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# Managing Opportunities and Challenges of Co-Authorship

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**Abstract:** Research with the largest impact on practice and science is often conducted by teams with diverse substantive, clinical, and methodological expertise. Team and interdisciplinary research has created authorship groups with varied expertise and expectations. Co-authorship among team members presents many opportunities and challenges. Intentional planning, clear expectations, sensitivity to differing disciplinary perspectives, attention to power differentials, effective communication, timelines, attention to published guidelines, and documentation of progress will contribute to successful co-

authorship. Both novice and seasoned authors will find the strategies identified by the *Western Journal of Nursing Research* Editorial Board useful for building positive co-authorship experiences.

**Keywords** authorship, publishing, writing, nursing research interprofessional relations

Interdisciplinary research has become more prevalent, inherently requiring multiple researchers to collaborate. As a result, in past decades, the size of research teams has grown. In the desire to expand professional networks, teams may now include colleagues who are well known to the lead investigator, or less known members selected for their expertise and willingness to work on a particular project. Larger and more complex research teams present both opportunities and challenges related to authorship and publication. The opportunities include manuscript work that can be shared among more writers, paper development that leverages colleagues with different strengths, higher quality manuscripts, and wider dissemination in varied journals based on team members' expertise. The challenges are found in the opportunities: working with diverse colleagues, authors, and co-authors with varied experience, the natural difficulty of coordinating multiple opinions and schedules, different writing styles and skills, and colleagues with varied commitment to seeing particular papers published.

Professional and individual differences have to be acknowledged in a research team. Co-authors often have varied expectations for their roles in manuscripts. Norms about authorship are not universal across disciplines including, for example, disciplinary differences in the meaning attributed to authorship order. The cultural norms of different regions may influence the value placed on authorship order. Even the label for the lead author (main, senior, managing, communicating, corresponding, first, or last author) may vary by discipline and journal. Publishers have their own standards, as well. Some journals limit the number of authors for manuscripts. Some require written statements about the specific contributions of each author; a few journals publish this information. Lead authors face many challenges in managing these complexities in manuscripts with co-author contributions. This article provides wisdom from the *Western Journal of Nursing Research* Editorial Board about working with co-authors to produce outstanding manuscripts.

## **Sandra Ward, PhD, RN, FAAN, University of Wisconsin–Madison**

The first thing that one should consider is that it will happen. The “it” in question here refers to problems with co-authors. I do not know any academician who has not encountered a co-author who does not write his or her section in a timely manner, does not return drafts in a timely manner, wishes to see him or herself higher on the list of authors, or who makes what others in the group consider to be fairly off the wall suggestions for change. An overarching way to manage all of these problems is that early in the manuscript preparation endeavor there should be explicit discussion of roles, responsibilities, deadlines, and order of authorship. Such discussions should be revisited on a regular basis as the paper evolves because just as one has proposal drift during grant application preparation, one also has manuscript drift as a paper evolves. In association with those team discussions, one should be consulting regularly with published guidelines regarding authorship such as the International Committee of Medical Journal Editors (ICMJE, 2008) and those guidelines should be discussed by the team members.

In addition to those general practices, there are significant refinements that one should consider. But first let us make explicit some of the assumptions under which I am writing. First, I am assuming that there is a senior/lead author on the paper and that the team members (the co-authors) agree who this person is. Second, I am assuming that there are different levels of seniority (read “power”) among the team members with a range that goes from senior investigators (e.g., funded full professors) to graduate students who are early in their careers. Third, I am assuming that there are different levels of interpersonal relationships among the authors with a range from close friendships that have extended over many years to situations where some co-authors may not have even met other co-authors in person. Fourth, I am assuming that the team is comprised of investigators from a variety of disciplines who bring with them different rules/guidelines/understandings of matters such as order of authorship.

Now, let us consider a scenario in which a student co-author is falling behind on deadlines. Here, the senior author has to assume a mentoring, guiding stance while assuring that the work gets done. That means one turns to pedagogical principles used in other academic endeavors, including strategies such as assessing what is causing the hold up, providing support or resources as required, working side-by-side to kick start the writing (literally sitting down together to work out a paragraph), and agreeing to rigid deadlines (i.e., moving from "Turn this back to me in a few weeks." to "I want to see this in my inbox by the 15th.")

When the culprit is a colleague of equal standing, somewhat more finesse may be required. Here, we first consider whether the colleague is a friend or not. If the colleague is a friend, one can fall back on the relationship and beg for movement. "John, you are making me crazy by avoiding this paper. What can I do to make you get onto this work?" You can offer drinks, dinner, a long walk to clear the head or whatever it takes to understand why there is a holdup and how it can be overcome. Good friends can confess to being over-extended with commitments or with personal problems and these matters can be discussed and compromises reached. Sometimes, one has to offer a graceful exit to the colleague who simply has too much to do. That is, the senior investigator can gently offer the option of dropping off of the manuscript in question with the understanding that feelings are not hurt and that there will be a next paper on which collaboration can continue.

But what if dropping out is not an option because, let's face it, the culprit is the statistician and none of the others on the manuscript fully and completely comprehend what has been done or is being done to the data? When that is the case and when the colleague is truly over-extended, then the senior author can sit down with the statistician, walk through orally what needs to be put in writing, do the writing, and shift the co-authors responsibility to correcting/revising rather than writing from scratch. After all, most of us find it much easier to critique and revise someone else's writing rather than doing our own. I will freely admit that I find that to be the case.

Now, we might want to consider that people have different working styles in that some people seem unable to produce until a

deadline is staring them in the face. Those of us not sharing that style can be driven to distraction by such a colleague. To prevent being so driven, one must sometimes sit back, take a deep breath, and accept that the colleague will not produce the requisite work until the last moment. Just make yourself wait. However, if you know your colleague has the procrastinator style, you could try to prevent problems at the outset by setting deadlines that are a bit sooner than fully required. This proactive maneuver combined with the "just wait for the actual deadline" can go a long way toward preventing insanity in the senior author.

## **Linda Herrick, PhD, RN, FAAN, South Dakota State University**

There are numerous reasons to publish and probably just as many reasons that studies have not been published. The main reason to publish is to share results of a study so that others can learn from it while secondary reasons include job expectations and issues of tenure and promotion for academic faculty. In the clinical setting, research findings are becoming more important with the emphasis on evidence-based practice. We need to be good steward of funding and make sure that results are disseminated. Members of research teams have many other commitments that can become challenges to the publication process. Effective management of the team and processes is helpful in assuring publication of study results and some key strategies can help deal with a number of issues that can arise.

