrti, MZiSS, HZJZ

Figure 1. *National mortality data flow.*

ki obrazac (BSO) i Obrazac hospitalizacije zbog rehabilitacije[5]. BSO obrazac sadrži sljedeće podatke:

— o zdravstvenoj ustanovi (naziv ustanove, adresu, djelatnost/odjel s kojeg se bolesnik otpušta i broj dana liječenja)

— o pacijentu (ime i prezime, spol, MBG, OIB, MBOO, broj osigurane osobe, naziv osiguravatelja, prebivalište, adresu, državu, radni status, zanimanje, djelatnost)

— o boravku u ustanovi (datum primitka bolesnika u ustanovu, datum otpusta, glavnu dijagnozu pri otpustu, vanjski uzrok ozljede, osnovni uzrok smrti, vanjski uzrok ozljede u slučaju smrtnog ishoda, način otpusta, broj povijesti bolesti, najznačajnije dvije operacije izvedene u dotičnoj hospitalizaciji).

and Form of hospitalization due to rehabilitation[5]. PSF form contains the following details:

— of medical institution (name of institution, address, activity/department from which a patient is released and a number of days of treatment)

— of a patient (first name and surname, citizen number, citizen code, citizen number of insured person, name of insurance company, place of residence, address, state, working status, occupation, activity)

— of stay in the institution (date of admittance of a patient to the institution, date of discharge, main diagnosis at the time of discharge, external cause of injury, main cause of death, external cause of injury in case of death outcome, manner of discharge, number of case history, the most important two procedures performed during the respective hospitalization).

Na temelju BSO obrazaca formira se godišnja baza hospitalizacija, iz koje se dobivaju podaci o broju hospitalizacija prema pojedinim dijagnostičkim entitetima, spolu, dobi, ustanovi, mjestu boravka te dužini liječenja. Treba naglasiti da se ovdje radi o broju hospitalizacija (ležanja u bolnici, odnosno boravka u dnevnoj bolnici i bolničkoj hemodijalizi), a ne o broju osoba bolnički liječenih tijekom jedne kalendarske godine. Iz zbirnog Godišnjeg izvješća o radu bolnice mogu se dobiti podaci o stacionarnoj zdravstvenoj ustanovi, djelatnicima i radu bolnica (organizacija, vrsta odjela, broj kreveta, broj primljenih i otpuštenih pacijenata prema odjelima, duljina bolničkog boravka, iskorištenost bolničkih kapaciteta).

Kvaliteta podataka u bolničkom morbiditetu najvećim dijelom ovisi o popunjenosti i točnosti ispunjavanja BSO obrasca, odnosno o podacima koje liječnik upiše u obrazac kod otpusta svakog bolesnika iz bolnice, odnosno o pridržavanju zadanog opisa sloga kod slanja podataka na disku. Podaci za Hrvatsku se godišnje dostavljaju u SZO, Eurostat i baze podataka UN.

Iz vanbolničkog sustava dobivaju se zbirni agregirani podaci o broju utvrđenih bolesti ili stanja u primarnoj i specijalističko-konzilijarnoj zdravstvenoj zaštiti. Prikupljeni podaci o bolestima iz vanbolničkog sutava ne mogu poslužiti za određivanje udjela pojavljivanja pojedinih bolesti, već samo kao uvid u kretanje učestalosti korištenja zdravstvene zaštite u djelatnostima primarne zdravstvene zaštite[2].

Pokazatelji mortaliteta i morbiditeta za kardiovaskularne bolesti u Hrvatskoj

Prema pokazateljima mortaliteta i morbiditeta KVB su prioritetni javnozdravstveni problem u Hrvatskoj, kao i u većini razvijenih zemalja svijeta. Za prikaz su korišteni podaci rutinske mortalitetne i morbiditetne statistike te iz baze podataka "Zdravlje za sve" SZO, a izraženi su kao opće, specifične i dobno-standardizirane stope te kao postotni udio.

