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KAKOVOST IN VARNOST/QUALITY AND SAFETY

Kazalniki kakovosti preventive srčno-žilnih bolezni v ambulanti družinske medicine

Quality Indicators of Cardiovascular Disease Prevention for Primary Care in Slovenia

Davorina Petek,¹ Stephen Campbell,² Maša Serec,¹ Janko Kersnik^{1,3}

Izveček

Namen: Nacionalna validacija kazalnikov kakovosti v preventivi bolezni srca in ožilja v primarnem zdravstvu v Sloveniji in primerjava z mednarodno validiranimi kazalniki.

Metode: V okviru mednarodne raziskave Epa cardio je bil razvit seznam kazalnikov kakovosti, ki so izvirali iz strokovnih smernic, priporočil in dobre klinične prakse. V vsaki sodelujoči državi so bili predlagani kazalniki predstavljeni skupini nacionalnih ekspertov, ki so jih glede na razumljivost, veljavnost in izvedljivost ocenili v dveh krogih s pomočjo metodologije Delphi. V Sloveniji je sodelovalo 14 ekspertov-zdravnikov družinske medicine s posebnim zanimanjem za bolezni srca in ožilja.

Rezultati: Največ validiranih kazalnikov je pripadalo skupini zdravstvene oskrbe bolnikov z boleznijo srca in ožilja. Manjše število kazalnikov je bilo validiranih s področja primarne preventive, večinoma glede zapisa in nasveta v zvezi z življenjskim slogom. Zelo malo je bilo validiranih kazalnikov izvida (vrednost dejavnikov tveganja). Noben kazalnik o vključenosti bolnika ali o novejših dejavnikih tveganja, npr. socioekonomske okoliščine, ni bil validiran.

Zaključki: Slovenija je validirala več kazalnikov kot mednarodna skupina, posebej s področja primarne preventive. Eksperti niso dosegli konsenza glede kazalnikov bolnikove perspektive kljub paradigmi družinske medicine, da je bolnik v središču oskrbe. Validirane kazalnike je potrebno pred uporabo za sistematično sledenje kakovosti preizkusiti v praksi.

Abstract

Aim: National validation of quality indicators for cardiovascular prevention in primary care in Slovenia and comparison with a set of internationally validated indicators.

Methods: A list of indicators derived from guidelines, recommendations and good clinical practice was developed internationally within a wider Epa-cardio study. In each participating country a panel of national experts were recruited to assess the indicators using a Delphi Technique methodology in two rounds for clarity, validity and feasibility. In Slovenia, 14 national experts, all general practitioners with special interest in cardiovascular diseases, were recruited.

Results: Most of validated indicators belonged to the health-care management of people with established cardiovascular disease. Fewer numbers of indicators were validated for primary prevention, mostly on life style recording and advice. Only very few indicators on outcome measures (level of risk factors) were validated. No indicators of patients' involvement or new risk factors, such as socioeconomic circumstances, got consensus.

Conclusion: Slovenia validated more indicators than the international study, especially indicators of primary prevention. The experts did not achieve consensus on indicators of patients' perspective, despite the paradigm of family medicine that the patient is in the centre of care. Validated indicators can now be tested for systematic quality assessment of cardiovascular prevention in the country.

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Introduction

Cardiovascular diseases are still the leading cause of death in Slovenia, representing 39.7% of all causes of death in 2011.¹ Standardised death rate by 100,000 inhabitants for circulatory diseases in 2008 in Slovenia was 234.9, slightly over average in the European Union (227.2).² High quality and timely prevention of cardiovascular diseases is therefore an important task for all family physicians. The most common approach to the quality assessment of medical care is assessment of the processes and the outcomes of provided care.³ We can assess the quality of medical care by quality indicators, which represent the statements on conditions, parts of the process or the outcome of medical care under observation.⁴ Quality indicators have to be measurable, have to be important for the outcome of the medical care and must reflect the improvement in quality of care.^{4,5}

In Slovenia several activities for evaluation of the quality and safety of patients' health care have been underway in last years. In 1999 started the project Quality in health care of Slovenia, which was aimed to develop quality indicators according to national and international standards and guidelines. In 2011 a working group at the Ministry of Health was appointed to identify a new set of quality indicators and methods of follow up. 72 quality indicators were accepted for quality assessment. In family practice, several indicators for quality assessment of preventive activities based on data from the National Register of Patients at Risk for Cardiovascular Disease were suggested, such as: share of people with target cholesterol/target blood pressure level after treatment, share of persons with normal body mass index after treatment etc. These quality indicators were measuring the effectiveness of the intervention part of the preventive program.^{6,7}

Scientific development of quality indicators provides the opportunity to take into account specific situation in national health care. Quality indicators need to be developed in a systematic manner so that they adhere to important attributes such as acceptability, feasibility, reliability and validity.⁴

