

## Autorstvo: od zasluge do odgovornosti. Razmišljanja iz Mreže urednika

### Authorship: From Credit to Accountability. Reflections From the Editors' Network

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**SAŽETAK:** Mreža urednika Europskoga kardiološkog društva nudi dinamičan forum za uredničke rasprave te podržava preporuke Međunarodnog odbora urednika medicinskih časopisa (ICMJE; eng. *International Committee of Medical Journal Editors*) za poboljšavanje znanstvene kvalitete biomedicinskih časopisa. Autorstvo donosi priznanja i važne akademske nagrade. ICMJE je nedavno naglasio da autorstvo zahtijeva savjesnost i odgovornost. Ta pitanja sada pokriva novi (četvrti) kriterij autorstva. Autori trebaju prihvatiti odgovornost i jamčiti da će pitanja o ispravnosti i čestitosti cjelokupnog rada biti primjereno riješena i na njih odgovoreno. Ovaj pregledni rad raspravlja o implikacijama ove promjene paradigme u uvjetima autorstva sa svrhom povećanja svijesti o dobrim znanstvenim i uredničkim praksama.

**SUMMARY:** The Editors' Network of the European Society of Cardiology provides a dynamic forum for editorial discussions and endorses the recommendations of the International Committee of Medical Journal Editors (ICMJE) to improve the scientific quality of biomedical journals. Authorship confers credit and important academic rewards. Recently, however, the ICMJE emphasized that authorship also requires responsibility and accountability. These issues are now covered by the new (fourth) criterion for authorship. Authors should agree to be accountable and ensure that questions regarding the accuracy and integrity of the entire work will be appropriately addressed. This review discusses the implications of this paradigm shift on authorship requirements with the aim of increasing awareness on good scientific and editorial practices.

**KLJUČNE RIJEČI:** urednička etika, znanstveni proces, autorstvo, odgovornost, znanstveni časopisi, časopisi.

**KEYWORDS:** editorial ethics, scientific process, authorship, accountability, scientific journals, journals.

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Mreža urednika Europskoga kardiološkog društva (ESC; engl. *European Society of Cardiology*) predana je promicanju uvođenja visokih uredničkih standarda među časopisima nacionalnih i pridruženih kardiovaskularnih društava Europskoga kardiološkog društva (NSCJ; engl. *National Societies Cardiovascular Journals*)<sup>1-6</sup>. NSCJ imaju važnu ulogu u diseminaciji izvornih znanstvenih istraživanja u cijelome svijetu, ali i u edukaciji i ujednačavanju kliničke prakse<sup>2-6</sup>. Promicanje uredničke izvrsnosti od ključne je važnosti za povećanje znanstvenog prestiža NSCJ-a<sup>1-6</sup>. U tome smislu Mreža urednika podržava preporuke Međunarodnog odbora urednika medicinskih časopisa (ICMJE; engl. *International Committee of Medical Journal Editors*)<sup>1</sup>. ICMJE neprestano ažurira dokument o ujednačenim uvjetima (prethodno poznat kao *Vancouver guidelines*) za rukopise poslane u biomedicinske časopise. Ti uvjeti uključuju preporuke za provođenje, izvještavanje, uređivanje i objavljivanje znanstvenih radova. Treba primijetiti da pritom nezgodna etička pitanja dobivaju sve veći uredničku važnost<sup>1</sup>.

Biomedicinska istraživanja ovise o povjerenju i transparentnosti u znanstvenom postupku, pri čemu su autori uvijek u središnjoj ulozi<sup>1,7-9</sup>. Ovaj će pregledni rad raspravljati o novim preporukama o autorstvu koje je izdao ICMJE<sup>1,10,11</sup> sa svrhom davanja dodatnih uredničkih uvida koji će se postupno uvoditi u NSCJ.

## Novi uvjeti autorstva

U važnoj izmjeni u kolovozu 2013. smjernice ICMJE-a su dodale četvrti kriterij autorstva kojim se ističe odgovornost svakog autora da stoji iza čestitosti cjelokupnog rada<sup>1,10,11</sup>. Dotad su ICMJE uvjeti za autorstvo uključivali: **1**) značajan doprinos idejnom začetku ili dizajnu rada ili prikupljanje, analizu ili interpretaciju podataka za rad; te također **2**) pisanje ili kritičko uređivanje rada vezano za važne intelektualne sadržaje; kao i **3**) završno odobrenje verzije koja će biti tiskana. Ažurirani ICMJE uvjeti navode novi (četvrti) kriterij koji također treba zadovoljiti<sup>1</sup>. Taj novi kriterij za autorstvo uključuje pristanak na odgovornost za sve aspekte rada i osiguravanje da se sva pitanja vezana za točnost ili čestitost bilo kojeg dijela rada primjereno istraže i razriješe<sup>1</sup>. Bit tog, novog uvjeta jest u tome što pomaže uravnotežiti zasluge s odgovornost<sup>10</sup>. Tom promjenom ICMJE ističe da je autorstvo također obvezivanje na odgovornost. Sada svaki pojedini autor mora zadovoljiti sva četiri uvjeta<sup>1</sup>. Dodavanje četvrtoga kriterija bilo je motivirano situacijama u kojima neki autori nisu mogli ili su odbili odgovoriti na upite o mogućoj znanstvenoj nečestitosti glede određenih aspekata istraživanja ili su pak odbijali prihvatiti

The Editors' Network of the European Society of Cardiology (ESC) is committed to foster implementation of high-quality editorial standards among ESC National Societies Cardiovascular Journals (NSCJ)<sup>1-6</sup>. NSCJ play a major role in disseminating original scientific research worldwide, but also in education and harmonization of clinical practice<sup>2-6</sup>. Promoting editorial excellence is paramount to increasing the scientific prestige of NSCJ<sup>1-6</sup>. In this regard, the Editors' Network endorses the recommendations of the International Committee of Medical Journal Editors (ICMJE)<sup>1</sup>. The ICMJE continuously updates its document on uniform requirements (previously known as the Vancouver guidelines) for manuscripts submitted to biomedical journals. These include recommendations for the conduct, reporting, editing and publication of scholarly work. Notably, vexing ethical issues are gaining increasing editorial relevance<sup>1</sup>.

Biomedical research relies on trust and transparency of the scientific process where authors remain centre stage<sup>1,7-9</sup>. This review will discuss the new recommendations on authorship issued by the ICMJE<sup>1,10,11</sup> with the aim of providing further editorial insight to be progressively implemented by the NSCJ.

