Survival Skills for Researchers

Peer Review

PEER REVIEW

Definitions

- Peer -- An equal
- Review -- To go over/to correct defects

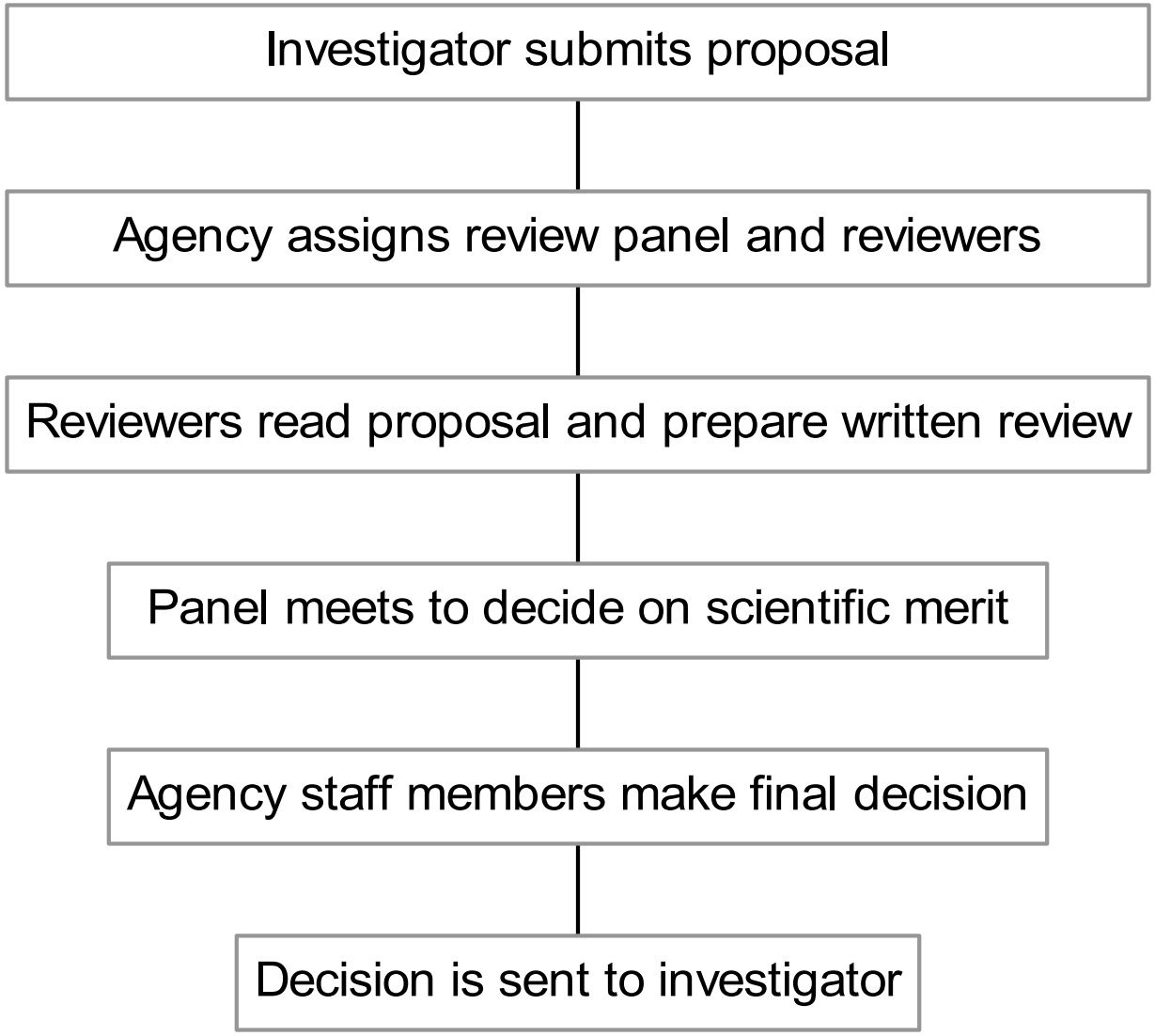
What is reviewed?