Indicators are often derived from practice guidelines and recommendations. However, some aspects of medical care lack strict scientific evidence of recommended quality⁸ so consensus techniques are often used to develop quality indicators.⁴ For example, Marshall developed 27 indicators for prevention, health promotion and clinical care.⁹

In the European Practice Assessment Cardiovascular (EPA Cardio) study we developed a set of internationally validated quality indicators for cardiovascular prevention.^{10,11} We used a systematic process of validating the indicators by conducting a two round Delphi Technique process, with expert panels of family doctors with a special interest in cardiovascular prevention in nine collaborating European countries (Austria, Belgium, Finland, France, Germany, The Netherlands, Slovenia, United Kingdom, and Switzerland); 44 out of 202 proposed indicators were rated valid in all 9 countries within four domains of quality: preventive care/ lifestyle management; clinical processes, outcomes and risk assessment; organisation of care; and the patient perspective.¹¹ The small number of indicators rated valid in all countries reflected the differences in the health care systems and the organisation of preventive services in the participating countries.

European countries with both strong (e.g. The Netherlands, UK) and weak (e.g. Belgium, France) primary care focus¹² took part in the Epa-cardio project. We found that a strong primary care system was typical of countries with a gatekeeper system, registered patients, good patients' medical records, central health insurance systems and at least partly per capita primary care teams' payment schemes.¹³ All systems differed in predominant approach to disease management or to lifestyle interventions regardless of the established CVD or risk factors.¹³

Among all participating countries, Finland and Slovenia had the highest numbers of validated indicators¹¹ and both are countries with strong primary-care systems. Slovenia is a unique country as it is the only one among the participating European countries having a national program of primary cardiovascular prevention included in

the contract between the National insurance company and health-care providers, which has been performed in all general practices since 2002.¹⁴ This program is a mandatory part of the regular work of a general physician in every primary care practice and provides a systematic prevention approach to the patients by age groups, defines procedures of the prevention process and interventional part of the program. 113 indicators were rated valid by the Slovenian panel as part of a wider study.¹¹

The aim of this study was to develop a set of feasible indicators, usable in everyday practice for evaluating the national program and the results of cardiovascular prevention in the country, and for exploring the differences with the international set of indicators. High consensus in the feasibility of the indicator was necessary for its validation.

Methods

As a part of the international Epa-cardio study, an expert panel composed of 14 practising family doctors with a special interest in CVD prevention was convened in Slovenia.¹¹ All 14 invited experts agreed to participate in the panel. In the first round of the Delphi, each panellist was presented with the 202 indicators divided into four domains.¹¹ For research purposes, the indicators were translated following rules of validated translation.¹⁵ Two professional translators independently translated the indicators from English into Slovenian language and consensus on differences in the translation

was reached by cooperation of the researcher. Two different professional translators re-translated the indicators into English and reached consensus on differences between the original English version and the re-translated version. We organised two electronic/postal rounds in accordance with the Delphi Technique methodology and followed study methodology¹¹: In round one, indicators were rated by clarity of the language/terminology and validity (the indicator represents care which is necessary to deliver and record for high quality), and in round two, for validity and feasibility (data are available on a consistent, comparable and reliable basis in all practices in the country). The panellists rated each indicator in two rounds on a nine-point scale: 1 was the lowest and 9 the highest rating. The round 2 questionnaire contained a feedback of the ratings from round 1 in terms of the frequency distribution of the ratings across the 9-point scale for each indicator and the overall panel median rating for each indicator.

Each indicator was analysed using the RAND methodology.¹⁶ To be valid and feasible, an indicator needed to have an overall panel median ≥ 7 for validity and feasibility and also there had to be 78–82% of ratings within the same 3 points of the scale as the overall median¹¹; in essence, 11 out of 14 Slovenian experts had to rate an indicator inside the same three-point range of the nine-point scale. All results were based on round 2 ratings only.

Table 1: Quality indicators by domains of preventive care, mediana and interquartile range for feasibility and necessity of validated indicators.

Domain	N ^o of indicators	N ^o and share of validated indicators	Feasibility–median and interquartile range	Necessity–median and interquartile range
Lifestyle management	35	20 (57%)	8.63 (0.83)*	8.60 (0.68)*
Clinical processes, outcomes, risk assessment	124	55 (44%)	8.61 (1.23)*	8.85 (0.41)*
Organisation of care	28	13 (46%)	8.77 (1.08)*	8.89 (0.46)*
Patient perspective	9	0 (0%)	/	/
ALL	196	88 (45%)	8.67 (1.05)	8.78 (0.52)

* Average median value and interquartile range for group of indicators

Results

All 14 experts participated in both rounds of the Delphi Technique study. They rated 186 indicators in round one and 202 indicators in round two: 16 were added and 6 eliminated in round two. The Slovenian panel of experts rated 88 (44 %) of the indicators valid (Table 1).