KVB predstavljaju vodeći uzrok smrti sa 25976 umrlih osoba, odnosno s udjelom od 49,6% u ukupnom mortalitetu 2009. godine. Pozitivan je pokazatelj što je po prvi puta nakon dugogodišnjeg udjela KVB s više od 50% u ukupnom mortalitetu, sada taj udio nešto manji[2]. Od ukupnog broja umrlih od KVB tijekom 2009. god, 43% umrlo je u bolnici, a 57% van bolnice. U 46% umrlih od KVB uzrok smrti utvrdio je mrtvozornik liječnik, u 44% umrlih doktor medicine koji je liječio umrlog, u 2% mrtvozornik drugi zdravstveni djelatnik, a u 8% uzrok smrti utvrdio je obducent. Analiza prema spolu pokazuje da su KVB u oba spola vodeći uzrok smrti i to u 56,4% umrlih žena (14881) i 42,6% umrlih muškaraca (11095). Vodeće dijagnostičke podskupine bile su koronarna bolest srca (KBS) s udjelom od 21,4% u mortalitetu žena i 18,8% umrlih muškaraca, a slijede cerebrovaskularne bolesti (CVB) s udjelom od 17,6% u mortalitetu žena i 12,6% umrlih muškaraca u ukupnom broju umrlih (***tablica 1***).

Analiza smrtnosti prema dobi pokazuje da kako u muškaraca tako i žena, dobno-specifične stope smrtnosti za KVB rastu s dobi i više su u muškaraca nego u žena u svim dobnim skupinama (**slika 2**). Intenzivniji porast smrtnosti

Based on the PSF form, the annual hospitalization base is formed showing the data on a number of hospitalizations according to specific diagnostic entities, gender, age, institution, place of residence and length of treatment. It should be pointed out that the number of hospitalizations is here in question (hospitalizations in hospital or stay in a daily hospital and patient's haemodialysis), not the number of persons who are in-hospital treated during one calendar year. The collective Annual report of the work of hospital provides the data on stationary medical institution, employees and work of hospitals (organization, type of department, number of beds, number of received and released patients according to departments, length of hospitalization, utilization of in-hospital capacities).

The quality of data in in-hospital morbidity is greatly dependent on the completeness and accuracy of completed PSF form, that is, the data entered by the physician in the form at the time of discharge of every patient from hospital, that is, compliance with given description of syllable when sending the data on the disc. The data for Croatia is submitted to the WHO, Eurostat and UN database.

Collective aggregate data on a number of determined diseases or conditions in primary and specialist and advisory committee health care is received from out-hospital system. The collected data on diseases from the out-hospital system may not be used for the determination of the rate of occurrence of specific diseases, but only as an insight into the movement of frequency of using the healthcare in the activities of primary healthcare[2].

Indicators of mortality and morbidity for cardiovascular diseases in Croatia

According to the indicators of mortality and morbidity, CVD are the prioritized public health problem in Croatia as well as in the most of the developed countries in the world. The data from routine mortality and morbidity statistics and from the WHO database "Health for All" were used for display, and they are expressed as general, specific and age-standardized rate and as percentage share.

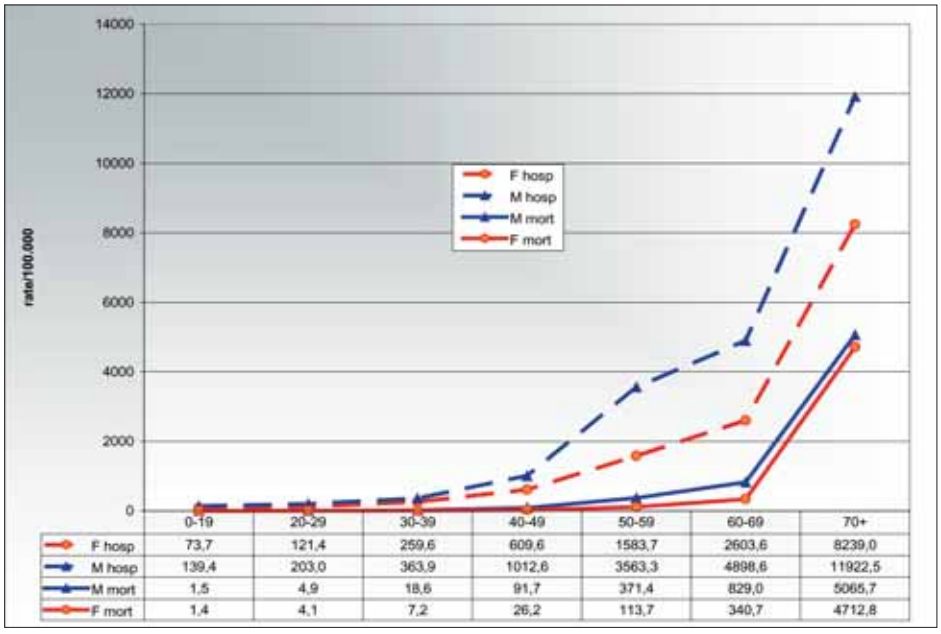
CVD represent the leading cause of death with 25976 dead persons, or with a share of 49.6% in total mortality in 2009. The positive indicator is that the share of more than 50% that was applicable for many years has for the first time been somewhat reduced in total mortality[2]. Out of total number of dead persons who died of CVD during 2009, 43% died in hospital and 57% died out of hospital. In 46% of persons who died of CVD, the cause of death was determined by coroner — physician, in 44% of dead persons, the medical doctor who treated the dead person determined the cause of death, in 2% it was a coroner — another medical employee and in 8% the cause of death was determined the autopsist. The gender-based analysis shows that CVD in both genders is the leading cause of death, namely, in 56.4% of dead women (14881) and 42.6% of dead men (11095). The leading diagnostic subgroups were ischaemic heart disease (IHD) with the rate of 21.4% in mortality of women and 18.8% dead men, followed by cerebrovascular diseases with the rate of 17.6% in mortality of women and 12.6% of dead men in total number of dead persons (***Table 1***).