- Protocols and Proposals
- Manuscripts
- Abstracts for some meetings

Definitions

- For Proposals:
  - Peer review = consideration by a group of experts qualified by training and experience to give advice on scientific merit of grant application
- For Manuscripts
  - Peer review = review of scientific merit and content of manuscripts by experts who are not part of editorial staff

General Process for Proposal Review



Assignment Process at NIH

- 10,000 applications arrive at given deadline!
- Each application assigned to Integrated Review Group (IRG) and to funding Institute(s)
- Application then assigned to Study Section within IRG
- NIH officials will consider requests for these assignments (put in cover letter)

Process at NIH

- *Scientific Review Administrator* (SRA) of Study Section then decides on reviewers from within members of Study Section or from ad hoc members

Appointment of Reviewers to Study Section

- Designated federal official called Scientific Review Administrator (SRA) recruits members of Study Section
- Composition defined in Code of Federal Regulations
  - Experts with training and experience in relevant scientific field
    - Level of formal education
    - Quantity and quality of relevant research
    - Honors and awards

Appointment of Reviewers to Study Section

SRA also needs to address

- Diversity in gender, ethnicity and geographic distribution
- Fairness and evenhandedness in review
- Willingness to do the work required
- Ability to give clear presentations

Appointment of Reviewers to Study Section

Types of appointments to study section

- Regular – typically 3-4 years
- Temporary, ad hoc – one time, may lead to regular appointment
- Appointment to special emphasis panel – one time only

Assignment of Applications to Reviewers

- SRA matches grant applications to specific reviewers
- Tries to ensure
  - Appropriate expertise
  - Differing scientific viewpoints
- Tries to avoid
  - Overload of particular reviewer
  - Same set of reviewers on multiple assignments
  - Potential conflict of interest

Assignment of Applications to Reviewers

2 reviewers and 1 discussant (minimum) are assigned to each proposal

- Primary reviewer
- Secondary reviewer
- Reader (does not need to prepare written review prior to meeting of study section)

Could be more – Tertiary, more Readers

Goals of Reviewer

What are goals of reviewer?

- To maintain and improve quality of scientific research
- To provide fair and impartial evaluation of individual application
- To voice opinion about merit of individual application

Goals of Reviewer

Reviewer should become acquainted with

- Goals of agency
- Other panel members and other reviewers of assigned proposals
- Instructions for review, including review criteria

NIH Review Criteria

NIH review criteria for unsolicited research project grant applications

- Significance
  - Important problem
  - Advancement of scientific knowledge
  - Influence on methods that drive the field
- Approach
  - Adequate development of design, methods, analyses
  - Acknowledgment of potential problems, alternatives