## New Authorship Requirements

In August 2013 an important revision of the ICMJE recommendations included a fourth criterion for authorship to emphasize each author's responsibility to stand by the integrity of the entire work<sup>1,10,11</sup>. Classically, the ICMJE requirements for authorship included: **1**) Substantial contributions to the conception or design of the work or the acquisition, analysis, or interpretation of data for the work; and, **2**) Drafting the work or revising it critically for important intellectual content; and, **3**) Final approval of the version to be published. In the updated ICMJE requirements a new (fourth) criterion also should be met<sup>1</sup>. This novel requirement for authorship includes agreement to be accountable for all aspects of the work and ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved<sup>1</sup>. The essence of this new requirement is that it helps to balance credit with responsibility<sup>10</sup>. With this revision the ICMJE emphasizes that authorship is a serious commitment to accountability. Now all 4 conditions must be met by each individual author<sup>1</sup>. The addition of a fourth criterion was motivated by situations in which some authors were unable to, or refused to, respond to inquiries on potential scientific misconduct regarding certain aspects of the study or by denying any responsibility<sup>1,10-14</sup>. Editors occasionally face reluctant authors who try to distance themselves from a conflictive publication

ikakvu odgovornost<sup>1,10-14</sup>. Urednici se povremeno suočavaju s nejasnim odgovorima autora koji se pokušavaju distancirati od prijeporne publikacije i prebaciti krivnju nekamo drugamo<sup>11</sup>. Glavna nova ideja jest da se istakne odgovornost svakog autora da stoji iza integriteta cjelokupnog rada. Svaki autor znanstvenoga članka treba razumjeti puni raspon tog rada, znati koji su koautori odgovorni za pojedine doprinose te imati pouzdanja u sposobnosti i čestitost svojih koautora<sup>1,10-14</sup>. Ako se pojave pitanja o bilo kojem aspektu istraživanja, na svim je autorima da istraže i osiguraju rješenje problema, koje tada treba predočiti uredniku s kojim su kontaktirali<sup>1,10-14</sup>.

Kako bismo što bolje procijenili važnost tog, četvrtog kriterija, treba promotriti točno značenje savjesnosti i odgovornosti. *Savjesnost* se definira kao moralna odgovornost u vezi s osiguravanjem činjenice da je određeni zadatak primjereno obavljen<sup>15,16</sup>. Stoga se savjesnost odnosi na zadatke koji su pojedincu bili dodijeljeni<sup>15,16</sup>. Nasuprot tomu, *odgovornost* označuje dužnost da se dani postupak opravda pred drugima i odgovori na rezultate toga djelovanja<sup>15,16</sup>. Odgovornost se dakle prije svega odnosi na svjesno preuzimanje uloge onoga koga će se kriviti ako stvari pođu po zlu<sup>15,16</sup>. Ipak, savjesnost i odgovornost često se uporabljaju kao jednoznačnice<sup>15,16</sup>.

Tvrditi da je svaki pojedini autor moralno odgovoran za svaki slučaj u kojemu je otkrivena znanstvena prijevara nerazumno je s obzirom na složenost današnjega znanstvenog istraživanja. Umjesto toga, četvrti kriterij upućuje na to da svaki autor mora surađivati s osobama koje istražuju činjenice radi razjašnjavanja problema vezani za znanstvenu nečestitost ako se članak dovede u pitanje<sup>1,16</sup>.

## Istraživačke zasluge

Prihvaćanje i objavljivanje znanstvenoga članka uvijek je razlog za veliko slavlje među njegovim autorima<sup>11</sup>. Autorstvo donosi prestiž, zasluge i znanstvenu prepoznatljivost. Ono ima važne akademske, društvene i financijske implikacije<sup>1,11</sup>. Trenutačno je autorstvo jedan od glavnih kriterija napredovanja u akademskoj karijeri. Znanstvenikova se povijest publikacija pažljivo pregledava pri zapošljavanju i izboru za znanstveno-nastavna zvanja i pozicije na sveučilištu. Ukupan broj publikacija i njihovih citata i dalje su valuta koja je u širokoj primjeni pri procjeni akademske vrijednosti pojedinih istraživača. U tom je smislu svrha preporuka koje izdaje ICMJE osigurati da svakomu tko je dao „značajan“ intelektualni doprinos članku dade priznanje kao autoru<sup>1</sup>.

## Potencijalni problemi koji proizlaze iz objave istraživanja

Objavljivanje znanstvenoga članka obično označuje kraj rada na istraživačkom projektu i otvara razdoblje rasprave i kritike ili prihvaćanja u znanstvenoj zajednici<sup>11</sup>. Pokatkad zdrava znanstvena rasprava pokrenuta takvim objavom dovodi od razotkrivanja ozbiljnih problema. U malobrojnim se slučajevima u pitanje može dovesti čak i integritet istraživanja ili publiciranoga članka<sup>11</sup>. U takvim situacijama autori katkad pokušaju izbjeći neugodu koja proizlazi iz publikacije znanstveno nepotpunog istraživanja. To objašnjava zašto je novi, četvrti kriterij toliko primjeren za probleme vezane za znanstvenu nečestitost. Ako se potvrdi postojanje neregularnosti, urednici to moraju javiti akademskoj instituciji autora te, u

and shift responsibilities elsewhere<sup>11</sup>. The main novel idea is to emphasize the responsibility of each author to stand for the integrity of the entire work. Each author of a scientific paper needs to understand the full scope of the work, know which co-authors are responsible for specific contributions and have confidence in co-authors' ability and integrity<sup>1,10-14</sup>. Should questions arise regarding any aspect of a study, the onus is on all authors to investigate and ensure resolution of the issue, which is then to be presented to the corresponding Editor<sup>1,10-14</sup>.

To better appraise this 4<sup>th</sup> criterion the precise meaning of responsibility and accountability should be revisited. *Responsibility* is defined as the moral obligation to ensure that a particular task is adequately performed<sup>15,16</sup>. Accordingly, responsibility relates to tasks that have been assigned to an individual<sup>15,16</sup>. By contrast, *accountability* denotes the duty to justify a given action to others and to respond for the results of that action<sup>15,16</sup>. Therefore, accountability mainly relates to the awareness and assumption of the role of being the one to blame if things go wrong<sup>15,16</sup>. Nevertheless, oftentimes responsibility is used interchangeably with accountability<sup>15,16</sup>.

Claiming that each individual author is held morally responsible in every case that misconduct is detected would appear unreasonable considering the complexity of current research. Rather, the fourth criterion suggests that each author must cooperate to clarify misconduct related issues if the paper is called into question<sup>1,16</sup>.

## Research Credits

Acceptance and publication of a scientific paper is always a cause of major celebration among authors<sup>11</sup>. Authorship provides prestige, credit and scientific recognition. Authorship has important academic, social and financial implications<sup>1,11</sup>. Currently, authorship remains a major criterion for promotion and career advancement among scholars. Publication records are revised in depth for university tenures and job appointments. Total number of publications and citations remain currencies widely used to ascertain the academic value of individual investigators. In this regard, the ICMJE recommendations on authorship are intended to ensure that anybody who has made a "substantive" intellectual contribution to a paper is given credit as an author<sup>1</sup>.

## Potential Problems Derived From Publication of Research

Publication of a scientific paper usually marks the end of a research project and opens a time for discussion and criticism or acceptance by the scientific community<sup>11</sup>. Occasionally, the healthy scientific debate fuelled by the publication of the paper raises serious concerns. In rare cases, even the integrity of the research or published paper is brought into question<sup>11</sup>. In these situations, authors may try to escape from the embarrassment of publishing a scientifically flawed study. This explains why the new fourth criterion is so pertinent to address issues related to scientific misconduct. Should irregularities be confirmed, editors must report to the authors' academic institution and, eventually, to the readers, with expressions of concern, or, in the worst-case scenario, with a retraction of the published paper<sup>1</sup>.

konačnici, i čitateljima, izjavom o zabrinutosti ili, u najgorem slučaju, povlačenjem publiciranoga članka<sup>1</sup>.

