

ABSTRACT&REFERENCES

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MARKERS OF SYSTEMIC INFLAMMATORY RESPONSE, OXIDATIVE STRESS, AND ENDOTHELIAL DYSFUNCTION IN PATIENTS WITH ARTERIAL HYPERTENSION COMBINED WITH RHEUMATOID ARTHRITIS WITH DIASTOLIC DYSFUNCTION

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Nataliya Ryndina, Postgraduate Student, Department of Therapy of Clinical Pharmacology and Endocrinology, State Institution “Zaporizhia Medical Academy of Post-Graduate Education Ministry of Health of Ukraine”, Vintera blvd., 20, Zaporizhzhia, Ukraine, 69096

E-mail: ryndina30@gmail.com

ORCID: <http://orcid.org/0000-0002-8060-3789>

Introduction. In patients with rheumatoid arthritis (RA) in combination with arterial hypertension (AH) the early development of cardiovascular complications is caused by chronic systemic inflammation, a high level of pro-inflammatory cytokines and lipid peroxidation products (LPO).

Aim of the research. For the purpose of early diagnosis of complications, study of the diastolic function of the left ventricle (LV) in patients with AH in combination with RA and determine the predictor value of LPO, endothelial function (EF), markers of a systemic inflammatory response regarding impaired LV diastolic function, and detection of exudate in the pericardial cavity.

Materials and methods. We examined 96 patients with stage II of AH in combination with RA, 45 patients with stage II arterial hypertension and 31 healthy subjects. Patients underwent echocardiography and we determined the levels of isolated double bonds, Schiff's bases, diene conjugates, diene ketones, malonic aldehyde, vitamins A, E, catalase, asymmetric dimethylarginine (ADMA), interleukin-1 beta (IL 1-B), interleukin-10 (IL 10), a highly sensitive C-reactive protein (hs-CRP) and the level of final serum nitric oxide metabolites.

Conclusins. The highest predictor value with respect to impaired LV diastolic function in AH patients in combination with RA was found in the indicator IL 1-B, AUC 0.882, sensitivity 72.15 %, specificity 100 % with an optimal distribution point >9.67 pg/ml, and relatively for detecting fluid in the pericardial cavity at an ADMA AUC of 0.913 with an optimal distribution point >0.841 μmol/L, sensitivity 94.12 %, specificity 85.53 %

Keywords: rheumatoid arthritis, arterial hypertension, diastolic function of the left ventricle, lipid peroxidation, endothelial dysfunction

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PREDICTING OF THE DEVELOPMENT OF AIDS-INDICATING OPPORTUNISTIC INFECTIONS IN HIV-INFECTED PATIENTS ON ANTIRETROVIRAL THERAPY (RETROSPECTIVE COHORT STUDY)

p. 11-17

Olena Marchenko, Postgraduate Student, Department of Infectious Diseases with Epidemiology, Ukrainian Academy of Medical Dental, Shevchenko str., 23, Poltava, Ukraine, 36011

Email: dr.marchenko.o@gmail.com

ORCID: <http://orcid.org/0000-0003-2300-1287>

HIV remains one of the actual problems of modern medicine. The search for predictors of the development of AIDS-associated opportunistic infections (OI) in patients on antiretroviral therapy (ART) is an urgent scientific and practical task.

The aim of the study was to investigate the predictors of progression and to create a prognostic model for the development of AIDS-related opportunistic infections in HIV-infected patients receiving ART based on the determination of clinical genetic markers.

Materials and methods. A retrospective cohort study of 181 HIV-infected patients was conducted. Logistic regression and ROC analysis were used for statistical data processing.

Results. As a result of the analysis of 27 potential predictors of the development of AIDS-associated OIs in patients on ART, 10 significant predictors were identified in HIV-infected patients, on which the progression of HIV depends, namely: male sex (OR=3.30 [95 % CI 1.21–9.0], $p=0.020$), injecting drugs (OR=2.49

[95 % SO 1.02–6.07], $p=0.044$), incarceration experience (OR=2.29 [95 % CI 1.07–4.91], $p=0.033$), smoking (OR=2.46 [95 % CI 1.14–5.27], $p=0.021$), immunological failure of ART (OR=4, 48 [95 % CI 1.98–10.13], $p=0.000$), low adherence to ART (OR=3.03 [95 % CI 1.13–8.09], $p=0.027$), BMI less 18.5 (OR=6.13 [95 % CI 2.77–13.56], $p=0.000$), haemoglobin level lower than 100 g/L (OR=2.99 [95 % CI 1.41–6.32], $p=0.004$), the 299Gly allele of the TLR4 gene carrying (OR=3.38 [95 % CI 1.41–8, 12], $p=0.006$) and the normal genotype (Gln11Gln, 11Gln/-) of the TLR7 gene (OR=2.90 [95 % CI 1.06–7.95], $p=0.038$).