NIH Criteria

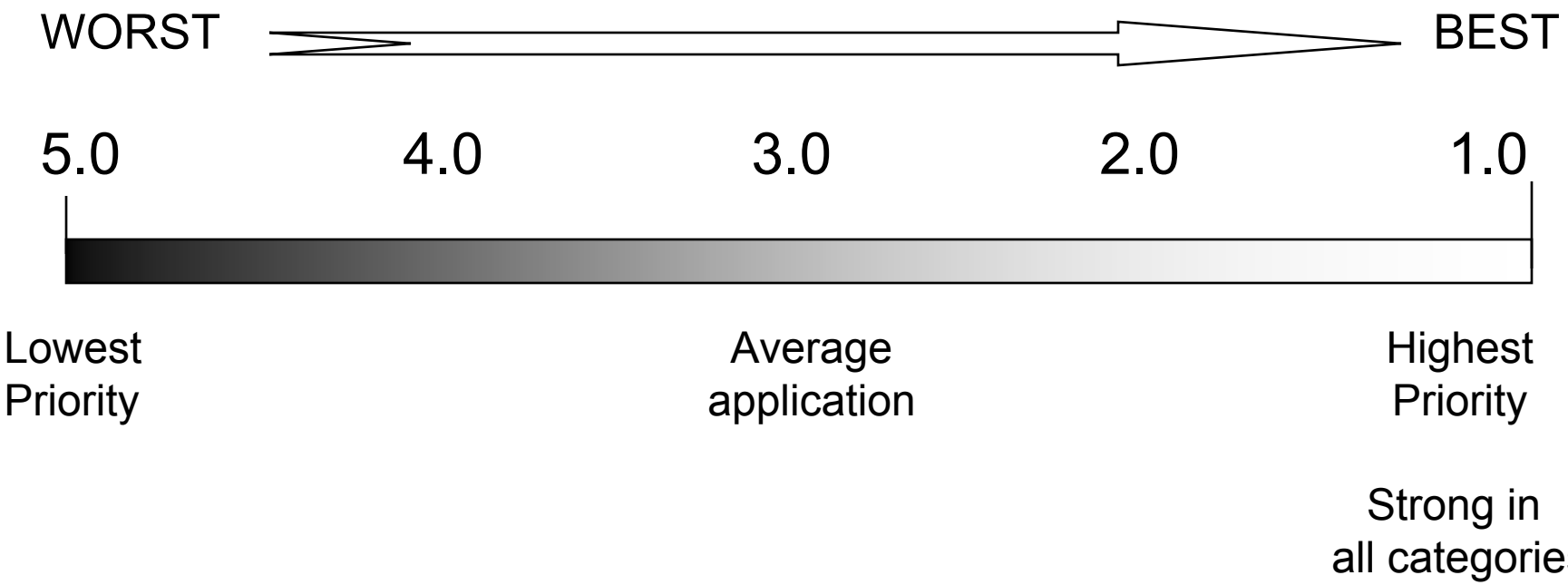
- Innovation
  - Novel concepts, approaches, methods
  - Challenge to existing paradigms
  - Development of new methodologies
- Investigator
  - Appropriate training, experience
- Environment
  - Conducive to probability of success
  - Useful collaborations
  - Institutional support

NIH Criteria

- Other criteria
  - Gender/minority/children inclusion
  - Budget
  - Protection of humans, animals, and environment
- Overall rating
  - Numerical score that reflects overall impact

NIH Numerical Rating

Priority score: Single, global score for proposal



Preparation for Writing Critique

- Scan title, abstract, research plan
  - General impression of merit
- Consider big picture first -- most agencies have moved in this direction
  - Example from NIH: “the review of grant applications needed to be refocused on the quality of the science and the impact it might have on the field, rather than on details of technique and methodology”

Preparation for Writing Critique

- Allot plenty of time
- Read each section
- Take notes
- Outline strengths and weaknesses

Writing the Critique

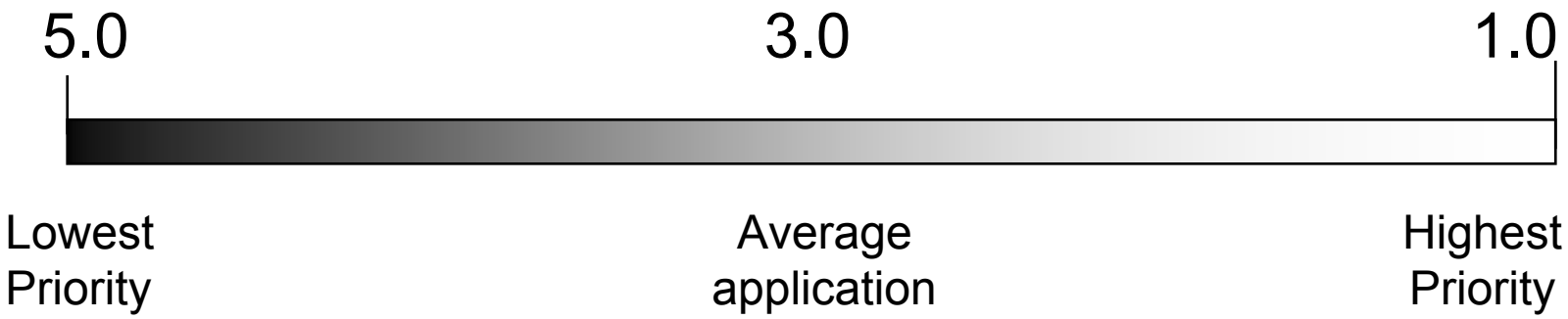
- Follow instructions of agency
- Use headings for NIH
  - Significance
  - Approach
  - Innovation
  - Investigator
  - Environment
- Minimize descriptive information