## Razmatranje klasičnih kriterija autorstva

Svaki istraživač naveden kao autor trebao je dati „značajan“ intelektualni doprinos i biti spreman preuzeti javnu odgovornost za rad, jamčiti njegovu ispravnost i moći upozoriti na svoj doprinos studiji<sup>1</sup>. No teškoća s tom definicijom autorstva nastaje zbog subjektivnosti u određivanju onoga što je „značajan“ doprinos istraživanju ili rukopisu. Dapače, točna granica sudjelovanja koja je potrebna kako bi se kvalificiralo za autorstvo i dalje nije jasna. S obzirom na to da pravi problem leži u definiranju onoga što je „značajan“ doprinos, predloženi su načini kvantifikacije stvarnog posla koji su obavili individualni autori. U tome smislu postoji prijedlog<sup>17</sup> da se „značajan“ doprinos publikaciji sastoji od važnoga intelektualnog doprinosa bez kojeg dio rada ili čak cijeli rad ne bi mogao biti dovršen ili bez kojeg rukopis ne bi mogao biti napisan<sup>17</sup>.

Prema ICMJE-u<sup>1</sup>, osobe koje *nisu* kvalificirane za autorstvo uključuju one koje su „samo“ pridonijele nešto od sljedećeg: **1)** prikupljanje pacijenata za kliničko ispitivanje, **2)** općenito prikupljanje podataka, **3)** prikupljanje uzoraka za istraživanje, **4)** prikupljanje financijskih sredstava, **5)** općenito nadziranje znanstvene skupine koje provode voditelji odjela. Osobe koje su „značajno“ pridonijele članku, ali koje ne zadovoljavaju četiri kriterija autorstva trebale bi, uz njihov pristanak, biti navedene u odjeljku sa zahvalama.

## Publiciranje pojedinačnih doprinosa

Smjernice ICMJE-a za autorstvu namjerno su široke i otvorene kako bi bile primjenjive na puni raspon raznolikosti u znanstvenom istraživanju i ostavile prostor za osobitosti uredničke prakse u pojedinačnim časopisima<sup>1</sup>. Ipak, bilo je mnogo zahtjeva za strukturiranim okvirom autorstva kako bi se poboljšale dosljednost i jasnoća u uvjetima za autorstvo. Izbor najboljeg načina da se prikaže odnos između autorstva i intelektualnog sudjelovanja u istraživanju i dalje je predmet rasprave. Trenutačno, ICMJE ne traži da svi autori izjave koji ih točno doprinosi kvalificiraju da budu autori<sup>1</sup>. No, ako autorstvo ne odražava količinu intelektualnog doprinosa pojedinih istraživača radu, ono će i dalje biti nejasan pokazatelj glede razmjera istraživačkih zasluga. Iskrenost i otvorenost u pripisivanju autorstva osiguravaju poštenje u dodjeli zasluga. Mnogi urednici tvrde da kriterije autorstva treba izmijeniti tako da zahtijevaju izjavu o doprinosu svih autora kako bi u potpunosti zahvaćali zaslužena priznanja i autorstvo. U skladu s tim, kako bi se promovirale transparentnost i jednoznačnost u pojedinačnim doprinosima, urednike se sada izrazito potiče da razviju i uvedu pravila doprinosa članku u svojim časopisima<sup>1</sup>. Ipak, pitanje o kvaliteti i količini doprinosa koje bi kvalificirale pojedinca za autorstvo i dalje je nerazriješeno<sup>1</sup>. Zanimljiv prijedlog u tom smislu jest da se uvedu značke za autorski doprinos. Takve su značke zamišljene tako da obuhvaćaju sve različite vrste suradnje u dovršenom rukopisu koje bi inače bilo teško razlučiti uobičajenim potvrdama. Popisivanje doprinosa omogućilo bi točniju i detaljniju procjenu zasluga. Ta bi strategija također omogućila dodatan uvid u znanstvenu produktivnost sukladno doprinosu<sup>18</sup>. Idealno bi bilo kad bi svaki ICMJE kriterij imao barem jednu značku. Svaka bi značka uključivala popis autora koji su dali doprinos

## Considerations on Classical Authorship Criteria

Any researcher listed as an author should have made a “substantive” intellectual contribution to the study and be prepared to take public responsibility for the work, ensure its accuracy, and be able to identify his/her contribution to the study<sup>1</sup>. However, a problem with the definition of authorship involves the subjectivity in what constitutes a ‘substantial’ contribution to the research or the manuscript. In fact, the precise threshold of involvement required to qualify for authorship remains unclear. As the real problem lies in defining what represents a “substantial” contribution, means to quantify the actual work performed by individual authors have been proposed. In this regard it has been suggested<sup>17</sup> that substantial contribution to a publication consists of an important intellectual contribution without which, a part of the work or even the entire work, could not have been completed or the manuscript could not have been written<sup>17</sup>.

According to the ICMJE<sup>1</sup> persons who **do not** qualify as an author include those who “only” provide: **1)** recruitment of patients to a trial, **2)** general data collection, **3)** obtaining samples for a study, **4)** acquisition of funding, **5)** general supervision of the research group by the department chairperson. Conversely, persons who significantly contributed to the paper but do not meet the 4 criteria for authorship should be listed in the acknowledgement section after obtaining their consent.

## Publishing Individual Contributions

The ICMJE authorship guidance is intentionally broad and open to accommodate the diversity of scientific research and allow space for the specific editorial policies of individual journals<sup>1</sup>. However, many have requested a more structured authorship framework to improve consistency and clarity in authorship requirements. The best means to present the relationship between authorship and intellectual involvement in research remains an issue of ongoing debate. Currently, the ICMJE does not mandate that all authors communicate exactly what “contributions” qualify them to be an author<sup>1</sup>. However, unless authorship reflects to what extent individual researchers have been intellectually involved in the work it will remain misleading regarding relative research merits. Honesty and openness in attribution ensures fairness in credit. Many editors argue that authorship criteria should be revised to request a contribution declaration, in order to fully capture deserving authorship and credit. Accordingly, to promote transparency and remove ambiguity on specific contributions, editors are now strongly encouraged to develop and implement contributorship policies in their journals<sup>1</sup>. As discussed, however, the question regarding the quality and quantity of contribution required to qualify an individual for authorship remain unresolved<sup>1</sup>. An interesting proposal in this regard suggests including contributorship badges. These badges are designed to fully capture the different types of collaboration in the submitted work that, otherwise, will be difficult to recognise with traditional credentials. Contributors listing allows a more accurate and granular assessment of credit. In addition, this strategy provides additional insight on contributor-adjusted productivity<sup>18</sup>. Ideally, each ICMJE criterion should have at least one badge. Each badge includes a list of authors making a contribution to that specific role<sup>18-20</sup>.



toj specifičnoj ulozi<sup>18-20</sup>. Neki su pak predložili dodjeljivanje brojčane vrijednosti kako bi se bolje vrednovala razina doprinosa između autora te, s vremenom, stvorio indeks specifičnog doprinosa za svakog autora u svrhu procjenjivanja istraživačke produktivnosti<sup>18-20</sup>.