### *Early Meetings and Negotiations*

One strategy that has been helpful in reducing issues about order of authors or primary authors, especially if there are several manuscripts from a large study, is to discuss publication plans as the study team is assembled before the study starts. A discussion of authorship and an outline of possible manuscripts and responsibilities at this early stage of the study allows for the criteria for the order in the publication to be discussed and negotiated. Team members have the chance to discuss future work and changing time commitments prior to the work being conducted. It has been helpful to have notes of the outcomes and responsibilities outlined at that initial meeting and to

discuss it periodically. Explicit agreement on the deliverables and transparency among all members of the team assure agreement and common goals.

### *Ongoing Meetings and Communication*

Regular study team meetings to discuss study progress and publication plans are important to keep everyone engaged in the study and to remind them of the deliverables. In a well-established research team, we maintain a list of pending publications with the primary author providing updates at least monthly as to the progress of each manuscript. The list includes the primary author, tentative title or study, and progress including submission dates to journals and outcomes. The team also discusses timelines for submission, and target dates for the manuscript to be completed are set. Deviations from that date are discussed and occasionally, authorship is re-established due to changing priorities but the changes are negotiated among all team members so transparency is maintained.

### *Holding the Line*

For busy people, a manuscript without a deadline often goes on the "back-burner," so one successful strategy has been to set a timeline with goal deadlines and "must-have" deadlines or the writing is re-assigned and that person loses authorship. Exceptions can be made for extraordinary life or work circumstances, but changes in deadlines need to be negotiated early. Rarely, timelines need to be extended if a key member is unable to make the deadline established, and timelines and work need to be negotiated; however, if that has been done initially, there are fewer issues.

### *Too Much Input*

Writing with a number of authors can be challenging when changes are recommended that either do not add to the paper or are contradictory among members. Another challenge is the number of words even though some suggestions may be helpful but too wordy to take as submitted. As a primary author, one needs to make difficult decisions. I have worked with some very senior people and worried

about omitting some of their suggestions. Communication of the decision-making and negotiation helped develop a good manuscript and maintained the team relationships.

We use document tracking identifying each author making changes and use comments liberally. All comments and changes are sent to all individuals involved with the paper. Occasionally, a single document location is identified and all authors work off a single document. Each method has its benefits and challenges. There is agreement that the primary author has the final decision though a final sign-off is done with each author prior to submission.

### *Know Thyself*

As a clinician and administrator, patient care and personnel needs have always come before publishing and have been a great excuse. I have found that once I know the answers from a study and share those with the team and affected areas, I am ready to move on to the next study as my curiosity is satisfied without publication. However, as a clinician I am frustrated with the repetition of projects in the clinical area that could be avoided if clinical researchers consistently published their work. We can no longer afford the luxury of research going unpublished for those not required to publish as part of their employment.

### *Communication and Support Is Key*

Not only is communication of results key, but communication among study team members is key to avoid a number of common publication pitfalls. Regular meetings and conversations related to publications including responsibilities and timelines can assure commitment and transparency. Positive reinforcement and thanks are also important. Just as with most other aspects of life, communication and negotiation can help avoid many of the pitfalls of publication.

## **Robert Topp, RN, PhD, Marquette University, College of Nursing**

As scholarly inquiry becomes more complex and interdisciplinary, the advantages and challenges in developing publications with multiple authors or co-authorship become more frequent. There are a number of decisions that commonly arise when developing a publication that includes co-authors. These decisions can be broadly grouped into two related areas: decisions about authorship and decisions about managing authorship contributions.

### *Decisions About Authorship*

Authorship of books, journal articles, abstracts, and other types of publications are the primary means by which academics communicate the results of their scholarly work. Authorship is also an important metric universities use to evaluate academic productivity for employment, tenure, and promotion. As well, the number and ordering of authors on a publication indicate the relative contribution of each of the authors to the publication. Thus, decisions regarding whom to include as an author and the ordering of the author list on a publication have direct implications for employment and advancement among academics.

Criteria to justify authorship on a publication have been developed previously and vary among professional organizations and journals (American Chemical Society, 2012; American Psychological Association, 2009; Committee on Science Engineering and Public Policy National Academy of Sciences, 1995; Gibaldi, 1998; Rennie, Yank, & Emanuel, 1997; University of Chicago, 2010). Commonly, an author is someone who makes a significant intellectual contribution to the development of a publication. A significant intellectual contribution can be defined as the conception, design, execution, and/or analysis and interpretation of data, drafting, reviewing, and/or revising the publication. In addition to making a significant intellectual contribution to the development of a publication, all authors of a publication must provide approval to submit the publication for publication prior to submission. Many publication outlets have specific requirements for obtaining approval from all authors, which must be followed prior to

any preliminary review of the publication. Authors should not be listed on a publication without their approval as all authors of a publication carry the same responsibility for accuracy of the content and thus need to check the publication and recommend changes prior to submission. In a notable case, American stem-cell researcher Gerald Schatten, PhD, co-authored a paper with Hwang Woo-suk, PhD, DVM. The data in this paper were later discovered to be fraudulent. Although Schatten was not accused of participating in the fraud, a panel at the University of Pittsburg, Dr Schatten's home institution, concluded "his failure to more closely oversee research with his name on it does make him guilty of 'research misbehavior'" (Holden, 2006, p. 928).

The decision to include an individual author may be formally defined or simply a custom within the group or discipline. Inappropriate assignment of authorship is not an uncommon occurrence and can lead to charges of academic misconduct and sanctions for the violator. A survey of a large number of researchers previously funded by the National Institute of Health (NIH) indicated that 10% of the respondents reported being inappropriately assigned authorship within the last 3 years (Martinson, Anderson, & de Vries, 2005). An example of a large number of authors listed on a publication was published in the *New England Journal of Medicine* that listed 972 authors in an appendix and authorship was assigned to a group (The GUSTO Investigators, 1993).