Detailed analysis of validated indicators is shown in Table 2.

Life style management

Altogether, consensus was reached on 57 % of indicators in the domain *Lifestyle management* on the recording of risk factors (smoking, physical activity, body mass index and waist circumference) in different age groups within primary prevention, secondary prevention and in diabetic patients. In the subgroup *Recording of lifestyle advice* indicators about smoking cessation, physical activity and healthy eating for primary and secondary prevention were validated. Panelists also validated the indicator of advice on

low-risk alcohol drinking for patients with high risk of CVD.

Clinical processes, outcomes

Panellists reached consensus on several indicators about recording cholesterol and blood pressure values, but only three on specific target values of risk factors. Three indicators defined individualised target values for the patient (for example: All patients with hypertension should have an individual target blood pressure level recorded). The indicators on prescribing (for example ACE inhibitors, beta blockers) were validated for secondary prevention and diabetes. Several indicators on the necessity to record risk factors in risk assessment were validated – some of them were country specific, such as: inclusion of body mass index or fasting lipid profile in risk assessment. New risk factors, such as ethnic origin or risky drinking or socioeconomic status included in risk assessment were not validated.

Table 2: Validation of quality indicators by subgroups.

Domain		N° of proposed indicators	N° of all validated indicators	N° of validated indicators for primary prevention (without CVD or diabetes)
Lifestyle management	Record of lifestyle risk factors	12	10	5
	Record of lifestyle advice	23	10	6
Clinical processes, outcomes	Record of tests/symptoms	16	11	6
	Level of tests	32	7	4
	Prescribing	21	11	3
	Referral	6	0	0
	Risk assessment	38	24	15
	Risk communication/advice	11	2	1
Organisation of care	Infrastructure	6	1	1
	Staff	8	4	4 *
	Information	12	8	5 *
	Quality and safety	2	0	0
Patient perspective	Patient experience	9	0	0
All domains		196	88	50 (41+9*)

*Applies to primary and secondary prevention

Organisation of care

Panellists validated indicators on the continuous medical education (CME) of a physician and nurse, and organisation of medical records regarding clearly marked risk factors, problem lists and data on prescribed medications.

Patient perspective

Slovenian panellists did not validate any indicator from this group, as in all other countries.¹¹

However, several indicators were graded as necessary (median ≥ 7) but without consensus agreement on feasibility. These are presented in Table 3.

Two indicators on risk assessment were evaluated as feasible but not necessary.

Discussion

Quality indicators for secondary and primary CVD prevention were rated using a modified Delphi Technique methodology. This methodology was used for the development of quality indicators in previous studies in various areas of medicine.¹⁷⁻²¹ In

Slovenia we used the Epa-cardio set of indicators and followed the same procedure with one difference: for the confirmation of QI two conditions were necessary: median ≥ 7 and consensus on validity and feasibility. Therefore, we were stricter in our criteria for validating national indicators because consensus on the feasibility of the indicator is crucial to ensure that the indicators are usable in everyday practice. Using this methodology, the Slovenian panel validated 88 indicators rather than the 113 in the international study.⁵

The highest percentage of validated indicators was derived from the lifestyle domain. Compared to the international results, Slovenian panellists in general validated more indicators from the field of primary prevention, especially in the group of patients with high risk of CVD for lifestyle advice and process of care. They also validated some process indicators for low-risk group such as: *There should be a record of the level of physical activity at least once in the last 5 years for all patients aged ≥ 16 .* Slovenia is a country with a strong primary care system, which may suggest that the care is more oriented towards prevention, chronic care

Table 3: Quality indicators by domains of CV prevention, evaluated as necessary without reached consensus on feasibility

Domain		Number of indicators
Lifestyle management	Record of lifestyle risk factors	0
	Record of lifestyle advice	6
Clinical processes, outcomes	Record of tests/symptoms	2
	Level of tests	13
	Prescribing	3
	Referral	1
	Risk assessment	6
	Risk communication/advice	4
Organisation of care	Infrastructure	2
	Staff	2
	Information	3
	Quality and safety	0
Patient perspective	<i>Patient experience</i>	3
All		45

and disease management.^{13,22} Due to the existence and requirements of the National preventive program family physicians also perform lifestyle advice and interventional programs to healthy patients. These activities probably reflect why the corresponding indicators were rated valid for primary prevention.²³ Although primary prevention is believed to be a public health responsibility, simultaneous action by primary care can improve the results at least for a high-risk group.²⁴⁻²⁷