Writing the Critique

- Describe strengths
- Describe weaknesses
- Avoid emphasis on minor technical details
- Avoid re-designing protocol
- Write review for eyes of applicant
- Length: 2-5 pages, double-spaced

Writing the Critique

- Decide on preliminary priority score



Submitting Critique Before Meeting

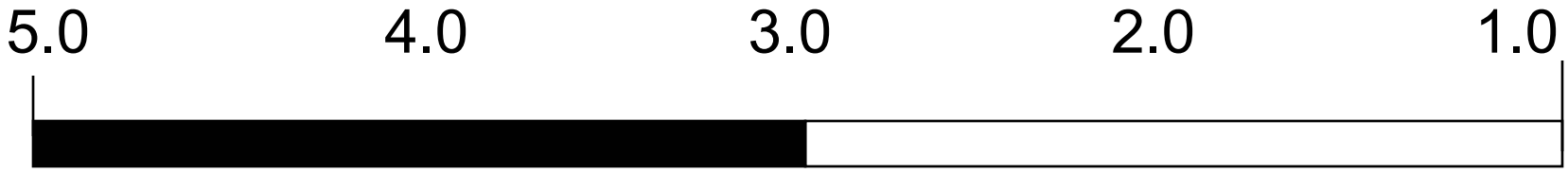
Website

- Several days before meeting, upload score and written critique
- Once uploaded, can then read other reviewers' scores and reviews
- Once uploaded, cannot make changes to your scores or critiques until after meeting

Study Section Meeting

Streamlined Applications

- Definition:
  - Not in upper half
  - Priority score higher than 3



- Does not apply to career awards, fellowships

Study Section Meeting
Streamlining

Streamlining Procedure

- Reviewers asked ahead of time to recommend applications not in upper half (“unscored” or “streamlined”)
- SRA compiles list
- List discussed at beginning of meeting
- Any member may ask for proposal to be discussed

Study Section Meeting
Streamlining

Benefits and rationale

- Gives time for in-depth discussion of better applications
- Saves costs if meeting is shortened
- Reduces work of scientific review administrators

Only about 25% of applications will be funded

Study Section Meeting
Streamlining

- If application is streamlined, applicant receives unaltered written critiques
- Fate of unscored applications?

Study Section Meeting
Review Procedures

Review procedure for proposals to be scored

- Chair of study section introduces application
- Each reviewer gives preliminary numerical score
- Primary reviewer covers description and comments
- Secondary reviewer adds comments
- Reader adds comments

Study Section Meeting
Review Procedures

Review procedure, continued

- Discussion ensues
- Consensus is not necessary
- Chair calls for priority rating
- Every members re-scores
- SRA asks reviewers to modify critiques to reflect discussion
- SRA prepares Resume and Summary of Discussion

Suggestions for Panel Meeting

- Decide if going to be “advocate”
- Try not to read written review
- Primary reviewer
  - Describe project for other committee members
  - Cover all major strengths and weaknesses
  - Make it clear if you support the application

Suggestions for Panel Meeting

- Secondary Reviewers/Readers
  - LISTEN to primary reviewer
  - Try to discuss NEW items only -- both strengths and weaknesses
  - Make it clear if you support the application
- Reviewer is being “reviewed”
  - Give effective oral presentation

Responsible Conduct
Conflict of Interest

- Conflict of interest – reviewer, close relative, or close professional associate has interest in application
- Examples:

  Reviewer, spouse, parent, child, partner is
  - Salaried employee of applicant institution
  - Negotiating employment at applicant institution
  - In position to receive direct financial benefit from project
- Action – leave room

Responsible Conduct
Conflict of Interest

- Special situation of conflict
  - Reviewer, close relative, or close associate is member of staff of proposed project
  - Sometimes called “member conflict”
- Action – application reviewed by another group
  - Standing study section
  - Special emphasis panel
- Reasoning – close relationship among peer review group members

Responsible Conduct
Conflict of Interest

- "Appearance" of conflict of interest – circumstances would cause reasonable person to question impartiality
- Examples
  - Reviewer worked closely with PI
  - Applicant mentions reviewer's name in cover letter
  - Longstanding differences
- Action – Reviewer may be asked to leave room, not strictly required