Conclusions. A prognostic model of 5 predictors (male sex, immunological failure of ART, haemoglobin level lower than 100 g/L, BMI below 18.5 kg/m² and carrier of the allele 299Gly of the TLR4 gene) was created (statistically significant ($\chi^2=59.88$, $g<0.001$) with operational characteristics: sensitivity – 73.0 %, specificity – 79.0 % and had a high predictive efficiency (area under the ROC curve – 0.8580)

Keywords: HIV infection, AIDS-indicating opportunistic infections on antiretroviral therapy, prognosis

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STUDY OF HEMODYNAMICS OF THE UTERINE BODY BY THE METHOD OF THREE-DIMENSIONAL ENERGY DOPPLEROGRAPHY OF PATIENTS WITH LEIOMYOMA IN DIFFERENT AGE PERIODS

p. 18-24

Kirill Yakovenko, Postgraduate Student, Department of Oncogynecology, State Institution «Grigoriev Institute for Med-

ical Radiology of National Academy of Medical Sciences of Ukraine», Pushkinska str., 82, Kharkiv, Ukraine, 61024

E-mail: kiras2001@ukr.net

ORCID: <http://orcid.org/0000-0001-7237-8078>

Tamara Tamm, MD, Professor, Head of Department, Department of Surgery and Proctology, Kharkiv Medical Academy of Postgraduate Education, Amosova str., 58, Kharkiv, Ukraine, 61176

E-mail: tamm_ti@ukr.net

ORCID: <http://orcid.org/0000-0001-6372-2092>

Elena Yakovenko, PhD, Associate Professor, Department of Genetics, Obstetrics, Gynecology and Fetal Medicine, Kharkiv Medical Academy of Postgraduate Education, Amosova str., 58, Kharkiv, Ukraine, 61176

E-mail: yakovenkoelen@ukr.net

ORCID: <http://orcid.org/0000-0001-6604-6077>

To date, there is not enough papers to establish the reproducibility of the calculation of three-dimensional indices of blood flow and their threshold values for the diagnosis of a particular pathology. In this regard, the technique of three-dimensional Doppler sonography requires further study.

The aim of research is studying the hemodynamics of the uterine body of patients with leiomyoma by three-dimensional energy Doppler ultrasonography to determine the possible patterns of changes in the indicators of three-dimensional vascularization indices depending on the phases of the menstrual cycle of women of reproductive age, in perimenopause and at different periods of menopause.

Materials and methods. 326 women between the ages of 18 and 75 were surveyed ($Me = 46.5$). The comparison group consisted of 157 (48.15 %) healthy women, the main group was 169 women (51.84 %) with uterine leiomyoma. All patients in both groups were divided into women of reproductive age, women in peri - and menopause.

In 3D reconstruction of the uterus using the energy mapping function and the VOCAL (Virtual Organ Computer - aided Analysis) option, an objective assessment of the hemodynamics of the uterine body was performed by calculating the vascularization index (VI), which characterizes the percentage of colour voxels in uterus body volume, flow intensity index (FI), showing the median luminance of colour voxels, which depends on the blood flow velocity in a given three-dimensional volume and vascularization-flow index (VFI), which is a product of multiplying the vascularization index and the flow index, divided by 100.