In addition to the decision to include an individual as an author, the decision regarding the ordering of authors on a publication is equally important. Among multiple authors, one author is commonly identified as the lead or first author, and assumes overall responsibility for coordinating the production of the publication. This first author serves as the corresponding author, as well as providing a significant intellectual contribution to the development of the publication. The first author is not necessarily the principal investigator or project leader. The first author is responsible for confirming the significant intellectual contributions of each of the other co-authors and ensuring the overall integrity of the work. The procedure for ordering authors on a publication should be understood by all project staff at the onset of the project. This procedure may be revisited as needed over the duration of the project, and changes in the procedure need to be clearly understood by all project staff. The procedure for ordering multiple

authors on a publication varies significantly between academic disciplines (Kennedy, 1985). Commonly, mathematics and engineering order authors alphabetically (Stubbs, 1997) while biology frequently lists the project's principal investigator or lab supervisor last, whereas organic chemists place the lab supervisor first. A frequently used procedure to order authors on publications in nursing is to list authors in order of their relative contribution to the particular publication. Thus, research staff who make more meaningful contributions to a publication achieve a higher ordering in the author list. Listing authors on a publication in order of their relative contribution appears straightforward, but may lead to conflict. In a study of 919 co-authors, more than two thirds indicated that they disagreed regarding contributions and order of each author (Ilakovic, Fister, Marusic, & Marusic, 2007).

There are also a number of potentially inappropriate decisions regarding academic authorship that need to be avoided. These inappropriate decisions include guest, gift, and ghost authorship. A guest (honorary, courtesy, or prestige) authorship is listing an individual as an author on a publication in the belief that their expert standing will increase the credibility of the work and/or increase the likelihood of publication. Similarly, a gift authorship is listing an individual as an author on a publication out of a sense of obligation, tribute, or to receive an anticipated benefit. Both guest and gift authorship are inappropriate because the individual has not made a significant intellectual contribution to the development of the publication. A ghost author is someone who has made a significant intellectual contribution to the development of a publication but is not included on the author list (Gøtzsche et al., 2007). Ghost authors include contract writers who were hired with the understanding that they will not be credited or other significant contributors who are not listed as an author. Ghost authorship is considered problematic because it may be used to obscure the participation of researchers with conflicts of interest (Nylenna, Andersen, Dahlquist, Sarvas, & Aakvaag, 1999). For example, the pharmaceutical company Merck employed ghost writers to prepare a journal publication regarding the efficacy of their medication Vioxx. The company then had academic researchers pose as the authors of the study. This approach allowed Merck to conceal the company's conflict of interest in authoring the

publication and marketing the medication (Ross, Hill, Egilman, & Krumholz, 2008).

### *Managing Authorship Contributions*

One of the most challenging decisions for first authors is how to manage the contributions of the various co-authors on a publication. As the first author is responsible for coordinating the production of a publication, the management of contributions of the various co-authors commonly falls to them. Challenges to managing the contributions of co-authors can be categorized as adhering to a timeline, maintaining each co-author's significant intellectual contribution to the publication, and resolving disputes between co-authors. Most of these challenges can be preempted by clear and frequent communication between the publication's co-authors. This communication begins when the first author and other co-authors are identified and the purpose of the publication is identified. This initial communication should identify each author's unique contribution, the deadline for delivering their respective contribution, and consequences of not delivering the contribution by the deadline. Rather than dictating, an astute first author allows the co-authors to identify their contribution, deadlines, and consequences for failing to deliver their contribution according to the timeline. By allowing co-authors to define the terms of their contribution, the individual co-author assumes the responsibility of setting the terms of their contribution to the publication. This process also empowers each co-author with a sense of ownership toward the publication and a sense of obligation to not only the first author but also to all of the other co-authors to deliver their contribution on time. For example, a co-author may indicate that they are willing to complete a review, revision, and approval of the final publication within three weeks and if they fail to meet this deadline, the other authors may consider doing this activity and dropping this individual from the author list. This clear communication works best if there is a written summary provided to all of the co-authors regarding who will make what contribution within what time frame, and the consequences of missing deadlines are circulated to all of the co-authors early in the development of the publication. This approach to working with academics may appear overly structured or draconian but "good fences make good neighbors" (Frost, 2008).

Another challenge commonly faced when co-authors involved in the production of a publication is conflict that arises between co-authors. Conflicts will arise during any creative collaboration including development of a scholarly publication and thus should be embraced and anticipated. Scholarly inquiry, particularly those that involve interdisciplinary collaboration, means that the collaborators will have different training, areas of content expertise, and theoretical perspectives. These differences enrich the quality of the science by providing different approaches to addressing a problem. Unfortunately, these differences commonly result in conflict that can stagnate the collaborative process among co-authors. A simple solution to this challenge is to acknowledge this potential for conflict, acknowledge its value, and agree upon an approach to resolving the conflict prior to its development. Commonly, the first author is the first to recognizing conflict and may wish to address the issue with any number of the publication's co-authors. If the conflict cannot be resolved among the co-authors, then academic institutions frequently have policy and procedures for resolving conflict. Unfortunately, if the conflict requires intervention from outside, then there is a low probability that these co-authors will collaborate in the future and the overall progress of the science may suffer.

Scientific inquiry is becoming more complex and interdisciplinary teams provide advantages as well as challenges to preparing publications with multiple authors. Challenges that commonly arise involve decisions about authorship and decisions about managing authorship contributions. These challenges can be addressed through clear communication of expectations and procedures for conflict resolution that are endorsed by all of the co-authors early in the development of the publication.

*Gregory L. Alexander, PhD, RN, FAAN, University of Missouri*

Authorship is a critical part of any faculty role in higher education. Authorship enhances credibility of a faculty member by increasing visibility of new ideas generated by the author, disseminating important research findings that can influence practice, and communicates to other people, that the author is a knowledgeable

expert in a specific content area. Authors, recognized as leaders in their fields, are often sought after for their expertise as visionary speakers and consultants. These benefits of authorship can create tricky circumstances, when negotiating the order of authorship on a major paper. Sequence of authorship is important because the order informs the reader about the nature of the relationship and work completed by the authors. Variables influencing the decision about authorship order include the scope of work completed by authors on the project, individual responsibilities of authors for project outcomes, total contributions made during manuscript development, and collaborations with international colleagues.

Scope of work takes into account a range of project activities from the development of ideas, long before a manuscript is even considered, to research outcomes reported by authors. Beginning ideologies may include intellectual property derived from think tanks or other types of research collaborations that are hard to measure. Intellectual property created from early developmental phases contains important insights into the conceptual development of the problem being addressed by authors. When writing about this early development, authors have to determine who is most responsible for ideas contributed during these phases. These decisions can be difficult to make. One method to make these decisions more objective is to generate a complete set of notes, from the discussions, including the timing and place of the discussion, who was present at the time of the discussion, and specific contributions added. These types of activities require some foresight to determine who is going to take notes, how these resources will be maintained during the project, and who will complete the content analysis toward the end of the project. Keeping good notes, about developmental activities, provides an objective resource to determine specific contributions made during project development and can make decisions about authorship order more clear.