Panellists did not rate valid indicators on motivating patients for lifestyle change and advice to younger, healthier patients of the importance of healthy lifestyle. Also, many indicators on risk advice, lifestyle and individual risk factors were not confirmed, reflecting that conditions for this activity in general practice are still not optimal for evaluating them as a quality performance measure.²² With few exceptions panellists did not validate specific target values for blood pressure and cholesterol. Although the recommendations on outcome values are clear²⁸ it is very difficult to expect that the quality of the physician's work and the process of his care can be measured by the outcome values using biological parameters. Such levels do not depend only on the quality of medical care but also on the patient's characteristics and compliance with a healthy lifestyle, attitude, psychological characteristics, strength of will for change etc. So it is understandable that the experts avoided that the quality of their clinical procedure would be evaluated by the outcome-achieving the recommended level of the risk factor.²⁹⁻³⁰

Our experts did not confirm indicators on a more pro-active approach of doctors in the prevention of CVD. The problem of feasibility for the suggested indicators was also obvious for indicators on information support – the criteria of validity were very high (median 8.5) but feasibility was very low (median 3.5). As those indicators were not validated in the international study as well, it seems that the lack of information support is a wider rather than only a Slovenian problem.

Panellists validated indicators on continuous medical education of employed staff

more than in the wider international study, which shows that staff education is considered important in our country.

Although a patient is in the centre of care³¹ and his perspective represents an important issue in Slovenia³² not even one indicator was validated on patients' inclusion, opinion, and experience with care. Borderline validated were indicators on patients' opinion on their chronic care and motivation for change, but did not get the consensus of the experts. So despite new paradigms of family medicine it is still a problem how we can measure the domain of patients' perspective.

Conclusion

Quality indicators development is always a difficult task because it has to take into account evidence-based medicine and the characteristics of the health system, which led to many indicators being rated not feasible in Slovenia. An international set of indicators is a valuable resource tool in quality measurement because it can allow international comparisons. However, nationally validated indicators give an important insight into the current state of the organisation and conditions for preventive activities and are more likely to be aligned to and be used by the professional community of a country. In Slovenia, primary CVD prevention quality indicators on lifestyle risk factors determination and advice were validated as well as secondary prevention indicators on medication whereas quality and safety indicators were not rated valid and feasible. The 88 indicators rated valid and feasible require pilot testing in practice before they can be applied generally or rolled out nationally.

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Appendix: International and country specific quality indicators for cardiovascular prevention

1. Lifestyle / lifestyle management

RECORD OF LIFESTYLE RISK FACTORS

- For all patients aged ≥ 16 there should be a record of smoking status at least once.
- For all patients with diabetes there should be a record of smoking status in the past 15 months, except for those who have never smoked, whose smoking status should be recorded **at least once**.
- For all patients with **established CVD** (CHD, stroke, TIA, or PVD) there should be a record of smoking status in the past 15 months, except for those who have never smoked, whose smoking status should be recorded **at least once**.
- For all patients aged ≥ 16 there should be a record of their level of physical activity / exercise capacity on their medical record at least once in the last 5 years.
- For all patients with **established CVD** (CHD, stroke, TIA, or PVD) there should be a record of their physical activity / exercise capacity at least once in the last 15 months.
- For all patients aged ≥ 16 and < 55 there should be a record of their weight or Body Mass Index at least once in the last 5 years.
- For all patients aged ≥ 55 there should be a record of their weight or Body Mass Index at least once in the last 15 months.
- For all patients aged ≥ 16 there should be a record of their waist circumference at least once in the last 5 years.
- For all patients with diabetes there should be a record of their weight or Body Mass Index at least once in the last 15 months.
- For all patients with established CVD (CHD, stroke, TIA, or PVD – see glossary) there should be a record of their weight or Body Mass Index at least once in the last 15 months.

RECORD OF LIFESTYLE ADVICE

- For all smokers there should be a record of being offered **smoking cessation advice at least once**.
- For all patients at **medium risk** of CVD there should be a record of being offered advice about **regular physical activity** at least once in the last 15 months unless contraindicated.
- For all patients with diabetes there should be a record of advice about **regular physical activity** (see glossary) at least once in the last 15 months unless contraindicated.
- For all patients with **established CVD** (CHD, stroke, TIA, or PVD) there should be a record of advice about **regular physical activity** at least once in the last 15 months unless contraindicated.
- For all patients with diabetes there should be a record that **diet advice** (see glossary) has been offered at least once in the last 15 months.
- For all patients with **established CVD** there should be a record that **diet advice** has been offered at least once in the last 15 months.
- For all patients with hypertension there should be a record that **diet advice** (see glossary) has been offered at least once in the last 15 months.
- For all patients at **high risk** of CVD there should be a record that **diet advice** (see glossary) has been offered at least once in the last 15 months.
- For all patients at **high risk** of CVD there should be a record that advice about a low-risk alcohol drinking pattern (men ≤ 2 units per day; women ≤ 1 unit per day) was offered at least once in the last 15 months, unless a no or low risk alcohol drinking.