Result. As a result, the main group identified the patterns of dynamics of three-dimensional indices of blood flow, depending on the survey at different ages, similar to the comparison group. In the reproductive period in patients with uterine leiomyoma, regardless of the size and degree of vascularization, the minimum values of the indexes VI, FI and VFI of the body of the uterus were registered in the early proliferative phase, significantly increasing to the middle secretion phase, coinciding with the fertility period of corpus luteum, secretion ($p < 0.05$, CCU). In peri - and menopause, patients with leiomyomas have a statistically

significant dynamics, similar to the nomograms of the comparison group, in reducing the values of the three-dimensional index of perfusion of the VI of the uterus as the period of absence of menstruation increases (CCU, $p=0.0472$), with the highest values being characteristic of the perimenopause period. In the analysis of the dynamics of the FI and VFI indices of the body of the uterus of women with perio- and menopausal leiomyomas, the distribution of the studied indices was not confirmed by statistical significance. However, their pattern quite accurately reproduces the dynamics of a gradual decrease in these three-dimensional indices of blood flow in women with uterine body leiomyoma as the duration of absence of menstruation increases: the highest values were characteristic of the perimenopause period and the lowest - for the menopause period of more than 10 years.

Conclusions. Taking into account the revealed patterns of dynamics of indicators of three-dimensional indices of blood flow depending on the age periods of women with leiomyoma will in the future increase the sensitivity and specificity of the method of three-dimensional energy Doppler sonography in the differential diagnosis of proliferative activity of uterine leiomyoma

Keywords: three-dimensional energy dopplerography, uterine body hemodynamics, uterine leiomyoma

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DETERMINATION OF ZAP70 EXPRESSION AS A PROGNOSTIC MARKER OF CHRONIC LYMPHOCYTIC LEUKEMIA

p. 25-29

Olga Vygovska, Junior Researcher, Haematologist, Department of Hematology with Laboratory Group, State Institution “Institute of Blood Transfusion Medicine and the National Academy of Medical Sciences of Ukraine”, Henerala Chuprynyky str., 45, Lviv, Ukraine, 79044

E-mail: oljavygovska@gmail.com

ORCID: <http://orcid.org/0000-0002-9301-2160>

Nataliya Pelenyo, PhD, Senior Researcher, Haematologist, Department of Hematology with Laboratory Group, State Institution “Institute of Blood Transfusion Medicine and the

National Academy of Medical Sciences of Ukraine”, Henerala Chuprynyky str., 45, Lviv, Ukraine, 79044

E-mail: nataliya.knysh27@gmail.com

ORCID: <http://orcid.org/0000-0002-1850-7083>

Ivan Dzis, PhD, Senior Researcher, Haematologist, Department of Hematology with Laboratory Group, State Institution “Institute of Blood Transfusion Medicine and the National Academy of Medical Sciences of Ukraine”, Henerala Chuprynyky str., 45, Lviv, Ukraine, 79044

E-mail: ivandzis@gmail.com

Tetiana Horodyska, Junior Researcher, Haematologist, Department of Hematology with Laboratory Group, State Institution “Institute of Blood Transfusion Medicine and the National Academy of Medical Sciences of Ukraine”, Henerala Chuprynyky str., 45, Lviv, Ukraine, 79044

E-mail: tetyanazozulya86@gmail.com

Olha Boyko, PhD, Senior Researcher, Department of Hematology, State Institution “Institute of Blood Transfusion Medicine and the National Academy of Medical Sciences of Ukraine”, Henerala Chuprynyky str., 45, Lviv, Ukraine, 79044

E-mail: olyaboyko1411@gmail.com

ORCID: <http://orcid.org/0000-0002-6429-9406>

Larysa Schevchenko, Hematologist, Consultative Polyclinic, State Institution “Institute of Blood Transfusion Medicine and the National Academy of Medical Sciences of Ukraine”, Henerala Chuprynyky str., 45, Lviv, Ukraine, 79044

Chronic lymphocytic leukemia (CLL) is a clinically and biologically heterogeneous disease. Some patients live for decades without any therapy, others die several years after diagnosis, despite the use of different lines of therapy. Significant progress has been achieved in the study of the pathogenesis of CLL, but over the past two decades there has been an intensive search for new biomarkers that may include a prognosis and also decide on therapeutic tactics. In conditions where complex genetic studies are expensive and inaccessible for routine analysis, the determination of ZAP70 remains relevant and sufficiently accessible to predict the course of CLL.

Aim of the research: to evaluate the prognostic significance of the level of expression of ZAP70 and its dependence on the stage of the disease in patients with chronic lymphocytic leukemia.