Detaljno prikazivanje doprinosa obavještava čitatelja o prirodi rada svakog autora te izbjegava razvodnjavanje znanstvenih priznanja time što precizno dodjeljuje zasluge. U člancima s više autora osobito je važno da se izričito naveđu doprinosi pojedinih autora. Svako istraživanje zahtijeva znatnu količinu rada te, u prosjeku, što je broj autora veći, to je udio uložene napore svakoga pojedinog autora manji. Druge vrste doprinosa koje ne zadovoljavaju uvjete autorstva mogu se navesti u odjeljku sa zahvalama ili dodavanjem u popis suradnika. To je važno pitanje s obzirom na neprestano rastući broj autora u novijim publikacijama, što označuje promjenu paradigme kao posljedicu timskog rada u istraživanjima<sup>18-24</sup>. Suradnici označeni kao autori trebali bi preuzeti punu odgovornost za ono što je objavljeno<sup>1,18</sup>. U tom se smislu zasluge normalizirane na doprinos mogu dalje uravnotežiti s pomoću drugih čimbenika kako bi se izveli učinkovitiji parametri za mjerenje istraživačke produktivnosti. Svaki autor trenutačno dobiva točno istu količinu zasluga neovisno o doprinosu koji je dao. Stoga je predloženo stvaranje „autorske matrice“ (uključujući sudjelovanje u idejama, radu, pisanju i nadzoru) kako bi se „kvantificirali“ pojedinačni doprinosi i uloge u člancima s više autora<sup>18-24</sup>.

## Poredak u popisu autora i hijerarhija

Ne postoje prikladne smjernice za poredak autora u popisu autora u članku. Dapače, praksa za razjašnjavanje razmjera zasluge različitih koautora u rukopisu znatno se razlikuje među različitim znanstvenim disciplinama<sup>18-22</sup>. Za biomedicinske je časopise prvi autor najvažnija pozicija, a nakon toga zadnji autor te zatim drugi autor. Mjesto prvog autora dodjeljuje se osobi koja je dala najveći doprinos (uložila najviše vremena u projekt), što je obično autor koji je napisao prvu verziju rukopisa. Zatim mjesto u nizu svakoga sljedećeg autora označuje razmjerno manje doprinose<sup>18</sup>. Slijedeći takav pristup u kojemu poredak određuje zasluge, zadnji bi autor dobivao najmanje. Stoga bi se zadnje mjesto moglo smatrati prilično velikodušnom opcijom. No zadnje se mjesto u biomedicinskom istraživanju trenutačno smatra vrlo važnim, jer se često veže uz autora za dopisivanje ili jamca za cijeli rad<sup>18</sup>. Ipak, mnogi tvrde da bi se stariji znanstvenici trebali češće dohvatiti pera (tastature) jer je pisanje i dalje ključno za napredak znanja<sup>19</sup>. Stariji su autori odgovorni za potpomaganje akademske karijere znanstvenika nove generacije.

Mnogi časopisi dopuštaju autorima da izjave da je dvoje ili više pojedinačnih autora dalo „jednak doprinos“ istraživanju<sup>25-28</sup>. U posljednjem je desetljeću postotak članaka s izjavama o jednakom doprinosu dramatično narastao i u temeljnim i u medicinskim znanstvenim časopisima<sup>25</sup>. Valja primijetiti da bi se odrednica „zajednički prvi autori“ trebala temeljiti na kvaliteti i količini rada<sup>25-28</sup>. Stoga bi se izjava o „jednakom doprinosu“ trebala čuvati samo za situacije u kojima doista odražava slične znanstvene doprinose, a ne njima se koristiti za napuhivanje životopisa<sup>25-28</sup>. Zanimljivo je da se praksa navođenja dvaju autora kao „zajedničkih zadnjih autora“ primjenjuje rjeđe, ali je svejedno u porastu. Ovakve bi publikacije

Others have proposed the value of assigning a numerical value to better evaluate the degree of relative contributions and, eventually, to create a contribution-specific index for each author to better assess research productivity<sup>18-20</sup>.

Detailing authors' contributions inform the readers of the nature of the individual work and avoids diluting credits by precisely allocating merits. In multi-authored papers it is particularly important that authors state the specific role they played in the research. Each research represents a significant amount of effort and, on average, the larger the number of authors the smaller percentage of effort for a given author. Other forms of contributions, not fulfilling criteria for authorship, may be recognized in the acknowledgement section or by listing these people as collaborators. This is an important issue considering the ever increasing number of authors seen in recent publications that represents a paradigm shift resulting from team-work research<sup>18-24</sup>. Contributors credited as authors should take full responsibility and remain accountable for what is published<sup>1,18</sup>. In this regard, contribution-adjusted credits can be further weighted by other factors to derive more effective parameters for measuring research productivity. Currently, every co-author gets the exact amount of citation credit regardless of their contribution. Therefore, an "author matrix" (including participation in ideas, work, writing and stewardship), has been proposed to "quantify" individual contributions and roles in multi-authored papers<sup>18-24</sup>.

## By-line Location and Hierarchy

There is no adequate guidance for author sequence in the by-line. In fact, practices to clarify the relative merit of the different coauthors in a manuscript vary significantly among scientific disciplines<sup>18-22</sup>. For biomedical journals, the first author is the most important position, followed by the last author and then the second author. The first author is reserved for the person who made the largest contribution (investing most time in the project) usually the author who wrote the first draft of the paper. Then the sequence of authors tends to represent progressively lesser contributions<sup>18</sup>. Following this approach, where the sequence determines credit, the last author receives the least. Accordingly, the last position might be considered as a rather generous option. Actually, the last position is currently considered as very important in biomedical research and, in fact, it is frequently associated with the corresponding author or the guarantor of the entire work<sup>18</sup>. However, many argue that senior scientists should grab the pen (keyboard) more often as writing remains essential for advancement in knowledge<sup>19</sup>. Senior authors have the responsibility to promote the academic career of new generation scientists.

Many journals allow authors to declare that 2 or more individuals have made "equal contribution" to the research<sup>25-28</sup>. In the last decade the percentage of articles with equal contribution statements has increased dramatically both in basic and medical scientific journals<sup>25</sup>. Notably, the designation of "joint first-authors" should be based on the quality and quantity of the work<sup>25-28</sup>. Thus the "contributed equally" designation should be reserved to honestly reflect similar scientific contributions and not to inflate a *curriculum vitae*<sup>25-28</sup>. Interestingly, the practice of listing two individuals as "joint last author" is used less frequent but steadily increasing. These publications

trebale sadržavati bilješku koja jasno pokazuje da su oba autora jednako pridonijela radu<sup>25-28</sup>.

Autor za dopisivanje preuzima glavnu odgovornost za komunikaciju s časopisom tijekom slanja rukopisa, znanstvene recenzije, publikacije i razdoblja nakon publikacije<sup>1</sup>. Trenutačno većina časopisa traži *e-mail* adresu za sve navedene autore, koje se zatim kontaktira kako bi ih se obavijestilo da je autor za dopisivanje poslao rad u časopis. Time se osigurava da su svi navedeni autor svjesni da je članak poslan u njihovo ime. Sustavna primjena ovakvog, elektroničkog sustava upozorenja otvara put za osiguravanje da treći kriterij autorstva bude zadovoljen. Stoga se takva politika sada može smatrati uobičajenim administrativnim uvjetom nalik na potpisivanje prijenosa prava.