The analysis of mortality according to age shows that age-specific rates of mortality of CVD are rising with age in both men and women, and they are higher in men than in women in all age groups (**Figure 2**). The more intensive rise

Table 1. *Cardiovascular diseases deaths by diagnostic group and gender, Croatia 2009.*

Diagnoses	Female		Male	
	Number	Rate/ 100.000	Number	Rate/ 100.000
Ischaemic heart diseases	**5 657**	**245.8**	**4 885**	**228.7**
- Acute myocardial infarction	**1 502**	**62.3**	**2 114**	**99.0**
- Chronic ischaemic heart diseases	**4 038**	**175.4**	**2 599**	**121.7**
Cerebrovascular diseases	**4 656**	**202.3**	**3 268**	**153.0**
- Stroke	**2 887**	**125,4**	**1 915**	**89,7**
Heart failure	**1 518**	**66.0**	**882**	**41.3**
Hypertensive diseases	**898**	**39.0**	**471**	**22.1**
Atherosclerosis	**864**	**37.5**	**427**	**20.0**
Cardiovascular diseases total	**14 881**	**646.6**	**11 095**	**519.5**

Source: Croatian Central Bureau of Statistics, Croatian National Institute of Public Health.



	0-19	20-29	30-39	40-49	50-59	60-69	70+
F hosp	73,7	121,4	259,6	609,6	1583,7	2603,6	8239,0
M hosp	139,4	203,0	363,9	1012,6	3563,3	4898,6	11922,5
M mort	1,5	4,9	18,6	91,7	371,4	829,0	5065,7
F mort	1,4	4,1	7,2	26,2	113,7	340,7	4712,8

Source: Croatian National Institute of Public Health, Croatian Central Bureau of Statistics.

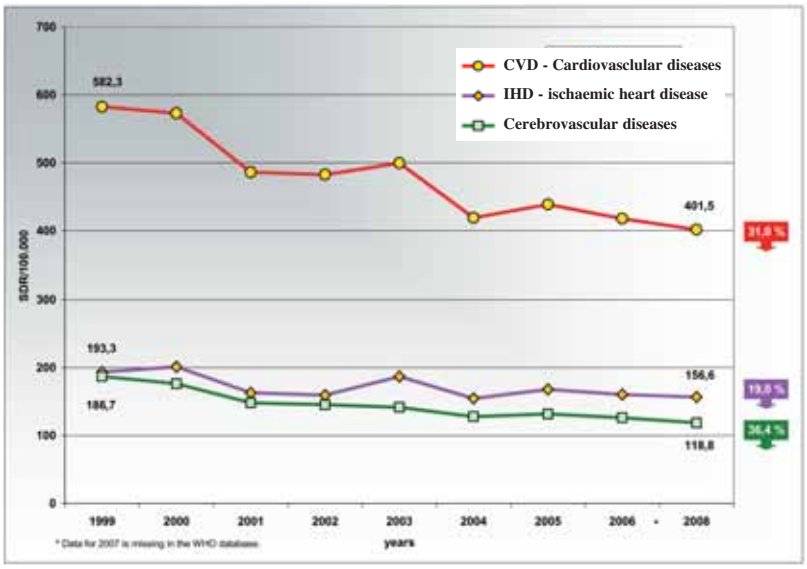
Figure 2. *Cardiovascular diseases mortality and hospitalizations by age and gender in Croatia 2009. M = male; F = female; hosp. = hospitalization*