Responsible Conduct
Confidentiality

- Privileged information during review
  - Application
  - Discussion
- Restrictions
  - Do not share materials or solicit outside opinions without permission
  - Do not discuss review proceedings
  - Do not communicate with applicant
  - Destroy all review-related materials
  - Refer inquiries to SRA

Responsible Conduct
Certification

- Each reviewer must sign conflict of interest and confidentiality form
- Certification contains specific list of proposal titles in real or apparent conflict
  - Generated by SRA
  - Added to by reviewer
- Reviewer agrees to “recuse myself from their review”

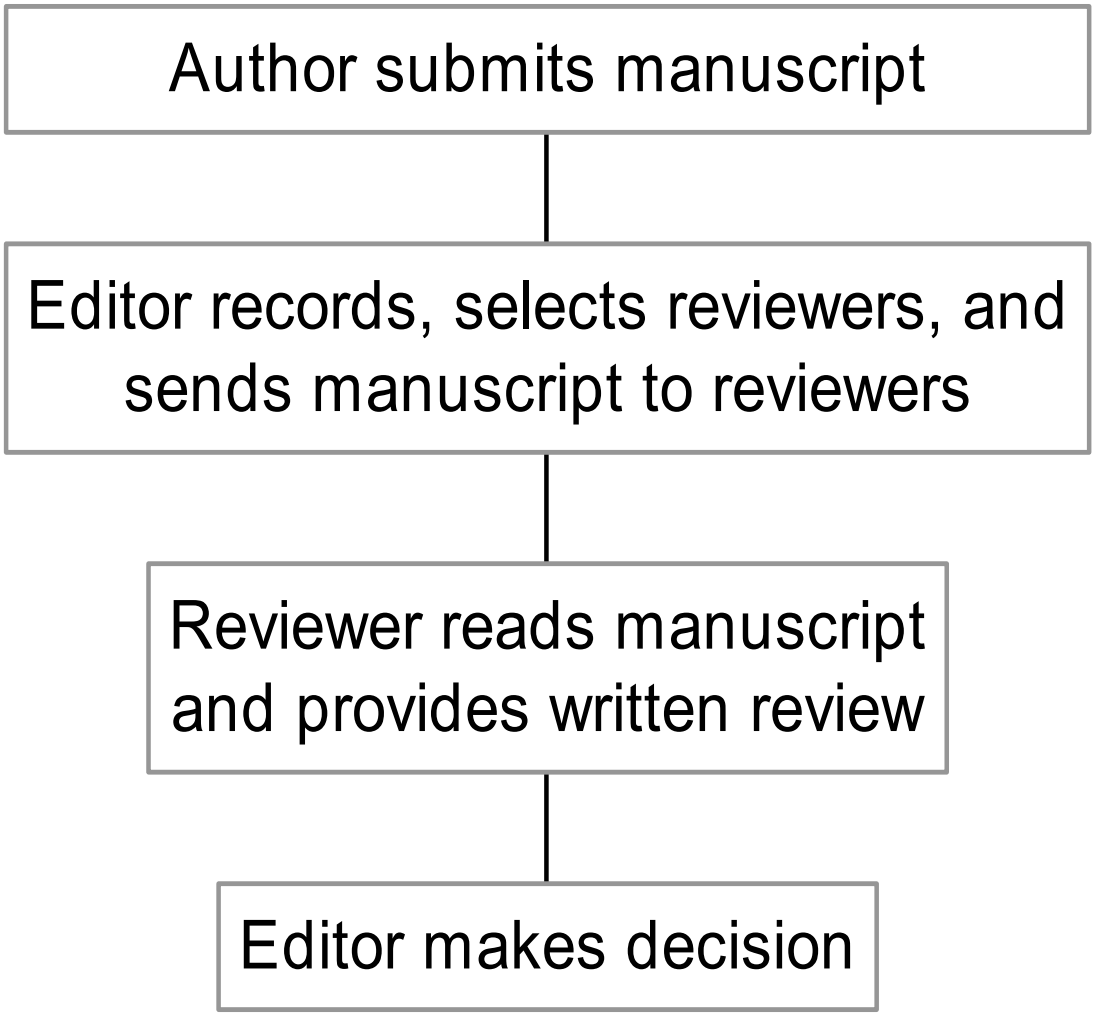
Reporting Suspicions of Misconduct

What if reviewer finds appearance of misconduct while reviewing?