„Jamac“ istraživanja ne mora biti prvi autor ili autor za dopisivanje pa tu ulogu često preuzima glavni istraživač ili iskusnija osoba u skupini. Jamac preuzima punu odgovornost za integritet rada kao cjeline, od začetka do publiciranoga članka. U skladu s tim, jamac mora biti potpuno spreman braniti sve dijelove istraživačkog projekta i završnog rukopisa. Jamci integriteta cjelokupnog rada osobito su važni kod članaka s više autora, pogotovo kada je u rad uključeno mnogo institucija. Svi autori također trebaju objaviti moguće sukobe interesa<sup>1,5</sup>. Temeljni ICMJE-ov Obrazac za prijavu sukoba interesa nedavno je ažuriran i svi bi autori trebali ispuniti standardizirani individualni elektronički dokument<sup>1,5</sup>. Osobito je važno da autori sponzoriranih istraživanja izjave da su imali puni pristup podacima i preuzmu potpunu odgovornost za točnost i integritet svoje analize. To je važno zato što u ovakvoj vrsti istraživanja uloge i interesi različitih sudionika mogu biti nejasni ili obmanjujući<sup>1</sup>.

Subjektivnost i emocionalnost autorstva razlog je zašto prijepori među istraživačima nisu rijetkost. Prijepore oko autorstva u istraživačkim skupinama treba izbjeći dogovaranjem uloga i odgovornosti unaprijed. Idealno bi bilo da istraživačka skupina na početku projekta zajednički odluči o poretku autora<sup>29</sup>. Završni poredak autora zatim bi trebalo po potrebi izmijeniti kada je sav posao obavljen, uzimajući u obzir stvarne doprinose pojedinaca<sup>17</sup>. Urednici ne mogu procijeniti jesu li autori zadovoljili uvjete autorstva. Smjernice Odbora za publikacijsku etiku (COPE; engl. *Committee for Publication Ethics*; [www.publicationethics.org](http://www.publicationethics.org)) korisne su u rješavanju razmirica u publikacijama<sup>9</sup>. Urednici bi trebali tražiti objašnjenje i potpis suglasnosti svih autora u slučaju zahtjeva za promjenom u popisu autora<sup>1</sup>.

## Članci s više autora

Znanstvena suradnja postaje sve važnija zbog rastuće složenosti suvremenoga znanstvenog istraživanja koje uključuje različite stručnosti i sposobnosti<sup>16</sup>. Za istraživanje može biti potreban i velik broj pacijenata i centara kako bi se primjerenost istražila klinički važna pitanja<sup>16</sup>. Multidisciplinarni istraživačke skupine nude priliku za međusobnu suradnju među disciplinama<sup>16</sup>. Stoga je rad u skupini trenutačno uobičajena praksa u biomedicinskom istraživanju. Koautorstvo je najosjetljiviji rezultat višestrane znanstvene suradnje. Grupno (korporativno) autorstvo postaje sve češće, s nekim razlikama u tome kako se pojedinačni autori i nazivi istraživačkih skupina navode u popisu autora. Valja primijetiti da je citatni odjek veći u člancima s više autora koji dolaze iz međunarodne suradnje. Problem napuhivanja podataka o publikacijama i citi-

should include a foot note clearly indicating that both authors equally contributed to the work<sup>25-28</sup>.

The corresponding author takes primary responsibility for communication with the journal during the submission, peer-review, publication and post-publication periods<sup>1</sup>. Currently, most journals require contact e-mail addresses from all listed authors who then will be contacted to inform that the corresponding author submitted the paper. This ensures that they are aware that the paper has been submitted in their name. The systematic implementation of this electronic warning system paves the way to guarantee that the 3<sup>rd</sup> authorship criterion has been met. Therefore, the policy now may be considered as a mere administrative requirement similar to signing of a copyright transfer.

The “guarantor” of the study may be different from the first or corresponding author and frequently is the principal investigator or more senior person in the group. The guarantor takes full responsibility for the integrity of the work as a whole from inception to the published paper. Accordingly, the guarantor must be fully prepared to defend all parts of the research project and final manuscript. Guarantors vouching for the integrity of the entire work are of special value for multi-author articles particularly when many institutions are involved. All authors should also disclose potential conflicts of interest<sup>1,5</sup>. The ICMJE uniform conflict of interest disclosure has been recently updated and all authors should complete the corresponding standardized individual electronic document<sup>1,5</sup>. In particular, authors of sponsored studies should indicate that they had full access to the data and take complete responsibility for the accuracy and integrity of the analysis. This is important as roles and interests of different stakeholders may remain elusive or misleading in this type of study<sup>1</sup>.

The subjectivity and emotionality of authorship may explain why disputes among investigators are not uncommon. Authorship disputes amongst research teams should be avoided by deciding roles and responsibilities beforehand. Ideally, the order of authors should be collectively decided by the research team at the onset of the project<sup>29</sup>. Then, the definitive author order should be revised when the work is completed, taking into account the actual level of individual contributions<sup>17</sup>. Editors are unable to judge whether authors have met the authorship criteria. The COPE (Committee on Publication Ethics; [www.publicationethics.org](http://www.publicationethics.org)) guidelines are useful to solve publication disputes<sup>9</sup>. Editors should seek explanations and signed agreement of all authors in case of a request for a change in the author list<sup>1</sup>.

## Multi-Authored Articles

Scientific collaboration has become increasingly important because the complexity of modern research involves different competencies<sup>16</sup>. Moreover, a large number of patients and centres may be required to adequately address clinically relevant questions<sup>16</sup>. In addition, multidisciplinary research groups offer the opportunity of cross-pollination<sup>16</sup>. Therefore, team-work is currently common place in biomedical research. Co-authorship is the most tangible result of multilateral scientific collaboration. Group (corporate) authorship has become increasingly common with variations in how individual authors and research group names are listed in the by-line. Notably, citation impact is greater in papers with multiple authors coming from international cooperation. The problem of

ranosti autora koji sudjeluju u multicentričnim istraživanjima također je izvor zabrinutosti<sup>18</sup>. Tomu je uzrok, barem dijelom, samocitiranje zbog suradnje<sup>30</sup>. Iscjepkane publikacije ili strategije „najmanjih publikabilnih“ članka inicijative su koje neprimjereno povećavaju broj publikacija od jednog istraživanja dijeljenjem rada (koji se mogao predočiti u jednom glavnom članku) u manje sastavne djelove koji se zatim publiciraju kao više različitih članaka. Takve se strategije mogu primijetiti u nekim multicentričnim istraživanjima<sup>30</sup>. Uporaba citatnih indeksa usklađenih s brojem koautora jedan je od predloženih načina nošenja s tim fenomenom<sup>30</sup>.

Postoje dokazi da je broj koautora po članku u medicinskoj literaturi s vremenom eksponencijalno rastao<sup>22,31</sup>. Razlozi tom povećanju najvjerojatnije su višestruki te uključuju povećanu složenost istraživanja, kao što smo naveli, no također i inflaciju broja autora. Neprimjereno dodjeljivanje autorstva nije etično te s vremenom uzrokuju smanjenje vrijednosti autorstva, stvarajući stanje u kojemu nezasluženo navedeni koautori ne mogu preuzeti odgovornost za istraživanje<sup>22,31</sup>. Zanimljivo je da je povezanost između kvalitete istraživanja i broja autora slaba, što pokazuje da čimbenik inflacije broja autora možda ima veću ulogu od složenosti istraživanja<sup>31</sup>.