počinje u dobi iznad 50 godina. Međutim u izračunu stope smrtnosti po spolu, veća zastupljenost žena u starijim dobnim skupinama, kao i veći broj umrlih žena, rezultira višom ukupnom stopom smrtnosti od KVB. Tako opća stopa smrtnosti u 2009. god. iznosi ukupno 585,4/100.000, za muškarce 519,5/100.000, a za žene 646,6 na 100.000 stanovnika.

Posljednjih deset godina prisutan je pozitivan trend smanjenja smrtnosti od KVB u Hrvatskoj, što je izraženije za CVB, nego za KBS i to posebno za dob do 64 godine (**slika 3**). Analizirajući kretanje dobno standardiziranih stopa mortaliteta od KVB ukupno u Hrvatskoj, od 1999. godine s 582,3/100.000 stopa pada na 401,5/100.000 2008. godine (zadnji raspoloživi podaci), što je pad smrtnosti od 31%. Za KBS pad smrtnosti u tom razdoblju iznosi 19%, a za CVB 36,4%.

in mortality starts at the age over 50 years of age. However, according to the calculation of the mortality rate according to gender, the greater number of present women in older age groups and a greater number of dead women results in a higher total rate of mortality from CVD. So, the general mortality rate in 2009 totaled to 585.4/100.000, for men 519.5/100.000, while for women it was 646.6 per 100,000 inhabitants.

During the last ten years, there is a positive trend of reducing the mortality from CVD in Croatia, which is more applicable to cerebrovascular diseases than for IHD, especially to the age up to the age of 64 (**Figure 3**). Analyzing the movement of age standardized rates of mortality from CVD totally in Croatia, since 1999 the rate fell from 582.3/100.000 to 401.5/100.000 in 2008 (the latest available data), which is a fall of mortality of 31%. The fall of



Source: WHO, Health for All database, 2010.

Figure 3. *Age standardized mortality rates for cardiovascular diseases for all ages in Croatia, 1999-2008.*

U bolničkom morbiditetu 2009. godine KVB se nalaze na drugom mjestu po broju hospitalizacija (83.781) s udjelom od 13,7%, od toga su 46,5% hospitalizacije žena i 53,5% hospitalizacije muškaraca. Međutim, analiza prema spolu pokazuje da su u muškaraca KVB na prvom mjestu po broju hospitalizacija s udjelom od 14,9%, a kod žena su na drugom mjestu s udjelom od 12,5%, iza novotvorina čiji je udio 14,9% u ukupnom broju hospitalizacija žena. Stopa hospitalizacija iznosila je 1888/100.000 stanovnika, u muškaraca 2100,6/100.000, a u žena 1690,8/100.000. Analiza bolničkog pobola prema dobi pokazuje da kako u muškaraca tako i žena, stope hospitalizacija za KVB rastu s dobi i više su u muškaraca nego u žena u svim dobnim skupinama (**slika 2**)[6]. Intenzivniji porast bolničkog pobola počinje u dobi iznad 40 godina. Najčešći uzroci hospitalizacija bila je KBS s udjelom od 25,9%, podskupina ostali oblici srčane bolesti (25,1%) s najčešćom dijagnozom kardiomiopatije te CVB s udjelom od 21,7%.

Usporedimo li zadnjih desetak godina stope smrtnosti i stope hospitalizacija prema spolu, vidimo da stope smrtnomortality for IHD during that period is 19% and 36.4% for cerebrovascular diseases.