- For patients with a Body Mass Index > 30kg/m² or waist circumference > 102cm for men and > 88 for women there should be a record that weight reduction advice was offered at least once in the last 15 months.

2. Clinical processes and outcomes

RECORD OF TESTS / SYMPTOMS

- For all patients aged ≥ 16 but ≤ 55 there should be a record of blood pressure at least once in the last 5 years.
- For all patients aged ≥ 55 there should be a record of blood pressure at least once in the last 5 years.
- For all patients with diabetes there should be a record of blood pressure at least once in the last 15 months.
- For all patients prescribed antihypertensive medication for diagnosed **hypertension** (see glossary) there should be a record of blood pressure at least once in the last 15 months.
- For all patients with **established CVD** (CHD, stroke, TIA, or PVD – see glossary) there should be a record of blood pressure at least once in the last 15 months.
- For all patients aged > 35 and ≤ 54 there should be a record of their cholesterol (general/total and HDL) at least once in the last 5 years.
- For all patients aged ≥ 55 there should be a record of their cholesterol (general/total and HDL) at least once in the last 5 years.
- For all patients at **high risk** of CVD there should be a record of their cholesterol (general/total, HDL and LDL) at least once in the last 15 months.
- For all patients with diabetes there should be a record of their cholesterol (general/total, HDL and LDL) at least once in the last 15 months.
- For all patients with **established CVD** (CHD, stroke, TIA, or PVD) there should be a record of their cholesterol (general/total, HDL and LDL) at least once in the last 15 months.
- For all patients aged ≥ 35 with a prior MI there should be a record of their cholesterol (general/total, HDL and LDL) at least once within the last 15 months.

LEVEL OF TESTS

- All patients with **established CVD** (CHD, stroke, TIA, or pvd) should have their diastolic blood pressure controlled to < 90.
- All patients with a record of persistent blood pressure elevation of > 160/100mmHg should be offered drug therapy to reduce their blood pressure.
- All patients with hypertension should have an individual target blood pressure level recorded.
- All patients with diabetes should have an individual target blood pressure level recorded.
- All patients at **high risk** (see glossary) should have an individual target blood pressure level recorded.
- All patients at **high risk** (see glossary) of CVD: serum cholesterol should be controlled to < 5.0mmol/l (approx 195mg/dl).
- All patients with diabetes: serum cholesterol should be controlled to < 5.0mmol/l (approx 195mg/dl).

CLINICAL PROCESSES: PRESCRIBING

- All patients at **high risk** (see glossary) should be offered a statin.
- All patients aged ≥ 40 with diabetes (type 1 or type 2) should be offered a statin unless there are no other risk factors.
- All patients with **established CVD** (CHD, stroke, TIA, or pvd) should be offered a statin.

- For all patients with diabetes who have sustained proteinuria there should be a record that an ACE-I has been offered.
- For all patients with **established CVD** (CHD, stroke, TIA, or pvd) or after a cerebrovascular ischemic event, there should be a record that anti-platelet therapy (acetilsalicilna kislina, clopidogrel or equivalent) at least 75 mg daily has been offered, unless contraindicated.
- For all patients who have heart failure there should be a record that an ACE-I has been offered.
- For all patients who have had a myocardial infarction or have had coronary artery bypass graft or percutaneous transluminal coronary angioplasty there should be a record that an ACE-I has been offered.
- All patients with **coronary heart disease** (see glossary) should be offered a beta blocker (unless a contraindication or side-effect is recorded).
- For all patients who have had a myocardial infarction there should be a record that a beta blocker has been offered (unless a contraindication or side-effects is recorded).
- For all patients with sustained high blood pressure readings (> 150/90 on 3 or more occasions) who are already taking antihypertensive medication there should be a record of being offered a change in therapy.
- Drug therapies should be offered in all patients with sustained (on more than 3 occasions) systolic BP ≥ 160 mm Hg or sustained diastolic BP ≥ 100 mm Hg despite up to six months of non-pharmacological measures, unless contraindicated or intolerant.