Responsibilities identified during different project phases can be an important resource to help identify authorship order. Typically, these responsibilities are negotiated with project leads as the project goals are determined. However, responsibilities can change as different timelines pass during project completion. For example, in one project, a large amount of data were required to be collected from

several different health care facilities over a period of several years. Initially, the data were collected in Excel spreadsheets and submitted to the project's program coordinator responsible for data management. After the initial data submission, it became clear to project leads that a new data submission plan was needed. Eventually, these decisions resulted in the development of a novel web-based, secure, data submission site, which was tested with users, and enabled data collection directly into a data repository that could be manipulated more easily. These developmental activities, which were not part of the original project scope, required the team to recruit someone with expertise in designing databases, so someone was recruited to help design the database. Activities evolving beyond original project goals, like this example, can be an excellent resource for publication and can inform interested readers about critical methodologies needed to advance science. However, the project leads must be ready to negotiate publication opportunities with scientific partners added as the project evolves beyond original goals.

Total contributions made on a project can be used as a resource to determine authorship order. Most journal editors identify contributing factors within their authorship guidelines to help authors identify who has contributed to a manuscript. For example, publications may require the main author to identify who participated in different stages of the project, such as recruitment and analysis. It is a good idea for lead authors to consider each co-author's individual contributions, in each phase of the project and perhaps assign a percentage of effort for each phase. Project goals and percentage of effort should be considered for each phase, which can help lead authors know which team members participated in certain project goals. This is important if there are multiple papers that are written based on different project goals. In some cases, journal submission criteria require authors be very specific about the contributions made by each author on the manuscripts, and these contributions are often published at the end of a manuscript.

A final consideration for author order includes publications with co-authors who are international colleagues. There are different values placed on order of authorship outside of the United States. The position of last author can weigh heavily on author order decisions when collaborating with international faculty. For example, in a paper

that is published by an international student, the last author on the paper might be reserved for the student's advisor during the project. Placements like these inform the reader who the senior people were on the project and can add credibility to the paper.

Determining author order on a manuscript requires objectivity. Implementing methods that help project leadership track contributions over the scope of the project is critical. Finally, planning and negotiating author order early and often will be the key to identifying the appropriate author order when writing publications.

## **Cindy M. Anderson, PhD, RN, WHNP-BC, FAHA, FAAN, The Ohio State University**

I received some advice in my early academic career when I participated as an author in my first manuscript. The advice was to clarify roles and expectations of authorship at the outset to avoid misunderstandings of expectations, ethical dilemmas, and even scientific misconduct. The advice served me well through the years, providing the foundation for my own publications and the guidance provided to junior faculty and students that I have had the pleasure to work with through my academic career.

Order of authorship is one of the first decisions that must be made as the responsibilities of authorship are in large part determined by this role. Typically, the first or primary author is responsible for consultation with the individual who generated data included in the manuscript should that individual not be the first author. The first author has primary responsibility for coordination of the manuscript milestones, from selection of the journal through manuscript submission. Co-authors should indicate their significant contributions to the manuscript, which include data acquisition, analysis, or interpretation and the actual writing of manuscript drafts. All authors bear responsibility for reviewing manuscript content and confirming the integrity of the data. Assuring that authors meet their commitments for contributions including concept/design, data acquisition/analysis/interpretation, and manuscript drafting based on the established timeline is perhaps one of the most challenging roles of

the first author. Finally, resolution of author conflicts falls to the first author who serves as the final decision maker.

While the main principles of authorship were always front and center in establishing mutual expectations, as my career advanced the process of establishing authorship responsibilities acquired a more formal structure. The more formalized process now employs a written authorship agreement that contains standard expectations and responsibilities associated with authorship. Each author indicates agreement to meet expectations of authorship role by signing the document. A copy is provided to all authors, serving as a written contract and reminder of commitments associated with authorship. The clear expectations resulting from the mutually agreed-upon commitments contribute to decreased conflict, timely outcomes, and satisfaction in both the process and outcome.

## **Carol E. Smith, PhD, RN, FAAN, Kansas University**

Managing co-authors on manuscript writing is an important scientific and collegial challenge. But these management skills can be learned. There are common issues to all joint writing "adventures" and it is best to discuss those issues at the very beginning of any research project. So initial conversations work well if you begin with stating that "all research projects have numerous topics to write about ranging from the conceptual underpinning of the study, methods being used, process and procedure know-how and of course at the end outcomes." Then, describe the key responsibilities of authorship, which include being able to be publically accountable for what gets written and what is published (ICMJE, 2008).

Next, discuss some of the International Committee of Medical (or Health Care) Journal Editors' guidelines of what earns a person co-authorship. Editors stipulate individuals earn authorship by making contributions to the research, writing, and revising (ICMJE, 2008). For example, most agree that authorship is earned by those having continuous involvement in designing of the study concept, intervention or design, those obtaining funding, supervising the study, conducting the statistical analyses and interpretation and those involved in writing of the manuscripts or the critical revisions of these. Also co-authors must acknowledge funding per guidelines, stipulate their agreement

with the final manuscript, and declare any conflicts of interest such as financial relationships to study funders or interventions (ICMJE, 2008).

During an initial discussion, many research groups often deliberate on authorship order. However, it is essential to explain that individual co-author order and even first authorship can change over time with some writers contributing greater effort than anticipated and others greater requirements such as further statistical analyses. Initially, it is best to select one person to spearhead writing on each of the topics, to plan an outline and make a schedule of due dates for the specific written contributions of each person involved. Describe that writing often takes many months and that many drafts are typical as all co-authors have numerous demands. And in advance state, there will be discussion of the problems that often occur such as co-authors having limited time, interest, or understanding of difficulties of writing.

Then, meet at the scheduled due dates to report progress, judge progress, and rearrange writing responsibilities as needed. During these sessions, describe how self and then co-author critique is an essential and challenging component of writing. Also, novice writers often over write lengthy details that cannot be placed into articles, so a forewarning that most critique comes in the form of strikeouts! Explain that all involved must recognize that critique, data collection or administrative support on data entry or writing suggestions alone do not always earn authorship. These activities can be placed in acknowledgments. Discussions should also deliberate on the level of journal impact factors and open access paid submissions.

One early due date session should discuss plagiarism—giving a description of an author inadvertently or purposively copying from work that has already been published, without citation. Explain that even your own previous work must be cited. Describing the publishing software programs now used to cross check for plagiarism will give gravity to this discussion.

For some article, book chapter, and even grant writing, it is essential to have a written agreement about co-authorship. Written agreements are also needed when others base their articles on components of your research data. Data may be used for secondary analyses or for student projects. Having a written agreement (which

can also be discussed and changed over time) keeps shared responsibilities and co-authorship clear.