In in-hospital morbidity 2009, CVD take the second place according to the number of hospitalizations (83781) with a share of 13.7%, out of which 46.5% are the hospitalizations of women and 53.5% are the hospitalizations of men. However, the gender-based analysis shows that CVD take the first place in a number of hospitalizations in men with a share of 14.9% and in women they take the second place with a share of 12.5%, followed by neoplasm of which a share is 14.9% in total number of hospitalizations of women. The rate of hospitalizations was 1888/100.000 inhabitants, in men it was 2100.6/100.000, in women it was 1690.8/100.000. The analysis of clinical morbidity according to age shows that in both men and women the rate of hospitalizations for CVD is rising with age and is higher in men than in women in all age groups (**Picture 2**)[6]. The more intensive rise in clinical morbidity starts at the age over 40 years of age. The most frequent causes of hospitalization was CHD with a share of 25.9%, the subgroup oth-

Table 2. *Cardiovascular diseases mortality and hospitalizations by gender in 2000-2009 (rate/100.000).*

Years	Mortality		Hospitalizations	
	Male	Female	Male	Female
2000	558,4	657,1	1862,4	1621,4
2001	547,3	645,3	1802,7	1589,4
2002	560,8	639,5	1856,7	1616,9
2003	572,9	679,4	1920,7	1653,8
2004	511,8	609,5	1997,1	1613,9
2005	531,1	638,1	2056,8	1661,5
2006	525,7	624,9	2111,6	1796,1
2007	534,5	655,6	2123,4	1741,6
2008	533,8	644,5	2112,5	1707,2
2009	519,5	646,6	2100,6	1690,8

Source: Croatian Central Bureau of Statistics, Croatian National Institute of Public Health.

sti padaju i u muškaraca i u žena, ali su u žena opće stope smrtnosti više no u muškaraca kroz cijelo razdoblje (**tablica 2**). Međutim stope hospitalizacija rastu u oba spola, s time da su stope hospitalizacija znatno niže u žena.

Pobol u primarnoj zdravstvenoj zaštiti prikazan je kao broj posjeta liječniku zbog bolesti te može poslužiti samo kao uvid u korištenje zdravstvene zaštite na primarnoj razini. Prema dijagnozama zabilježenim u djelatnosti opće medicine 2009. godine, KVB nalaze se na drugom mjestu s udjelom od 11,7%, iza bolesti dišnog sustava čiji je udio iznosio 18,6%. Najučestalija dijagnostička podskupina bile su hipertenzivne bolesti s udjelom od 59,6% u skupini KVB.

Zaključak

Iako je zadnjih godina došlo do pada smrtnosti od KVB, ova skupina bolesti i dalje predstavlja vodeći uzrok smrtnosti i u žena i muškaraca. Sveukupno više žena umire od KVB, a više umiru muškarci u mlađoj dobi. Nasuprot tome, žene su manje hospitalizirane, pa u svakodnevnoj praksi treba uzeti u obzir specifičnosti KVB u žena, od kliničke slike, dijagnostike do terapije. Zbog izuzetne važnosti mortalitetnih i morbiditetnih pokazatelja za zdravstvo, ali i za državnu statistiku u cjelini, kao i obveza Hrvatske kao države u izvješćivanju prema međunarodnim organizacijama, potrebno je osigurati kontinuirano unaprjeđenje kvalitete podataka.

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*Address for correspondence: Hrvatski zavod za javno zdravstvo, Rockefellerova 7, HR-10000 Zagreb, Croatia.

Phone / Fax: +385-1-4863-271

E-mail: verica.kralj@hzjz.hr

er forms of cardiac diseases (25.1%) with the most frequent diagnosis of cardiomyopathy and cerebrovascular diseases with a share of 21.7%.

If we compare the mortality rates and hospitalization rates according to gender in the last ten years, we can see that the mortality rates show falling trend in both men and women, but the general mortality rates are higher in women then in men during the entire period (**Table 2**). However, the hospitalization rates are rising in the both genders, whereas the hospitalization rates are much lower in women.

The morbidity in primary health care is shown as a number of visits to a physician due to disease and may be used only as an insight into using primary health care at the primary level. According to diagnoses recorded in the general medicine activity of 2009, CVD take the second place with a share of 11.7% following the respiratory system disease whose share is 18.6%. The most frequent diagnostic sub-group was hypertensive diseases with a share of 59.6% in the group of CVD.

Conclusion

Although a fall in mortality of CVD has been recorded in the last few years, this group of diseases still represents the leading cause of mortality in both women and men. More women die of CVD in total, but more men die at younger age. On the other hand, women are less hospitalized, so specific features of CVD in women are to be considered in a daily practice, from clinical manifestations, diagnostics to therapy. Due to great importance of mortality and morbidity indicators for health system, state statistics in whole and the obligation of Croatia as the state to submit reports to the international organizations, it is necessary to continuously improve the quality of data.

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