CLINICAL PROCESSES: RISK ASSESSMENT

- For all patients aged ≥ 40 there should be a record that a CVD risk assessment using a **standardised tool** has been offered.
- For all patients aged ≥ 50 there should be a record that a CVD risk assessment using a **standardised tool** (see glossary) has been offered.
- For all patients aged ≥ 60 there should be a record that a CVD risk assessment using a **standardised tool** (see glossary) has been offered.
- CVD risk assessment should include age.
- CVD risk assessment should include gender.
- CVD risk assessment should include smoking status.
- CVD risk assessment should include blood pressure.
- CVD risk assessment should include family history of CVD.
- CVD risk assessment should include personal history of diabetes.
- CVD risk assessment should include past history of CVD.
- CVD risk assessment should include weight or Body Mass Index.
- CVD risk assessment should include fasting lipid profile.
- CVD assessment should include a means of identifying diabetes or impaired glucose regulation (e.g. random or fasting blood plasma glucose or glucose tolerance test).
- CVD risk assessment should include diabetes status.
- All patients with diabetes should have their CVD event risk assessed at diagnosis.
- All patients with diabetes should have had their CVD risk re-assessed and recorded at least once within the last 5 years.
- All patients at **high risk** of a **CVD event** should have had their CVD risk re-assessed and recorded at least once within the last 5 years.
- All patients with a **CVD event risk score** < 10 % over 10 years should have their CVD risk re-assessed every 5–10 years.
- All patients with a **CVD event risk score** of 10 %-15 % over 10 years should have their CVD risk re-assessed at least once within the last 5 years.
- Patients with **coronary heart disease** should have a recording of frequency or pattern of angina attacks in the last 15 months.

- All patients with **established CVD** (CHD, stroke, TIA, or pvd) should have their random blood plasma glucose tested at least once in the last 15 months.
- All patients at **high risk** of CVD event over 10 years should have their blood plasma glucose tested at least once in the last 15 months.
- *All patients at high risk of CVD event over 10 years should have their blood plasma glucose tested at least once.*
- *All patients with established CVD (CHD, stroke, TIA, or pvd) should have their random blood plasma glucose tested at least once after diagnosis.*

CLINICAL PROCESSES: RISK COMMUNICATION/ADVICE

- For all people with **established CVD**, (CHD, stroke, TIA, or pvd – see glossary) there should be a record that *specific advice about lifestyle* has been offered at least once in the last 5 years.
- *For all people with a CVD event risk of $\geq 20\%$ (over 10 years) there should be a record that specific advice about lifestyle (see glossary) has been offered at least once in the last 15 months.*

3. Organisational

INFRASTRUCTURE

- For all patients who are obese (Body Mass Index $> 30\text{kg/m}^2$) there should be a record that they have been offered at least one follow-up consultation within the last 15 months.

PEOPLE

- All GPs should attend ≥ 1 training/continuing medical education event on CVD within the last 5 years
- At least one general practitioner per practice should attend ≥ 1 training/continuing medical education event on CVD within the last 15 months.
- All nurses should attend ≥ 1 training/continuing medical education event on CVD within the last 5 years.
- At least one nurse per practice should attend ≥ 1 training/continuing medical education event on CVD within the last 15 months.

INFORMATION

- *The medical record should contain a summary list of major medical problems.*
- *The medical record should contain details of current prescribed medications.*
- *The medical record should contain information about intolerances and contraindications to medications.*
- Information leaflets about CVD (e.g. CHD, stroke, hypertension, stopping smoking etc) should be available at the practice for patients to take home or read in the practice.
- *Smoking status should be clearly identifiable from the paper and / or electronic record.*
- *The diagnosis of hypertension should be clearly identifiable from the paper and / or electronic record.*
- *The diagnosis of diabetes should be clearly identifiable from the paper and / or electronic record.*
- *The diagnosis of CVD should be clearly identifiable from the paper and / or electronic record.*

Legend:

Strait font: validated country specific indicators

Italic font: internationally validated indicators

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Conflict of interest

The authors declare that there is no conflict of interest.