Dosad se broj autora u članku nije uzimao u obzir u procjeni akademske zasluge pojedinačnih autora<sup>3</sup>. No, budući da istraživački projekt zahtijeva određenu količinu posla, što je broj autora veći to je manja zasluga svakoga pojedinog autora. Neki pojedinci uložimo mnogo truda, dok drugi pridonose mnogo manje. Zasluga koju dobiju ljudi koji obave većinu posla razvodnjava se uključivanjem mnogo autora s malim ili gotovo nikakvim doprinosima. S vremenom ovakva strategija „besplatnog ručka“ potkopava vrijednost autorstva u znanstvenome članku<sup>32</sup>.

Trebalo bi ažurirati smjernice za autorstvo kako bi se prilagodile rastućem trendu skupnog istraživačkog rada. Što je veći broj autora, to je više prilika za svađu i prijepore. Svaki autor u radu sa „skupnim autorstvom“ treba zadovoljavati četiri kriterija autorstva. U suprotnom, trebalo bi ih navesti kao istraživače ili suradnike, a ne kao autore<sup>1</sup>. S obzirom na složenost i višestrukost zadataka vezanih za suvremena istraživanja, jasno je da većina autora ne može sudjelovati u svakom dijelu posla. Stoga bi određene odgovornosti trebalo vezati za različite istraživačke uloge. Autori bi se trebali kloniti suradnje s kolegama čija kvaliteta ili čestitost može uzrokovati zabrinutost<sup>1</sup>. Na kraju, zbog rastućeg je broja autora sve teže odrediti koga treba držati moralno odgovornima ako se otkrije znanstvene nečestitosti<sup>22,31</sup>. Držati sve autore odgovornima nije pošteno prema onima koji nisu krivi za nečestitost.

## Povrede autorstva: od gostujućeg do skrivenog autora

Povrede autorstva oblik su obmane. Gostujući (počasni) autori i skriveni autori („autori duhovi“) oblik su zlorabe autorstva kakav ne bi trebalo dopuštati<sup>33-37</sup>. Skriveni je autor onaj koji nije naveden, a dao je značajan doprinos članku. Skriveni su autori oni koji su dali doprinos rukopisu koji zavrjeđuje autorstvo, ali koji zbog različitih razloga nisu uključeni u popis autora. Neki skriveni autori imaju ozbiljne sukobe interesa ili ih plaća komercijalni sponzor. To treba razlikovati od pisca iz sjene (engl. *ghost writer*). Pisci iz sjene osobe su koje su pridonijele pisanju rukopisa a da ne zadovoljavaju kriterije autor-

inflating publication and citation records of authors participating in multicenter studies has been a cause of concern<sup>18</sup>. This is due, at least in part, to collaboration-induced self-citation<sup>30</sup>. Salami publications, or least publishable units strategies, are initiatives that inflate the number of publications on the same research project by dividing the work (that could have been presented in a single main paper) into smaller component parts, then publishing them as several different articles. Such strategies may be detected in some multicenter studies<sup>30</sup>. The use of coauthor-adjusted citation indexes have been suggested to account for this phenomenon<sup>30</sup>.

There is evidence that the number of coauthors per paper in medical literature has increased exponentially over time<sup>22,31</sup>. The reason for this increase is probably multifactorial and includes, increasing complexity of research, as discussed, but also author inflation. Inappropriate authorship is not ethical and eventually leads to diminish the value of authorship, generating a situation where undeserved coauthors cannot take responsibility for the research<sup>22,31</sup>. Interestingly, the correlation between research quality and number of authors is poor, suggesting that the component of author inflation plays a greater role than that of research complexity<sup>31</sup>.

Until now the number of authors in the by-line was not considered in the evaluation of the relative academic merit of individual authors<sup>3</sup>. However, as a research project involves a defined amount of work, the larger the number of authors in a paper the smaller the merit that deserves any given author. Major efforts are made by some individuals whereas others contribute significantly less. The credit received by people doing the work becomes diluted by the inclusion of many authors with little, if any, contributions. Eventually this “free lunch” strategy undermines the value of being named on a scientific paper<sup>32</sup>.

Authorship guidelines should be updated to adapt to the growing trend of collaborative research. The larger the number of authors the more opportunities for contentious arguments and disputes. Every author of a “group authorship” work must meet the 4 criteria for authorship. Otherwise they should be identified just as investigators or collaborators rather than authors<sup>1</sup>. Given the complexity and multiple tasks involved in current research it is clear that most authors cannot participate in every aspect of the work. Accordingly, specific responsibilities should be tied to different research roles. Authors should refrain from collaborating with colleagues whose quality or integrity may inspire concerns<sup>1</sup>. Last, but not least, with a growing number of authors it is increasingly difficult to identify those who may be held morally responsible should scientific misconduct be detected<sup>22,31</sup>. Holding everybody responsible is unfair to the researchers that are not guilty of misconduct.

## Breaches in Authorship: From Ghost to Guest Authors

Breaches in authorship are a form of deception. Guest or gift (honorary) and ghost (hidden) authors represent a form of authorship abuse that should not be permitted<sup>33-37</sup>. Ghost authorship is omitting authors that have made relevant contributions to a paper. Ghost authors provide contributions to a manuscript that do merit authorship but, for different reasons, are not included in the author by-line. Some ghost authors



stva, a njihov doprinos nije naveden u odjeljku sa zahvalama<sup>17,36</sup>. Pisanje iz sjene također je neetična praksa jer prikriva sudjelovanje osobe u nastanku rukopisa. Razlog zbog kojeg to može biti problem jest da pisci koje su unajmile tvrtke mogu utjecati na sadržaj publikacije ili skrivati neželjene rezultate, što uvodi moguću nevidljivu pristranost kada se sve autorske zasluge daju akademskim počasnim autorima<sup>17</sup>. Profesionalni medicinski pisci trebali bi slijediti etičku publikacijsku praksu i otvoreno u odjeljku sa zahvalama obznaniti svoje sudjelovanje<sup>36</sup>.

Uključivanje pojedinaca s malim ili nikakvim doprinosom znak je „labave“ autorske prakse<sup>33-37</sup>. Počasno, poklonjeno ili gostujuće autorstvo definira se kao koautorstvo dodijeljeno ljudima koji ne zadovoljavaju kriterije autorstva i koji nisu pridonijeli dovoljno da bi preuzeli javnu odgovornost za rad<sup>1</sup>. Takvo autorstvo može se dodijeliti u uvjerenju da će prestiž znanstveno poštovane osobe povećati vjerojatnost publikacije ili utjecajnost rada<sup>29</sup>. Često se dobro poznato ime uglednog akademika upotrebljuje kako bi se sakrilo autore sa sukobom interesa vezanim za neku industriju<sup>29</sup>. I gostujućem autoru i drugim koautorima takva praksa može pogodovati, no ona je svejedno neetična. Pojačani pritisak da se publicira među znanstvenicima koji žele unaprijeđenje ili napredak u karijeri (kultura „publiciraj ili umri“) također može pridonijeti objašnjenju ovakvih neetičnih djelovanja. Taj pritisak objašnjava zašto neki istraživači prihvaćaju „poklonjeno“ autorstvo u člancima kojima nisu intelektualno pridonijeli. Takvo zlorabljenje autorstva umanjuje zaslugu autorstva u znanstvenom članku. Kako što smo već naveli, kvantificiranje doprinosa pomaže u sprječavanju da se zasluge neprimjereno pripisuju počasnim autorima koji time nepravredno oduzimaju zasluge autorima koji su doista odradili posao<sup>37-40</sup>.