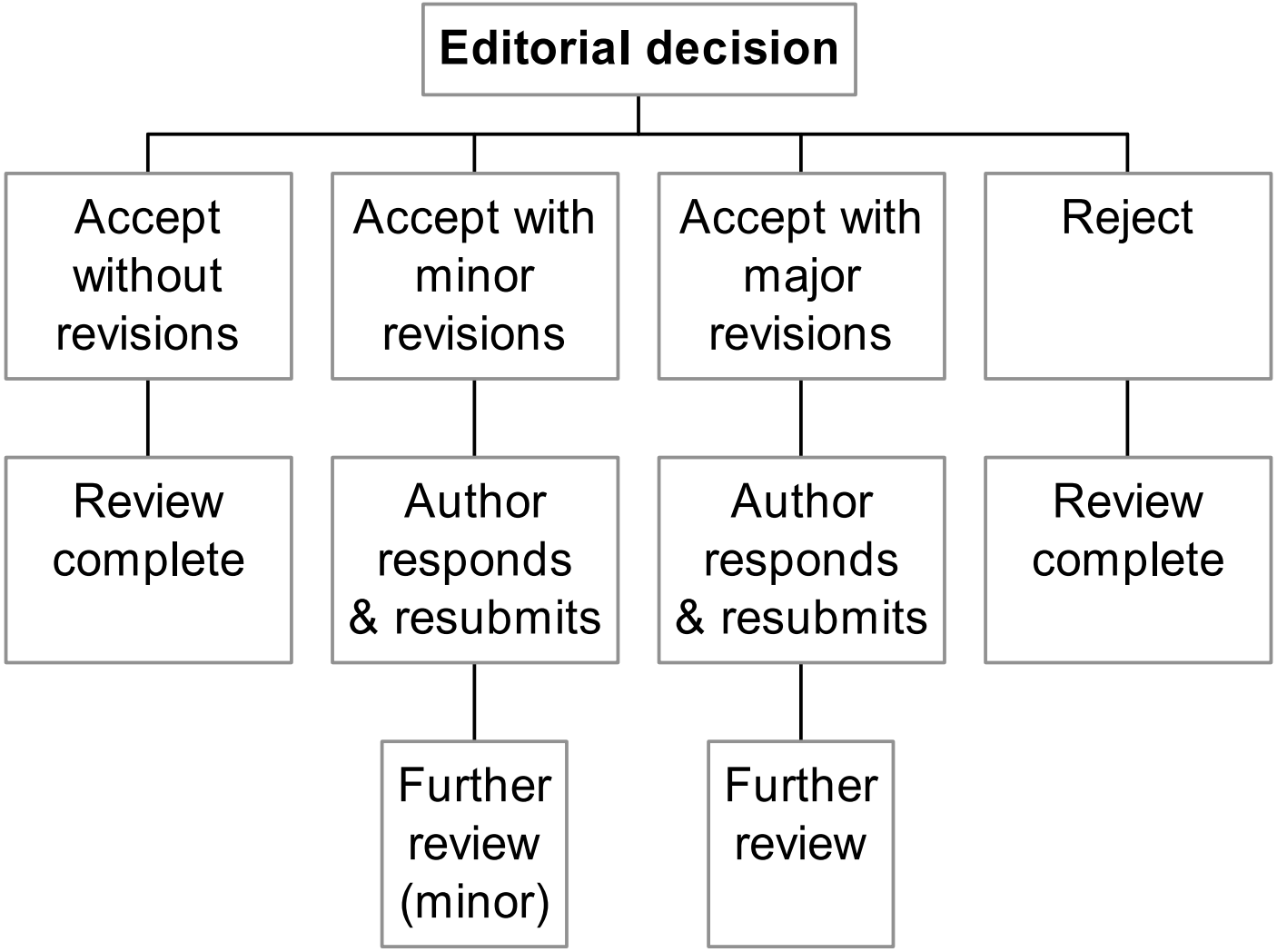
- Bring to attention of SRA – sooner the better
- SRA will report to Research Integrity Officer
- Review will proceed while allegation is assessed
- Reviewer should not raise suspicion during review