Also an important discussion topic is the publication of non-significant or non-validated outcomes. Recognizing that such findings are in fact important new knowledge shedding light on what is not correlated or may not be adding variance to patient outcomes is a service to health care professions.

These initial preparations can avert most co-author conflicts such as missed due dates and hurt pride over critiques. However, there will be struggles of many types and the more these can be anticipated and discussed the better long-term co-author writing experience.

## **Lazelle E. Benefield, PhD, RN, FAAN, University of Oklahoma Health Sciences Center**

Effectively managing manuscript co-authorship involves many of the same principles that are seminal to effective team management. Early planning, clear and frequent communication of project timeline, well-defined responsibilities of each co-author, progress tracking, and realignment when necessary are key elements to success.

First steps include planning the manuscript purpose, developing the content outline, and initially identifying potential co-authors. This creates a context within which the team of authors can function. As first author, owning the responsibility of managing the team is essential and sets the structure early on with contextual and communication formats that improve the likelihood of success.

The issue of authorship order is something that is best settled early in the team's organization. I personally support the use of a co-author agreement signed by each member. The framework guiding author behavior can be drawn from standard ethics of publication and co-authorship guidelines, such as those recommended by the Committee on Publication Ethics (n.d.). These agreed-to plans can avoid later disappointments or misunderstandings as the project progresses and are helpful in resolving disputes over work or credit.

Include task assignments, how decisions are made, and how the team will address items if situations and/or author contributions change. At the initial team meeting, whether in person or virtual, introduce the planned manuscript, the co-author agreement, and the clear delineation of responsibilities related to preparing the manuscript. Establish the timeline for manuscript development, inserting some cushion of time to accommodate the “life happens” events that will inevitably occur among members of the team.

Expect communication issues to surface and prepare ahead your verbal (and written) “script” should you need to realign responsibilities, remove or add authors, or modify the manuscript outline. Issues of civility should be dealt with quickly and privately. When there is tension, misunderstanding, or mismatched aims, the time and energy to address these issues and refocus can be exhausting. Refer back to the co-author agreement to support the team’s agreed-upon collective decisions and communication expectations. As lead author, seek wise counsel regarding issues of ownership of data, publishing outside the team, and intellectual property. Seeking the high road as an author means becoming acquainted with the legal and ethical boundaries and expectations of publication.

In addition to celebrating the final product, rejoice in the incremental successes as the manuscript progresses. As the team develops and builds rapport and trust, members sustain each other and evolve to planning future manuscripts in support of each other’s expertise. As one author expressed, “When I become worn out from writing, my co-author gave me wind beneath my wings.” When the team works well, it is intellectually stimulating, energizing, and positive. Establishing the framework for communication and responsibilities early will not guarantee success, but certainly will provide the backdrop for achievement and redirection when necessary.

## **Barbara Given, PhD, RN, FAAN, Michigan State University**

Co-authorship author credit has been something relevant to us over the years. Dr. Harriet Werley, early in my career, provided strong

statements and guidance to me as a junior faculty. At that time, she was editor of *Research in Nursing & Health* (RINAH). Thus, being clear about co-author expectations has been attended to early rather than later.

Based on this guidance, we developed author guidelines and agreements that we use related to publication from our grants. Thus, for any publications, that is a part of discussion and practice. This includes all team members including students. We plan manuscripts for the future and decide on roles and responsibilities as well as inclusions of authors for generally a 6-month period. Because we have primarily done community-based research, we include physicians and nurses as co-authors based on their reading the manuscripts and providing the clinical viewpoint. If they do not contribute as decided, they are told that we are proceeding without them. They are removed from authorship. This has worked well without issues for the most part.

We do generally have careful and open discussions around manuscripts before they are too far developed. We have many drafts, thus authorship responsibility is dealt with along the trajectory.

For the edited books we have done, which has been few in number, we started with authors who we thought we understood their work style in being on time versus procrastinators. We then get written agreements to the various detailed time points—for outlines, drafts, final copies, and edited copies. We do agreements and reminders of due dates. This has served us well, and no author has been removed from any of our books or special edition journal articles. We have not had many but we believe careful pre-selection of colleagues made the difference. We have, therefore, because of good mentoring of a new junior faculty, moved without much trauma.

## **Marita Titler, PhD, RN, FAAN, University of Michigan**

Co-authorship of research papers and other publications is both rewarding and challenging. I approach co-authorship from two perspectives, the first using a set of principles/processes I use with

colleagues or individuals who have published in the past and the second perspective based on principles/processes for co-authorship with students or first-time authors.

When individuals are part of my research teams, I use the following process and principles for those who are serving as first authors and have prior publications. First, we set forth possible publications from the research in one of the investigative team meetings—this includes the major findings of the research first, and then other papers that could be written from the research projects (e.g., the conceptual model with a description; the lessons learned from multi-site studies). Next, the first author and targeted journal for each potential paper is determined. If I am the principal investigator of the research, I take the major paper of study findings. Then, we select co-authors for each paper. Due dates and sequence of publications/papers for submission to journals are next determined. Then, the first author does a paper outline and assigns co-authors sections to write for the paper with due dates. If co-authors do not submit their pieces after three reminders, they forgo their co-authorship. The first author integrates the pieces from the co-authors into a publishable manuscript and circulates it to the co-authors for comments and feedback. All co-authors must respond. If I am the principal investigator of the study from which papers are emanating, I as principal investigator have the final review before it is submitted. The first author is responsible for formatting and submission of the paper to the journal. This pattern of developing manuscripts is based on the assumptions that all authors have been part of the investigative team and contributed to the research and that they contribute a section of the written manuscript.

Challenges in this approach are that some co-authors may not follow through with submitting their written piece. In this case, they are sent an email (the third email notice mentioned above), letting them know that if they want to be a co-author, they must have their written piece sent to the first author by a set deadline (usually a week after the third email is sent). A second challenge is the first author may not meet deadlines. If I am the principal investigator of the study, I usually have a private conversation with them to determine their continued interest and feasibility in being first author and setting deadlines, which if not met, will preclude them from being first author.

Tracking manuscripts is important. A table with the information above is reviewed at each of the investigative team meetings to keep the work moving forward (Table 1). I usually start this process of populating the table after we have enrolled sites and we are well underway with data collection.

Table 1. Sample Manuscript Development Table.