Istraživanja pokazuju da su povrede smjernica o autorstvu česte. U nedavnom je ispitivanju trećina autora izjavila kako smatra da su bili zakinuti za zaslužen autorstvo, a sličan je broj rekao da su iskusili pritisak da među autore članka uključe nekoga tko to nije zaslužio<sup>20</sup>. Drugo je nedavno istraživanje časopisa uključenih u bazu podataka *Journal Citation Reports* pronašla da je 85 % časopisa u svoje upute uključilo zahtjev da autori budu odgovorni za istraživanje kao cjelinu, 32 % časopisa izričito zabranilo skrivene ili gostujuće autorstvo, no da je samo 5 % časopisa tražilo od autora da opišu svoje pojedinačne doprinose<sup>25</sup>.

## Završne napomene

Autorstvo nosi zasluge, ali uključuje i odgovornosti. Autori bi trebali biti odgovorni i jamčiti za integritet cjelokupnog rada. Mreža urednika ESC-a podržava Smjernice ICMJE-a o autorstvu i potiče pojedinačne NSCJ-e da u skladu s tim primijene takve uredničke politike.

may have major conflicts of interest or are paid by a commercial sponsor. This should be differentiated from ghost writing. Ghost writers are writing contributors to a manuscript that do not fulfill authorship criteria, but their contributions are not disclosed in the acknowledgements<sup>17,36</sup>. Ghost writing is also an unethical practice as it keeps hidden the involvement in the manuscript. The concern is that writers hired by the industry might influence the content of the publication or hide unwelcome results, which introduces potential bias that is obscured when relevant academic guest authors are accredited with authorship<sup>17</sup>. Professional medical writers should follow ethical publication practices and should openly disclose their involvement in the acknowledgement section<sup>36</sup>.

The inclusion of individuals with minimal or no input reflects “loose authorship” practices<sup>33-37</sup>. Guest, gift or honorary authorship is defined as co-authorship awarded to people who do not meet the authorship criteria and have not contributed substantially to take public responsibility for the work<sup>1</sup>. This may be offered in the belief that the prestige of a scientifically respected person will increase the likelihood of publication or the impact of the work<sup>29</sup>. Oftentimes, a well-known academic senior name is used to conceal ghost authors with industry-related conflicts of interest<sup>29</sup>. Both, the gift-author and the remaining co-authors may benefit from this practice (a win-win situation) that, nevertheless, remains unethical. The increased pressure for publishing among scholars seeking promotion and career advancement (the “publish or perish” culture) may also help to explain these practices. This pressure explains why some researchers accept the ‘gift’ authorship in papers to which they have not contributed intellectually. This abuse in authorship devalues the merit of being named as an author in a scientific paper. As previously discussed, quantitative contribution helps to prevent granting undeserved credits to guest authors who take away well-deserved credits from the authors who actually did the work<sup>37-40</sup>.

Studies suggest that breaches of authorship guidelines are frequent. In a recent survey one-third of authors believed that they had been excluded from deserved authorship and a similar number declared that they had experienced pressures to include undeserved authors in their papers<sup>20</sup>. Another recent study of journals included in the Journals Citation Reports database suggested that 85% of them included in their policy guidance the requirement that authors should be accountable for the research as a whole, 32% explicitly prohibited guest or ghost authorship but only 5% required authors to describe their individual contributions<sup>25</sup>.

## Final Remarks

Authorship confers credit but also involves responsibility. Authors should be accountable and vouch for the integrity of the entire work. The Editors’ Network of the ESC endorses the ICMJE recommendations on authorship and encourages individual NSCJ to adapt their editorial policies accordingly.