References

1. Statistični urad Republike Slovenija. Statistični letopis 2011. Dosegljivo 20.6.2012 na: http://www.stat.si/letopis/2011/04_11/04-14-11.htm.
2. Eurostat Europe in figures – Eurostat Yearbook 2011. Health. Dosegljivo 20.6.2012 na: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/CH_03_2011/EN/CH_03_2011-EN.PDF
3. Mant J. Process versus outcome indicators in the assessment of quality of health care. Int. Journal for Quality in Health Care. 2001; 13: 475–80.
4. Campbell SM, Braspenning J, Hutchinson A, Marshall M. Research methods used in developing and applying quality indicators in primary care. Qual Saf Health Care 2002; 11: 358–64.
5. Marshall MN, Campbell SM, Hacker J, Roland MO, eds. Quality indicators for general practice: A practical guide for health professionals and managers. London: Royal Society of Medicine; 2002.
6. Simčič B, Mircha Poldrugovac M, Dorjan Marušič D. Quality indicators and accreditation as a tool for quality management in healthcare in Slovenia. Bilt – Ekon Organ Inform Zdrav 2011; 27: 29–49. Dosegljivo 20.6.2012 na: <http://temena.famnit.upr.si/files/files/Simcic.pdf>
7. Pribaković Brinovec R, Masten Cuznar O, Ivanuša M, Leskošek B, Pajntar M, Poldrugovac M, et al. Priročnik o kazalnikih kakovosti. Ljubljana: Ministrstvo za zdravje; 2010. Dosegljivo 20.6.2012 na: http://www.mz.gov.si/fileadmin/mz.gov.si/pageuploads/kakovost/kazalniki_kakovosti_dec_2010/Prirocnik_kazalniki_kakovosti.pdf.
8. Naylor CD. Grey zones in clinical practice: some limits to evidence based medicine. Lancet1995; 345: 840–2.
9. Marshall M, Klazinga N, Leatherman S, Hardy C, Bergmann E, Pisco L et al. OECD Health Care Quality Indicator Project. The expert panel on primary care prevention and health promotion. Int J Qual Health Care 2006; 9: 21–5.
10. Wensing M, Ludt S, Campbell S, Van Lieshout, Volbracht E, Grol R. European Practice Assessment of Cardiovascular risk management (EPA Cardio): protocol of an international observational study in primary care. Implementation Science2009; 4: 3.
11. Campbell SM, Ludt S, Van Lieshout J, Boffin N, Wensing M, Petek D, et al. Quality indicators for the prevention and management of cardiovascular disease in primary care in nine European countries. Eur J Cardiovasc Prev Rehabil 2008; 15: 509–15.
12. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health, Milbank Q 2005; 83: 457–502
13. van Lieshout J, Wensing M, Campbell SM, Grol R. Primary Care Strength Linked to Prevention Programs for Cardiovascular Disease. Am J Manag Care 2009; 15: 255–62.
14. Bulc M, Fras Z, Zaletel-Kragelj L. Twelve-year blood pressure dynamics in adults in Ljubljana area, Slovenia: contribution of WHO Countrywide Integrated Noncommunicable Diseases Intervention Program. Croat Med J 2006; 47: 469–77.
15. Linguistic validation – Methodology. Dosegljivo 20.6.2012 na: <http://www.mapi-institute.com/linguistic-validation/methodology>.

16. Brook RH, Chassin MR, Fink A, Solomon DH, Koseoff J, Park RE. A method for the detailed assessment of the appropriateness of medical technologies. *Int J Technol Assess Health Care* 1986; 2: 53–63.
17. Burge FI, Bower K, Putnam W, Cox JL. Quality indicators for cardiovascular primary care. *Can J Cardiol* 2007; 23: 383–8.
18. Gagliardi AR, Fleshner N, Langer B, Stern H, Brown AD. Development of prostate cancer quality indicators: a modified Delphi approach. *Can J Urol* 2005; 12: 2808–15.
19. Quan ML, Wells BJ, McCready D, Wright FC, Fraser N, Gagliardi AR. Beyond the False Negative Rate: Development of Quality Indicators for Sentinel Lymph Node Biopsy in Breast Cancer. *Ann Surg Oncol* 2009; 17: 579–91.
20. van Hulst LT, Fransen J, den Broeder AA, Grol R, van Riel PL, Hulscher ME. Development of quality indicators for monitoring of the disease course in Rheumatoid Arthritis. *Ann Rheum Dis*. 2009; 68: 1805–10.
21. Kröger E, Tourigny A, Morin D, Côté L, Kergoat MJ, Lebel P, Robichaud L, Imbeault S, Proulx S, Benounissa Z. Selecting process quality indicators for the integrated care of vulnerable older adults affected by cognitive impairment or dementia. *BMC Health Serv Res* 2007; 7: 195.
22. Klancar D, Svab I, Kersnik J. Vizija prihodnosti zdravstvenih domov v Sloveniji. The vision of health centers in Slovenia. *Zdrav Var* 2010; 49: 37–43.
23. Kersnik J, Poplas Susič T, Kolsek M, Svab I. What May Stimulate General Practitioners to Undertake Screening and Brief Intervention for Excess Alcohol Consumption in Slovenia? A Focus Group Study. *J Int Med Res* 2009; 37: 1561–69.
24. Erhardt L, Moller R, Puig JG. Comprehensive cardiovascular risk management—what does it mean in practice? *Vasc Health Risk Manag* 2007; 3: 587–603.
25. Daviglius ML, Lloyd-Jones DM, Pirzada A. Preventing cardiovascular disease in the 21st century: therapeutic and preventive implications of current evidence. *Am J Cardiovasc Drugs*. 2006; 6: 87–101.
26. Emberson J, Whincup P, Morris R, Walker M, Ebrahim S. Evaluating the impact of population and high-risk strategies for the primary prevention of cardiovascular disease. *Eur Heart J* 2004; 25: 484–91.
27. Qin X, Jackson R, Marshall R, Lee L, Cao W, Zhan S, Hu Y. Modelling the potential impact of population-wide and targeted high-risk blood pressure-lowering strategies on cardiovascular disease in China. *Eur J Cardiovasc Prev Rehabil* 2009; 16: 96–101.
28. Graham I, Atar D, Borch-Johnsen K, Boysen G, Burell G, Cifkova R et al. European guidelines on cardiovascular disease prevention in clinical practice: full text. Fourth Joint Task Force of the European Society of Cardiology and other societies on cardiovascular disease prevention in clinical practice (constituted by representatives of nine societies and by invited experts. *Eur J Cardiovasc Prev Rehabil* 2007 Sep; 14 Suppl 2:S1–113.
29. Ajzen I. The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 1991; 50: 179–211.
30. Gatt S, Sammut R. An exploratory study of predictors of self-care behaviour in persons with type 2 diabetes. *Int J Nurs Stud* 2008; 45: 1525–33.
31. Petek D, Rotar Pavlic D, Kersnik J, Svab I. Patients' adherence to treatment of diabetes mellitus. *Zdrav vars* 2010; 49: 11–18.
32. Vodopivec-Jamsek V, Kersnik J, Svab I. Trends in patients' satisfaction with family practice in Slovenia. *Zdrav Var* 2009; 48: 145–51.