**Table 1.** Sample Manuscript Development Table.

Paper Title	Focus of the Paper	Targeted Journal and Due Date for Submission	First Author	Co-Authors
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I use a similar process with individuals who have never published before if they are first authors. I usually work with them to outline the paper, determine the due dates for co-authors, and assist with communication to co-authors. This is usually approached as a learning experience for this first-time author and I tend to commit considerable time in helping them be successful. They must demonstrate, however, that they can critically analyze the feedback and integrate suggestions (not just accept what people recommend). If I find that this individual is unable to serve as first author, we have a discussion with the team about who else might like to be first author. This is usually a judgment call. The individual who may no longer be first author is still encouraged to be co-author. The challenge with this approach is that first-time first authors may not realize the effort and commitment to managing a co-authored paper.

## **Janet Larson, PhD, RN, FAAN, University of Michigan**

I have come to realize that I can expect different contributions from different members of my research team. One member can be counted on to give me detailed editorial input, something that I welcome. Another member will verify the accuracy of tables, references, and content, but will not provide suggestions for framing

the paper and adding or subtracting content, despite the fact that he or she is an excellent scientist. This knowledge comes from working with a mature research team over the years and I currently use it to good advantage when preparing manuscripts. We order the authorship according to who wrote the bulk of the paper (first), then the magnitude of contribution to the research; and as the senior author I assume the last position, referred to as the senior author's position, when someone else carries the bulk of the work in writing the paper. The position of the senior author is not always handled in this way, but it is common in the biological sciences and is the accepted practice at my institution. It also has the advantage of giving junior authors higher ranking within the list, something that can be important for their promotion.

When I am not working with an established team the contribution of each individual is less predictable and requires advance planning and clarification of expectations. In this situation, responsibility for writing the paper is divided, typically among two of the authors, and drafts are sent to all authors for input and critique. We ask for a response within two weeks and list the date in the note, understanding that everyone may not be able to respond within this time frame. Some delay in response is not unusual, but extensive delay is unacceptable. An extensive delay can happen when one of the co-authors is no longer closely linked to the project. Some people also have a habit of responding slowly and this can be frustrating. In deciding how to handle each situation, it is important to keep in mind that the field of nursing research is relatively small and it is unwise to antagonize co-authors, even when they are months overdue, because they may be reviewing your work in the future. Current co-authors could eventually be reviewing your manuscripts, research grants, or papers for promotion, and it is important to maintain collegial relationships. In these situations, diplomacy is required, and I find that students seldom understand this, so I explain it in detail.

I personally try to respond to my co-authors within two weeks of receiving the draft manuscript. I think this is a reasonable turnaround time, and I tell my co-authors to expect it and I ask them to please remind me if I do not respond within that time frame. I am concerned that I may inadvertently lose track of a manuscript and fail to respond for a lengthy period of time, unnecessarily delaying the

manuscript preparation time. This gives the first author permission to bug me for my feedback. In this process, it is important to remember that everyone is busy, both the senior authors and the junior authors, so advance planning and transparency are important. Publishing is an important marker of scholarly productivity and how one handles the process will influence productivity.

## **Nancy L. Fahrenwald, PhD, RN, APHN-BC, South Dakota State University**

Early planning is the most helpful strategy I have employed with managing co-authors. Timelines for dissemination are built into most funding proposals. While grant applications typically do not require a description of the specific papers that will be disseminated from the project, this planning strategy is important to include on the agenda for pre-submission meetings of the research team. The discussion at this early stage needs to include planning for who will be the anticipated lead authors and co-authors on the manuscripts related to the project. In this pre-submission team building phase, it is a good practice to discuss authorship responsibilities and expectations as a group. The team needs to work out and agree upon alternative plans for authors who are not able to meet expected deadlines. This early agreement on responsibilities and consequences when expectations of co-authors are unmet reduces later frustration on how to handle difficult authorship situations. Once the project is funded, team meetings need to include a standing agenda item on dissemination plans and progress toward specific planned submission dates.

Writing quality is a sticky issue that I have encountered in authorship of manuscripts. At times, I have invited co-authors because of their clinical or methodological expertise, or their interest in a particular project. While this generous approach has yielded fantastic ideas and additional dissemination options and outcomes, it has also resulted in unanticipated problems with the quality of scientific writing. It is difficult to return content to co-authors requesting complete revision. After several experiences like this, I invite co-authors to gauge their writing skills and their commitment to writing quality before a paper is co-authored. Distinguishing between generous critique and criticism is an important conversation in this process.

Rather than launching into my own heavy revision of poorly developed written materials, I return sections to co-authors completely unmarked. I simply ask the co-author to spend more time on specific details prior to returning it to me by a certain date. If writing quality cannot be improved, then alternative dissemination options are suggested. Perhaps the team member can present a poster or podium presentation at a scientific or professional meeting.

When writing with a team, I have learned to expect the unexpected. Personal crises occur, faculty roles change, projects are delayed for many reasons, and people move on to other things. Discuss these possibilities and plan responses together with the research team. Not only does this conversation make it easier to respond to these unanticipated events, but it also provides co-authors with a respectful acknowledgment that we are all humans.

## **Marlene Z. Cohen, PhD, RN, FAAN, University of Nebraska Medical Center**

To paraphrase what Mahatma Gandhi (Waylon, 2013) may (or may not) have said, "Be the co-author you wish to see in the world." I have been privileged to work with many co-authors, and most of my experiences have been very positive. While everyone can learn from negative examples, perhaps the positive examples make points even more effectively.

I have learned about the importance of being clear about expectations as soon as possible. The best co-authors I have worked with are very clear about what they expect and continue to clarify expectations as the writing process moves forward. This includes the content of the paper, the topics to cover, the journal to submit to, and other journals to which to resubmit should the paper not be accepted, and so on. Clarity about deadlines is also important, as well as who will be responsible for which parts, and how best to communicate, for example, using email, track changes on manuscript drafts, phone calls, Skype, or some combination of these and other methods.

Order of authorship is another part of writing together that needs to be clear and revisited as things change. I have worked with

very generous co-authors, so I try to keep that in mind when making decisions about authorship. Early in my career, two of my favorite co-authors had me be first author on papers that were the result of invitations that had come to them, the more senior researchers. I knew that was both kind and generous, and now work to pay it forward and know that author order is far less important to a professor than to an assistant professor. It is also important to be clear about what you need in regard to order of the names of the co-authors. One co-author told me at the start of a project that she was going up for promotion that year and wanted to be first author. She did the work that required, and I was happy she let me know what she needed. When thinking about teaching as part of the writing process, it is important to maintain integrity (along with generosity), so that the order really reflects the work that each person does.