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**LITERATURE** |

1. The International Committee of Medical Journals Editors. Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals. Available from: <http://www.icmje.org/recommendations> (February 3, 2019).
2. Lüscher TF. The codex of science: honesty, precision, and truth-and its violations. *Eur Heart J.* 2013 Apr;34(14):1018-23. <https://doi.org/10.1093/eurheartj/ehs063>
3. Alfonso F, Ambrosio G, Pinto FJ, Ector H, Vardas P, Kulakowski P, et al; Editors' Network ESC Task Force. European Society of Cardiology national cardiovascular journals: the 'Editors' Network'. *Eur Heart J.* 2010 Jan;31(1):26-8. <https://doi.org/10.1093/eurheartj/ehp462>
4. Mills P, Timmis A, Huber K, Ector H, Lancellotti P, Masic I, et al. The role of European national journals in education. *Kardio list.* 2010;5(1-2):1-5. Available from: [http://www.kardio.hr/pdf/Kardio%20list%202010\\_5\\_1-2\\_1-5.pdf](http://www.kardio.hr/pdf/Kardio%20list%202010_5_1-2_1-5.pdf) (February 3, 2019).
5. Alfonso F, Timmis A, Pinto FJ, Ambrosio G, Ector H, Kulakowski P, et al; on behalf of the Editors' Network European Society of Cardiology Task Force. Conflict of interest policies and disclosure requirements among European Society of Cardiology National Cardiovascular Journals. *Cardiol Croat.* 2012;7(5-6):146-157. Available from: [http://www.kardio.hr/pdf/Cardiologia%20Croatia%202012\\_7\\_5-6\\_146-157.pdf](http://www.kardio.hr/pdf/Cardiologia%20Croatia%202012_7_5-6_146-157.pdf) (February 3, 2019).
6. Alfonso F, Adamyk K, Artigou JY, Aschermann M, Boehm M, Buendia A, et al; on behalf of the Editors' Network European Society of Cardiology Task Force. Data Sharing: A New Editorial Initiative of the International Committee of Medical Journal Editors. Implications for the Editors' Network. *Cardiol Croat.* 2017;12(5-6):264-272. <https://doi.org/10.15836/ccar.2017.264>
7. Council of Science Editors. White Paper on Publication Ethics. CSE's White Paper on Promoting Integrity in Scientific Journal Publications, 2012 Update. Available from: <http://www.CouncilScienceEditors.org> (February 3, 2019).
8. World Association of Medical Editors. WAME Professionalism Code of Conduct. The new WAME Professionalism Code of Conduct for medical journal editors. Available from: <http://www.wame.org> (February 3, 2019).
9. Committee On Publication Ethics. COPE. Code of Conduct and Best Practice Guidelines for Journal Editors. Available from: <http://publicationethics.org/resources/guidelines> (February 3, 2019).
10. Stephenson J. ICMJE: All authors of medical Journal articles have "responsibility to stand by the integrity of the entire work". *JAMA.* 2013 Sep 25;310(12):1216. <https://doi.org/10.1001/jama.2013.278743>
11. Authorship and accountability. *Lancet.* 2013 Aug 31;382(9894):744. [https://doi.org/10.1016/S0140-6736\(13\)61815-2](https://doi.org/10.1016/S0140-6736(13)61815-2)
12. Goodman NW. Survey of fulfillment of criteria for authorship in published medical research. *BMJ.* 1994 Dec 3;309(6967):1482. <https://doi.org/10.1136/bmj.309.6967.1482>
13. Rennie D, Flanagan A. Authorship! Authorship! Guests, ghosts, grafters, and the two-sided coin. *JAMA.* 1994 Feb 9;271(6):469-71. <https://doi.org/10.1001/jama.1994.03510300075043>
14. Rennie D, Yank V, Emanuel L. When authorship fails. A proposal to make contributors accountable. *JAMA.* 1997 Aug 20;278(7):579-85. <https://doi.org/10.1001/jama.1997.03550070071041>
15. Leonelli S. Locating ethics in data science: responsibility and accountability in global and distributed knowledge production systems. *Philos Trans A Math Phys Eng Sci.* 2016 Dec 28;374(2083). pii: 20160122. <https://doi.org/10.1098/rsta.2016.0122>
16. Helgesson G, Eriksson S. Responsibility for scientific misconduct in collaborative papers. *Med Health Care Philos.* 2018 Sep;21(3):423-430. <https://doi.org/10.1007/s11019-017-9817-7>
17. Stocks A, Simcoe D, Toroser D, DeTora L. Substantial contribution and accountability: best authorship practices for medical writers in biomedical publications. *Curr Med Res Opin.* 2018 Jun;34(6):1163-1168. <https://doi.org/10.1080/03007995.2018.1451832>
18. Clement TP. Authorship matrix: a rational approach to quantify individual contributions and responsibilities in multi-author scientific articles. *Sci Eng Ethics.* 2014 Jun;20(2):345-61. <https://doi.org/10.1007/s11948-013-9454-3>
19. Fairbairn S, Kelly L, Mahar S, Prosée R. Authorship: an evolving concept. Editorial coordinators. Health Learning, Research & Practice, Wolkers and Kluber. Available from: [http://wkauthorserices.editage.com/resources/files/An\\_Evolving\\_Concept\\_in\\_Scientific\\_and\\_Medical\\_Publishing.pdf](http://wkauthorserices.editage.com/resources/files/An_Evolving_Concept_in_Scientific_and_Medical_Publishing.pdf) (February 3, 2019).
20. Nylenna M, Fagerbakk F, Kierulf P. Authorship: attitudes and practice among Norwegian researchers. *BMC Med Ethics.* 2014 Jul 2;15:53. <https://doi.org/10.1186/1472-6939-15-53>
21. Hess CW, Brückner C, Kaiser T, Mauron A, Wahli W, Wenzel UJ, et al. Authorship in scientific publications: analysis and recommendations. *Swiss Med Wkly.* 2015 Feb 21;145:w14108. <https://doi.org/10.4414/sm.w.2015.14108>
22. Hwang SS, Song HH, Baik JH, Jung SL, Park SH, Choi KH, et al. Researcher contributions and fulfillment of ICMJE authorship criteria: analysis of author contribution lists in research articles with multiple authors published in radiology. *International Committee of Medical Journal Editors. Radiology.* 2003 Jan;226(1):16-23. <https://doi.org/10.1148/radiol.226101255>
23. Hoen WP, Walvoort HC, Overbeke AJ. What are the factors determining authorship and the order of the authors' names? A study among authors of the *Nederlands Tijdschrift voor Geneeskunde* (Dutch Journal of Medicine). *JAMA.* 1998 Jul 15;280(3):217-8. <https://doi.org/10.1001/jama.280.3.217>
24. Wager E. Do medical journals provide clear and consistent guidelines on authorship? *MedGenMed.* 2007 Jul 19;9(3):16. PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/18092023>
25. Resnik DB, Tyler AM, Black JR, Kissing G. Authorship policies of scientific journals. *J Med Ethics.* 2016 Mar;42(3):199-202. <https://doi.org/10.1136/medethics-2015-103171>
26. Akhabe E, Lautenbach E. "Equal" contributions and credit: an emerging trend in the characterization of authorship. *Ann Epidemiol.* 2010 Nov;20(11):868-71. <https://doi.org/10.1016/j.annepidem.2010.08.004>
27. Dotson B. Equal contributions and credit assigned to authors in pharmacy journals. *Am J Pharm Educ.* 2013 Mar 12;77(2):39. <https://doi.org/10.5688/ajpe77239>
28. Li Z, Sun YM, Wu FX, Yang LQ, Lu ZJ, Yu WF. Equal contributions and credit: an emerging trend in the characterization of authorship in major anaesthesia journals during a 10-yr period. *PLoS One.* 2013 Aug 5;8(8):e71430. <https://doi.org/10.1371/journal.pone.0071430>
29. Tarkang EE, Kweku M, Zotor FB. Publication Practices and Responsible Authorship: A Review Article. *J Public Health Afr.* 2017 Jun 27;8(1):723. <https://doi.org/10.4081/jphia.2017.723>
30. Ioannidis JP. A generalized view of self-citation: direct, co-author, collaborative, and coercive induced self-citation. *J Psychosom Res.* 2015 Jan;78(1):7-11. <https://doi.org/10.1016/j.jpsychores.2014.11.008>
31. Chow DS, Ha R, Filippi CG. Increased rates of authorship in radiology publications: a bibliometric analysis of 142,576 articles published worldwide by radiologists between 1991 and 2012. *AJR Am J Roentgenol.* 2015 Jan;204(1):W52-7. <https://doi.org/10.2214/AJR.14.12852>
32. Shapiro DW, Wenger NS, Shapiro MF. The contributions of authors to multi-authored biomedical research papers. *JAMA.* 1994 Feb 9;271(6):438-42. <https://doi.org/10.1001/jama.1994.03510300044036>
33. Flanagan A, Carey LA, Fontanarosa PB, Phillips SG, Pace BP, Lundberg GD, et al. Prevalence of articles with honorary authors and ghost authors in peer-reviewed medical journals. *JAMA.* 1998 Jul 15;280(3):222-4. <https://doi.org/10.1001/jama.280.3.222>
34. Laine C, Mulrow CD. Exorcising ghosts and unwelcome guests. *Ann Intern Med.* 2005 Oct 18;143(8):611-2. <https://doi.org/10.7326/0003-4819-143-8-200510180-00013>
35. Wislar JS, Flanagan A, Fontanarosa PB, Deangelis CD. Honorary and ghost authorship in high impact biomedical journals: a cross sectional survey. *BMJ.* 2011 Oct 25;343:d6128. <https://doi.org/10.1136/bmj.d6128>
36. Stretton S. Systematic review on the primary and secondary reporting of the prevalence of ghostwriting in the medical literature. *BMJ Open.* 2014 Jul 14;4(7):e004777. <https://doi.org/10.1136/bmjopen-2013-004777>
37. Smith R. Let's simply scrap authorship and move to contributorship. *BMJ.* 2012 Jan 10;344:e157. <https://doi.org/10.1136/bmj.e157>
38. Tilak G, Prasad V, Jena AB. Authorship Inflation in Medical Publications. *Inquiry.* 2015 Jul 29;52. pii: 0046958015598311. <https://doi.org/10.1177/0046958015598311>
39. Juyal D, Thawani V, Thaledi S, Prakash A. The fruits of authorship. *Educ Health (Abingdon).* 2014 May-Aug;27(2):217-20. <https://doi.org/10.4103/1357-6283.143777>
40. Fanelli D. Why growing retractions are (mostly) a good sign. *PLoS Med.* 2013 Dec;10(12):e1001563. <https://doi.org/10.1371/journal.pmed.1001563>