Materials and methods: under our supervision, there were 68 patients with chronic lymphocytic leukemia at various stages of the disease, among them 24 women aged 40–84 years (median 65 years) and 44 men aged 43–84 years (median 63 years). 51 patients received adequate treatment. Immunophenotypic studies of the lymphoid cell population and ZAP70 were performed using flow cytometry.

Results of the research: indicators of expression of ZAP70 in patients at different stages of the disease did not differ significantly. Overall survival in the group of patients with ZAP70 expression <20 % was significantly higher compared with patients with ZAP70 expression >20 %.

Conclusions: in CLL patients, the level of expression of ZAP70 is stable, does not depend on the stage of the disease, and does not change during the progression of the disease. ZAP70 expression level >20 % of cells is a poor prognostic marker of the course of the disease and indicates a high risk of the disease.

Key words: chronic lymphocytic leukemia, ZAP70, prognostic marker, stage of the disease, treatment, survival

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CONDITION OF THE CENTRAL HEMODYNAMICS IN CHILDREN WITH FALSE TENDONS IN THE LEFT CARDIAC VENTRICLE

p. 30-34

Alexander Kuleshov, PhD, Associate Professor, Department of Propaedeutics of Pediatrics Diseases with Patient Care, National Pirogov Memorial Medical University, Pyrohova str., 56, Vinnytsia, Ukraine, 21018

E-mail: alex81kuleshov@gmail.com

ORCID: <http://orcid.org/0000-0003-0149-3452>

Yana Medrazhevskaya, PhD, Associate Professor, Department of Propaedeutics of Pediatrics Diseases with Patient Care, National Pirogov Memorial Medical University, Pirogova str., 56, Vinnytsia, Ukraine, 21018

E-mail: yana79vrach@ukr.net

ORCID: <http://orcid.org/0000-0002-3736-8779>

Iryna Andrikevych, PhD, Associate Professor, Department of Pediatrics No. 2, National Pirogov Memorial Medical University, Pyrohova str., 56, Vinnytsia, Ukraine, 21018

E-mail: mamchur1980@gmail.com

ORCID: <http://orcid.org/0000-0002-4954-6800>

Halyna Mantak, PhD, Associate Professor, Department of Pediatrics No. 2, National Pirogov Memorial Medical University, Pyrohova str., 56, Vinnytsia, Ukraine, 21018

E-mail: mantakgalina@gmail.com

ORCID: <http://orcid.org/0000-0003-1083-7122>

Hennadii Rudenko, PhD, Associate Professor, Department of Pediatrics No. 2, National Pirogov Memorial Medical University, Pyrohova str., 56, Vinnytsia, Ukraine, 21018

E-mail: grudenko81@gmail.com

ORCID: <http://orcid.org/0000-0003-2799-1900>

Aim: To study the echomorphometric parameters of the heart in children with false tendons (FT) in the left cardiac ventricle to improve diagnostics of its possible complications.

Materials and methods. 64 children with FT, aged from 13 to 17 ($15,3 \pm 0,2$) years old, were examined. Main group of patients consisted of 40 ($62,5 \pm 6,1\%$) boys and 24 ($37 \pm 6,1\%$) girls. The control group included 23 almost healthy children of similar age. The study was carried out in Vinnytsia city hospital “Center of Mother and a Child”. The morphological and functional condition of the heart with hemodynamic parameters was evaluated according to the standard method, recommended by American association of cardiologists in one-dimensional (M-) and two-dimensional (B-) modes, using echocardiography with Doppler effect.

Results. Echomorphometric indicators did not significantly differ from the control data. Indicators of ejection ($69,4 \pm 0,8\%$ vs. $67,8 \pm 1,7\%$ – boys and $70,8 \pm 1\%$ vs. $69 \pm 1,4\%$ – girls) and shortening fraction of the left ventricle ($38,6 \pm 0,8\%$ vs. $41 \pm 2\%$ – boys and $40,8 \pm 0,9\%$ vs. $32,5 \pm 2,8\%$ – girls) were within normal limits. There was a tendency for decreasing of the end-diastolic index (EDI) in both subgroups ($60,3 \pm 2,7\text{ ml/m}^2$ vs. $62,5 \pm 3,9\text{ ml/m}^2$ – boys and $56,6 \pm 3,3\text{ ml/m}^2$ vs. $68,2 \pm 5,3\text{ ml/m}^2$ – girls). Analysis of diastolic function of the left ventricle (LV) in children of the main group revealed increasing of the E/A parameter in boys ($2 \pm 0,1$ vs. $1,8 \pm 0,1$, $p < 0,05$) and in girls ($2,2 \pm 0,1$ vs. $2 \pm 0,1$, $p < 0,05$). The thickness of the left atrium (LA) was not changed. These results reveal the first stages of diastolic dysfunctions of the LV myocardium. The systolic function of the myocardium was normal.