IZVIRNI ČLANEK/ORIGINAL ARTICLE

Sodobna obravnava bolnikov z omrzlinami

Modern management of patients with frostbite

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Ključne besede:

zmrzljinska okvara tkiva, trifazna scintigrafija kosti, hiperbarična

Izvleček

Izhodišča: Omrzline so lokalne poškodbe tkiva, ki pomenijo za poškodovanca v primeru amputacij hudo funkcionalno okvaro. Povezane so z bivanjem in aktivnostmi v mrzlem okolju. Vrhunski razvoj alpinizma v Sloveniji se kaže tudi z večjo pojavnostjo z mrazom povezanih poškodb. Mraz je sprožilni dejavnik za procese, ki na lokalni ravni okvarijo mikrocirkulacijo. Omrzline delimo na povrhnje–reverzibilne in globoke omrzline z nepovratnimi okvarami tkiva. Povrhnje omrzline obravnavamo ambulantno, globoke pa hospitalno. Uspešnost obravnave omrzlin je odvisna od pravočasne prve (PP) in nujne medicinske pomoči (NMP), od hitre diagnostike in kombiniranega zdravljenja.

Bolniki in metode: V obdobju med letoma 2000 in 2010 smo obravnavali 27 alpinistov z omrzlinami. Povrhnje omrzline je imelo 16 alpinistov. Pri 11 alpinistih smo ugotovili globoke omrzline. Povprečna starost alpinistov je bila 36,5 let (najmlajši 23 let, najstarejši 55 let). Med njimi sta bili 2 alpinistki (18 %) in devet alpinistov (82 %). Omrzline so utrpeli na nadmorskih višinah med 2000 in 8848 metri. Devet (82 %) jih je utrpelo omrzline prstov nog, dva (18 %) omrzline prstov rok. Devet alpinistov (82 %) je na terenu prejelo PP, devet (82 %) tudi NMP. Pri sedmih alpinistih (64 %) smo po prihodu v bolnišnico naredili trifazno scintigrafijo kosti (TS), s katero smo lahko pravilno ocenili globino poškodb ter napovedali potek bolezni. Sedem alpinistov (64 %) smo zdravili s kombinacijo zdravil (acetilsalicilna

kislina, nizkomolekularni heparin, pentoksifilin, antibiotiki, iloprost). Osem alpinistov (73 %) smo zdravili s hiperbarično oksigenacijo (HBO).

Rezultati: Pri šestih bolnikih (55 %) z globokimi omrzlinami amputacije prstov niso bile potrebne. Kirurško nekrektomijo (popolne amputacije prstov) smo izvedli pri petih bolnikih (45 %). Pri dveh alpinistih smo prst amputirali v metatarzofalangealnem (MCP) sklepu, pri štirih alpinistih pa na bolj distalnih ravneh. Amputacije v distalnih interfalangealnih (DIP) sklepih smo morali izvesti pri obeh alpinistkah.

Zaključek: Za dober končni rezultat zdravljenja omrzlin sta najprej potrebni hitra in pravilna PP in NMP. V zgodnji diagnostiki omrzlin se je najbolj izkazala TS. Za zdravljenje uporabljamo v primeru globokih omrzlin kombinacijo zdravil, čemur dodamo še HBO kot obliko adjuvantnega zdravljenja. S takim pristopom lahko ohranimo vitalnost tkiva in preprečimo napredovanje obsega mrtvine ter hudo funkcionalno okvaro.

Abstract

Background: Frostbite is a local cold injury that may lead to loss of tissue, and result in disability. It is normally a consequence of prolonged exposure of unprotected regions to subzero ambient temperatures, which causes impairment of the microcirculation. In Slovenia, the main risk group for frostbite injury are mountain climbers. Frostbite is classified as either a superficial-reversible injury, or an irreversible deep tissue injury. Superficial frostbite is managed in out-