Of course, problems inevitably arise, and at the heart of these problems is often communication. I try to be clear that deadlines are great guides, but usually they can be flexible. However, if they cannot be moved, then that needs to be clearly stated. I can be persistent to the point of being annoying when communication breaks down. It is easier to track people down when writing with people who work in the same campus. Long distance collaborations are more challenging, but emails and being clear about consequences of not meeting deadlines are useful. For example, I was invited to write a book chapter and worked on it with some co-authors. Order of authorship was discussed at our initial meeting, and we decided who would be the first author. Unfortunately, the first author did not write the parts she agreed to write. After several unanswered calls and emails, I emailed her that we had a "real" deadline for this book chapter, and if she could not meet the deadline, perhaps someone else would take the lead on the chapter. We then talked and did change the order of the authorship as she could not do all the work she had agreed to do. I have also had the very sad experience that two co-authors became very sick during our work together. They both offered to be taken off the paper as an author, which did not seem like the right thing to do. One of the co-authors contributed early to the manuscript and I finished the paper and submitted it. Fortunately by the time the "revise and resubmit" letter came, she was better and contributed to the revision. The other person passed away before the paper was published and that was noted in the author section of the paper. These are the only

experiences with co-authors I have had that I hope never to have again.

My favorite co-authors are those who do what they agree to do, and do it promptly. When a co-author sends me a draft to work on, I do my best to do that work the same week (or sooner!) if possible. Having a paper sit only makes it less fresh in your mind and takes longer to get back to the flow of writing. I have worked with some co-authors who are so prompt with their work that the new version of the manuscript comes before I have had time to start work on another project. One co-author who works in a time zone 7 hr ahead of me typically does revisions before I come back to work the next day.

Another aspect of a good co-author is providing good feedback and attending to all feedback. It is not helpful to be in such a rush to get a paper out that needed revisions are neglected. I believe a manuscript should be as clear and complete as possible before submitting it. Others resist making changes that will require too much work, believing that the paper is "good enough." A good co-author will provide feedback and is willing to do the work needed to respond to others' critiques to make the paper better.

A final role of a good co-author is to celebrate successes and to commiserate unfortunate evaluations of manuscripts. Whether the reviewers are wise and see the value of a manuscript or are foolish (or worse, rude!) in their critique, a good co-author and some chocolate can really help.

I am always mindful that the kinds of disagreements and conflicts that arise in co-authoring can result in ending relationships. Deciding whether the conflict is more important than the relationship often resolves the problem for me.

## **Vicki Conn, PhD, RN, FAAN, University of Missouri**

As musicians in an orchestra play varied roles that contribute to a whole performance, there are many ways that co-authors can make significant contributions to manuscript development. The most committed co-authors draft sections of manuscripts. Other co-authors provide critical insights on drafts of manuscripts to significantly

improve documents. Some co-authors predominantly contribute through oral discussions about manuscript development but do not have a hand in the written drafts. Unfortunately, other potential co-authors seem to disappear during manuscript development. Strategies to effectively involve co-authors in manuscript development can both enhance the product by increasing manuscript quality as well as improve important processes such as research team effectiveness.

Early planning and discussion of co-author manuscript activities is very useful for clarifying everyone's role. Keep in mind that co-authored manuscripts generally require more time for development than sole-authored papers. The lead author needs to allot ample time for co-author contributions into the paper development timeline. Co-authors are more likely to agree to due dates four weeks away than to panicked requests for assistance within four days.

These preliminary discussions should include the timing of manuscript development, division of responsibilities of manuscript components among authors, realistic assessment of how this project fits with people's workloads, and clear principles for determining authorship and order of authorship. See Table 2 for a list of project activities that might be discussed with potential co-authors to allocate work as well as determine authorship credit and order. These early discussions provide the foundation for continued dialogue when manuscripts are actually being developed. These interactions often occur in the context of broader discussions about other possible manuscripts from particular projects and leadership of each project, so harmony should be a high priority.

**Table 2.** Contributions to Consider for Allocating Work and Determining Authorship Credit and Order.

Study Activities	Manuscript Activities
<ul style="list-style-type: none"> <li>• Conceptualize study</li> <li>• Design study methods</li> <li>• Locate/secure/create study measures</li> <li>• Generate study protocol</li> <li>• Secure funding for study</li> <li>• Provide resources for study (e.g., equipment, laboratory access, graduate research assistant time)</li> <li>• Secure human subjects/animal use approval</li> <li>• Train study personnel</li> <li>• Enable access to subjects</li> <li>• Recruit and retain subjects</li> <li>• Conduct study (e.g., deliver interventions, collect data)</li> <li>• Manage data</li> <li>• Develop analysis plans</li> <li>• Analyze data</li> <li>• Interpret findings in context of extant research</li> <li>• Explicate the meaning of findings for practice</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct updated literature search for manuscript development</li> <li>• Determine publishing outlet(s) for manuscript</li> <li>• Write manuscript abstract</li> <li>• Write manuscript background section</li> <li>• Write manuscript methods</li> <li>• Write manuscript results narrative</li> <li>• Generate manuscript tables and figures</li> <li>• Write manuscript discussion</li> <li>• Communicate with co-authors and include their ideas in the paper during manuscript development</li> <li>• Manage manuscript formatting (e.g., reference lists, specific formats for tables)</li> <li>• Communicate with journal(s) regarding manuscript</li> <li>• Retain files and records to address any potential questions prior to and following publication</li> </ul>

Note. Some individual items listed in the table may not merit co-authorship but do contribute to the overall contribution and are therefore taken into account when determining authorship. Not all study and manuscript activities are equally important.

The result of the planning stage should be a written work plan and timeline that are circulated to all potential authors of the manuscript. These notes allow colleagues to identify their respective contributions. Strategically timed reminder emails are useful to remind co-authors who may have forgotten their task in the noise of their workload.

Early discussion about team members' professional needs regarding authorship can help with decisions regarding who will assume which responsibility in the manuscript. While individuals should not be "gifted" with authorship because they need another publication for promotion, they could be granted the opportunity to significantly contribute to a manuscript to justify authorship. This

policy ensures that co-authors are on even ground in terms of expected work, eliminating any discord due to unequal treatment.

Finally, it is important to consider the experience of each potential co-author. It is a natural result of the academic process that not all co-authors are equally prepared to be co-authors. Research teams often invite doctoral students or junior faculty to participate in the co-authorship of manuscripts. Lead authors may need to take extra time to provide mentoring to such individuals regarding appropriate co-author behavior. First-time lead authors can benefit from discussing co-author management with experienced lead authors.