Conclusions. Children with FT have normovolemic and eukinetic types of central hemodynamics. Diastolic function in children with FT has initial signs of impairment. These results will help to prevent complication occurrence and progression of diastolic dysfunction of myocardium in adolescents with false tendons by timely providing medical-preventative methods

Keywords: children, false tendons, central hemodynamics, systolic and diastolic function of the heart

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DETERMINATION OF THE CONDITION OF “NORMOCENOSIS” ON THE RESULTS OF A PROSPECTIVE BACTERIOLOGICAL STUDY OF THE DAIRY GLANDS IN FAMILIES IN THE DYNAMICS OF 7 DAYS OF POST-NATAL PERIOD

p. 35-38

Vasily Chuiko, PhD, Assistant, Department of Obstetrics and Gynecology, State Institution «Dnipropetrovsk Medical Academy of the Ministry of Health of Ukraine», V. Vernadskoho str., 9, Dnipro, Ukraine, 49044

E-mail: ksuchuiko@gmail.com

ORCID: <http://orcid.org/0000-0003-3945-1119>

Dmytro Khaskhachykh, PhD, Associate Professor, Department of Obstetrics and Gynecology, State Institution «Dnipropetrovsk Medical Academy of the Ministry of Health of Ukraine», V. Vernadskoho str., 9, Dnipro, Ukraine, 49044

E-mail: docdhas@gmail.com

ORCID: <http://orcid.org/0000-0001-5097-6667>

Aim. To study the dynamic changes in the qualitative and quantitative state of microbial flora in different parts of the skin of the mammary glands during childbirth during the 7 days of the postpartum period, to identify the representatives of the microflora that form the concept of “normocenosis” of the mammary gland, as a factor in preventing purulent-septic complications in the postpartum period.

Materials and methods. We examined 54 pedigrees for the first, third and fifth and seventh days of the postnatal period with physiological births, with the absence of extragenital pathology, acute and chronic infectious diseases that were exclusively breast-fed. For taking the material we used a method of Rosemary cleansing by Williamson and Klygman from two parts of the mammary gland: areola mammae and papilla mammae. Identification of bacterial flora was carried out by a colorimetric system for the study of “Liofilchem” (Italy). The cultures of the aero-cocci were also identified by additional criteria: growth in the selectively-indicative medium, growth and biochemical activity on the media with selenium and tellurium salts, lactate oxidase, superoxide dismutase activity.

Results. In total, 13 strains of microorganisms (*Staphylococcus epidermidis*, *Staphylococcus saprofiticus*, *Staphylococcus aureus*,

Micrococcus sp and *Aerococcus viridans*, enterobacterial – *Enterobacter sp.*, *E. coli*, *Klebsiella pneumonia*, *Bacillus sp.*, and crested mushrooms – *Candida sp.*) were isolated. At 1–2 days after childbirth there was a sowing town with a higher incidence of enterobacterial flora and *Staphylococcus aureus*. Out of the different parts of the mammary gland, *Staphylococcus aureus* was sown in 23.8 % of cases, *Enterobacter sp.*– 9.5 %, *E. coli*– 19 %, *Klebsiella pneumonia* – 14.3 %. In the early days of the postpartum period, the sowing of *Staphylococcus epidermidis* from different parts of the mammary gland was markedly higher. In the dynamics of the postpartum period of 3–4 days, there was an increase in the excretion of coccal flora from the mammary gland: *Staphylococcus epidermidis*, *Staphylococcus saprofiticus*, *Micrococcus sp.* At 5–7 days postnatal period, sowing from different parts of the mammary glands *Staphylococcus epidermidis*, *Staphylococcus saprofiticus* and *Aerococcus viridans* was more likely.

