

Association of Cardiovascular Surgeons of Ukraine  
National M.M. Amosov Institute of Cardiovascular Surgery National Academy  
of Medical Sciences of Ukraine  
Shupyk National Medical Academy of Postgraduate Education



# HERALD

## CARDIOVASCULAR SURGERY

№ 3 (edition 32) 2018

### Scientific edition

#### The founders:

National M.M. Amosov Institute of Cardiovascular  
Surgery National Academy of Medical Sciences of  
Ukraine

Association of Cardiovascular Surgeons of  
Ukraine

#### Chief editor:

*V.V. Lazoryshynetz*, member of National Academy  
of Medical Sciences, prof.

#### Deputies of the chief editor:

*V.B. Maksimenko*, PhD, prof.

*A.V. Rudenko*, member of National Academy of  
Medical Sciences, Corresponding member of  
National Academy of Medical Sciences, prof.

#### Editorial Board:

Ye.V. Aksenov.  
M.Yu. Atamaniuk  
O.A. Beregovyy  
N.M. Verych  
R.M. Vitovskyy  
V.Yu. Gladkych  
V.K. Gryn  
V.B. Demianchuk  
L.S. Dzachoeva  
S.O. Dykucha  
M.M. Dyrda  
O.M. Dovgan  
I.M. Yemetz  
V.A. Zhovnir  
V.P. Zakharova  
Yu.I. Karpenko  
V.I. Kravchenko  
O.A. Krykunov  
L.V. Kulyk  
A.O. Lozovyy  
P.M. Lukach

S.V. Maksimenko  
V.G. Mishalov  
Ye.A. Nastenکو  
O.S. Nikonenko  
Yu.V. Panichkin  
I.V. Polivenok  
V.V. Popov  
O.V. Rybakova  
K.V. Rudenko  
N.M. Rudenko  
O.V. Rudenko  
L.L. Sitar  
S.O. Siromakha  
M. Soskida  
O.S. Stychinskyy  
A.V. Sudus  
L.D. Tarasova  
B.M. Todurov  
O.M. Trembovetzka  
Ya.P. Truba  
S.M. Furkalo

**Cardiovascular Surgery Herald** № 3 edition 32). – K., 2018. – 112.

The registration certificate KB № 20730-10530 ПП was given in 08.05.2014 by The State registration service of Ukraine.

Edited under name “The yearbook of scientific works of Ukrainian Society of Cardiovascular Surgery” since 2014, certified by the Highest Attestation Commission (approved by the decision of the Presidium of the HAC of Ukraine of April 14, 2010 No. 1-05 / 3 «On adding of periodical scientific professional editions to the new list of scientific professional editions of Ukraine»).

Recommended by the Scientific Board of National M.M. Amosov Institute of Cardiovascular Surgery National Academy of Medical Science of Ukraine. Protocol No 11 from 14.09.18.

The Journal was included to the list of Ukrainian Scientific professional editions in which the results of doctoral thesis for PhD achievement can be published. (approved by the order of The Ministry Of Education and Sciences of Ukraine from 06.03.2015 № 261)

All materials are published by the language of origin.

All submitted articles are undergoing internal and external peer review.

The journal is free of charge.

Electronic version is presented at [www.cvs-herald.org.ua](http://www.cvs-herald.org.ua), as well at the web-site of the Vernadsky National Library in department of «Scientific periodical press of Ukraine».

Prepress preparation of edition: N.G. Gnoyevaya.

On-line: S. Rysin

Address of the editorial office: 03038, Amosov, 6, Kiev, Ukraine

Signed for print 17.09.2018 p.

Offset paper. Offset print. Size 70x100/16. Cond. Print sheets. 20,4.

Circulation 1000 samples.

Order № 9374.

Editor: Association of Cardiovascular Surgeons of Ukraine

Printer «VD “AGAT PRINT“»

Cherniakhovsky street, 16/30, of.3, 03190, Kyiv

The certificate of subject of publishing № 97211