Despite following the advice presented here, it is possible that there will be a potential co-author who does not deliver their planned contribution to the manuscript. Sometimes, the manuscript can move forward without that person's input. Many journals are explicit about authorship criteria; presenting these statements can be useful in reigning in individuals who did not contribute to the manuscript but wish to be listed as authors. While tempting, removing potential co-authors should generally be a last resort after other possibilities to remedy the problem have been fully explored. Lead authors may even find it worthwhile to delay a manuscript to receive a co-author's comments to preserve important professional relationships.

As the manuscript nears completion, the actual contributions of co-authors may stray from the plan set out in the beginning. Sometimes, there is disagreement with the order of authorship designated by the lead author. For example, one co-author might request to move higher in the author list because she wrote two paragraphs of the discussion section, while another co-author only asked a question about the analysis. Usually, the lead author can settle these disagreements by describing the relative intellectual contributions of various authors as justification for authorship order. In this case, maybe the co-author's sole question caused the lead author to conduct additional analysis instrumental to the research's importance. Open discussion among all the co-authors concerning author order is more efficient than multiple one-to-one discussions between the lead author and each co-author. Refer again to Table 2 for a list of contributions to be considered in determining authorship credit and order.

Another problematic situation occurs when one co-author wants to add content she considers important due to her expertise, but which the lead author believes is tangential to the manuscript's focus. One strategy that could benefit everyone is to propose an alternative manuscript, lead authored by the individual with that expertise, focused on the tangential topic. Another approach is to crowdsource the pruning process by asking all the authors to identify any content not essential for this paper. This activity is also useful when manuscripts exceed a journal's word or page limits.

Disagreements among authors about interpreting findings in manuscripts may be frustrating, but useful. These disagreements can represent unique perspectives which can move science forward (Spring, Moller, & Falk-Krzesinski, 2011). The lead author should promote a team environment where multiple opinions are considered. It would be unwise to prematurely censor divergent perspectives before fully considering their potential contribution to new knowledge. Teams that encourage multiple perspectives are most likely to generate innovative studies that solve complex problems. These sorts of disagreements should be resolved on the basis of strength of evidence, rather than force of personality.

These tips for managing co-author dilemmas form certain motifs. Early and frequent discussions of authorship principles and issues can prevent the escalation of problems. Understanding the professional needs of each co-author is key, and transparency among them is essential. Keep creative solutions in mind when handling any issues that arise.

Just as an orchestra sounds more resonant than a solo performer, team science has a scope and depth that is hard to achieve by single investigators. Thus, having a repertoire of strategies to effectively manage co-authored papers is a worthwhile endeavor to build the scientific basis of nursing practice.

## **Summary**

Team science is the future of health care research. Team authorship will continue to grow. The benefits presented by engaging in co-authorship generally outweigh the challenges. Strategies to deal

with co-authorship challenges are summarized in Table 3. Co-authorship, like other skills, takes practice and is not always a perfect process. Learning intentional planning, effective communication, and having clear expectations will help avoid many of the challenges. When issues arise, remember that research dissemination and manuscript publication are worthy goals, and engaging in co-authorship is often part of the process. Learning from the wisdom of more experienced authors and intentional planning will promote successful endeavors in co-authorship.

**Table 3. Effective Strategies to Address Common Challenges With Co-Authorial Manuscripts**

Challenge	Strategy
Inexperienced co-author	<ul style="list-style-type: none"> <li>• Provide mentoring from a more experienced author on the team</li> <li>• Plan for additional support that less experienced author may need</li> <li>• Allow additional time for novice co-author contributions</li> </ul>
Ineffective communication	<ul style="list-style-type: none"> <li>• Have early and frequent discussion about manuscripts</li> <li>• Provide written timelines</li> <li>• Circulate and update work agreements widely and regularly</li> <li>• Review and remind team about approaching deadlines</li> </ul>
Co-author edit concern lead author considers to be non-essential	<ul style="list-style-type: none"> <li>• Suggest an additional manuscript about the content added by the co-author, potentially with current co-author becoming lead author on the new paper</li> <li>• Remind co-author of word limits</li> <li>• Allow other team authors to decide which content is retained and excluded</li> </ul>
Disagreements about interpretation of results	<ul style="list-style-type: none"> <li>• Be transparent in stating rationale for changes</li> <li>• Value divergent perspectives about interpreting findings; consider including them in manuscripts</li> <li>• Use varied interpretations of findings to promote team building which values discussion and novel ideas</li> <li>• Prevent disagreements from escalating emotions</li> <li>• Determine interpretation of findings for manuscripts based on strength of evidence</li> </ul>
Potential co-author's desire more publications to advance their careers	<ul style="list-style-type: none"> <li>• Have early discussions of manuscript possibilities from a planned project</li> <li>• Encourage development of additional papers beyond those essential for the project</li> <li>• Consider order of publication development to advance co-author's career progression</li> <li>• Monitor principle that authorship requires significant contributions to manuscripts</li> <li>• Discuss publication guidelines regarding authorship determination</li> </ul>
Failure of a co-author to meet a deadline	<ul style="list-style-type: none"> <li>• Consider co-author's other commitments in determining timelines</li> <li>• Agree with co-author on a detailed schedule with delegated work and deadlines</li> <li>• Communicate effectively and frequently</li> <li>• Develop a written accountability plan</li> <li>• Have a backup plan for re-delegating tasks</li> <li>• Make co-author agreements which articulate work expectations</li> </ul>
Failure of a situation to complete the expected work	<ul style="list-style-type: none"> <li>• Provide detailed expectations at the beginning of the project</li> <li>• Time requests for work to allow ample time for co-author contributions</li> <li>• Use timed multiple reminders</li> <li>• Articulate consequences of not completing the work</li> </ul>
Disagreements about degree of contribution and order of authorship	<ul style="list-style-type: none"> <li>• Have written plans for manuscripts and authorship developed early in project</li> <li>• Communicate openly about serial contributions of co-authors as manuscript is developed</li> <li>• List contributions of each author to research paper and manuscript development</li> <li>• Consult journal guidelines</li> <li>• Include senior colleague from outside project to facilitate discussion of authorship disagreements</li> </ul>
Co-investigator develops manuscript using project data without input or approval from principal investigator	<ul style="list-style-type: none"> <li>• Include written requirements for use of data in original discussions about possible manuscripts based on agreed-upon standards</li> <li>• Remind research team that project data may not be used without approval of principal investigator</li> <li>• Advise that all new research questions require research team and human subjects professional committee approval</li> <li>• Seek university legal counsel and experts in intellectual property for problematic situations</li> </ul>

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