Conclusions. The microbiological state of the mammary glands is motile without infections, and is made up of coca flora, including *Aerococcus viridans*. Cocoa flora, except *Staphylococcus aureus*, is a flora of normobiose, which provides a healthy condition of the skin of the mammary glands in women after childbirth. Over time, in the postpartum period, there is an increase in colonization of the mammary glands by saprophytic and antagonistically active coccal microflora, mainly in the areas of rapilla mammae. The aforementioned tendency occurs in parallel with the decrease of colonization of different parts of the mammary gland *Staphylococcus aureus* and Gram-negative enterobacteria. In the dynamics of the postpartum period, the sowing of aerobic spore-forming bacilli, especially with rapilla mammae, can be seen in the infantile period, which can be interpreted as a com-pencil mechanism for the normalization of microbocenosis in this part of the mammary gland

Keywords: mammary gland, bacteriological examination, microbiocenosis, normocenosis, dynamics, postpartum period, lactation

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APPLICATION OF THE CONCEPT OF THE HOSPITAL SAFETY INDEX TAKING INTO ACCOUNT CLINICAL RISKS IN ASSESSING THE LEVEL OF HOSPITAL SAFETY IN UKRAINE

p. 39-44

Hanna Shevchuk, Deputy Director, “HEART LIFE HOSPITAL” LLC, Amosova str., 6, Kyiv, Ukraine, 03038, Fund co-founder, CF “Heart&Soul”, Bohomoltsia str., 7/14, Kyiv, Ukraine, 01024, State Institution “Ukrainian Scientific and Practical Center of Emergency Medicine and Disaster Medicine of Ministry of Health of Ukraine”, Bratyslavka str., 3, Kyiv, Ukraine, 02660
E-mail: anna.shvk@gmail.com

ORCID: <http://orcid.org/0000-0001-6720-6757>

Sergiy Guriev, MD, Professor, Deputy Director, Laureate of the State Prize in Science and Technology, Honored Doctor of Ukraine, State Institution “Ukrainian Scientific and Practical Center of Emergency Medicine and Disaster Medicine of Ministry of Health of Ukraine”, Bratyslavka str., 3, Kyiv, Ukraine, 02660
E-mail: gurevsergej1959@gmail.com

ORCID: <http://orcid.org/0000-0003-0191-945X>

The aim of the study. Provision the increasing hospitals safety in Ukraine by identifying and assessing the risk creating factors, organizational, structural, functional readiness of institutions ability to function effectively in providing medical assistance to victims in emergency situations (ES).

Materials and methods of research. The research is based on the analysis of official WHO expert reports, information from special and scientific sources, namely: *International Disaster Database (EM-DAT), Center for Natural Disaster Epidemiology Studies at the Catholic University of Leuven (Belgium), safety assessment reports Kiev City Clinical Hospital Emergency Medical Services (KCCHEMS) in 2012 and 2017.*

The research methods were: formal logic methods, bibliographic, experts review and evaluation, risk management and full-scale modelling. For the first time the adapted classification of HSI has been applied, taking into account the values of clinical risk, which is based on a methodology for identifying risks as an element of crisis management.

Research results. *The overall safety of KCCHEMS, assessed by the existing classification of HSI in both 2012 and 2017, is at a high level (A), meaning that further activities – work on the plan, the hospital will function during the ES. When applying our proposed clinical risk classification, we have significantly different results: in 2012, a C (critical risk) score, meaning that the hospital needs immediate action to increase its capacity to respond to emergencies, there is a high likelihood of termination functioning of the hospital under such conditions; in 2017 - at level B (significant risk): correction of the proposed measures is required, there is a likelihood of termination of hospital operation in the event of ES. Thus, the incomplete result of improving the safety of the KCCHEMS from the implementation of the recommended measures in 2012, which was established during the re-evaluation of this hospital in 2017, may be due not only to the incomplete implementation of these measures, but also to their speed of implementation and depth, which also proves the need for a correction of the 2017 Hospital Action Plan to improve hospital safety.*

Conclusions. *Methodology of determining the Hospitality Safety Index, recommended by WHO, is appropriate to apply in Ukraine, increasing its effectiveness is possible with the application of the adapted classification the HSI levels, taking into account clinical risks*

Keywords: *Hospital Safety Index, levels of safety, emergencies, clinical risk, crisis management*

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