Peer Review of Manuscripts

Process for Review of Manuscripts



Process


Editorial decision
Accept without revisions
Accept with minor revisions
Accept with major revisions
Reject
Review complete
Author responds & resubmits
Author responds & resubmits
Review complete
Further review (minor)
Further review

Process

Masking in peer review systems

	Authors known to Reviewers	Reviewers known to Authors
Fully open	YES	YES
Partial	YES	NO
Fully closed	NO	NO

Masking

Closed versus open peer review [Rennie 1998]

- Fully closed
  + Fair
  - Very difficult to implement, often unsuccessful

Masking

- Partially closed
  - + Familiar
  - + Allows reviewer to write anything without repercussions
  - - Inconsistent: masking reviewer is viewed as vital to process but not masking author
  - - Reviewer does not have to be accountable
  - - Could be abused (e.g., plagiarism)

Masking

- Open
  + Promotes constructive nature of review
  + Promotes politeness
  + Encourages substantiation of criticisms
  + Practical to implement
  - Must overcome current system
  - Discourages reviewer from being exhaustive
  - May generate fear of repercussions

Assignment of Reviewers

- Choice of editor and/or editorial board
- Editor's responsibilities in assigning reviewers
  - To select unbiased reviewers
  - To select experts in field
  - To check for potential conflict of interest

Goals of Reviewer

What are goals of reviewer?

- To maintain and improve quality of scientific literature
- To provide constructive comments for authors
- To voice opinion about acceptability
- To provide assistance to journal editors

Guidelines for Reviewers

- Acquaint yourself with target journal
  - Scope, content, and instructions
- Scan entire manuscript
  - General impressions
- Read each section, prepare comment for authors
  - Prepare specific constructive suggestions
- Prepare comments to editors and final decision

Reviewer's Comments to Editor

- Often confidential (not transmitted to author)
- Reviewer should:
  - Present opinion as to suitability for publication
  - Discuss "sticky" points

Reviewer's Comments to Authors

- Give point-by-point recommendations
- Cover scientific and technical issues
- Be constructive
- Be polite
- Be clear
  - Differentiate between suggestions and requirements
  - State explicit action to be taken by author

Reviewer's Comments to Authors

Examples and guidelines:

- Science and Engineering Ethics Forms
  - Guidelines for Reviewers
  - Manuscript Evaluation Form
- Checklist for Critical Review

Responsible Conduct of Reviewer
Conflict of Interest

- Definition – Reviewer has ties to activities that could influence judgment
- Examples:
  - Close personal or professional relationships
  - Longstanding competition
- Action – reviewer should disclose to editor and excuse himself/herself

Responsible Conduct of Reviewer
Confidentiality

- Manuscripts are privileged communications
- Typical restrictions for reviewer (specific to journal)
  - Do not share manuscript
  - Do not solicit outside opinions without permission
  - Do not communicate directly with authors
  - Return or destroy all review-related materials
  - Do not use unpublished ideas/methods/ results/analysis

Reporting Suspicions of Misconduct

What if reviewer suspects misconduct while reviewing manuscript?

- Bring to attention of editor
- Editor will follow up depending on nature of allegation, source of funding, etc.
- Full investigation will be responsibility of authors' institution

Responsible Conduct of Editors

- Must act as “gatekeeper” [Cowell 2000]
  - Assure scientific significance
  - Provide final guarantee of accuracy and validity
- Check appearance of conflicts between
  - Reviewers and authors
  - Authors and sponsors
  - Editors and authors or reviewers
- Maintain confidentiality of process
- Handle suspect manuscripts appropriately

Resources

Cowell HR: Ethical responsibilities of editors, reviewers, and authors. Clin Orthop 2000, 378:83.

International Committee of Medical Journal Editors: Uniform Requirements for Manuscripts Submitted to Biomedical Journals. [Available on-line at www.icmje.org]

NIH Center for Scientific Review websites [Available on-line at www.csr.gov]

Rennie D (1998) Freedom and responsibility in medical publications; setting the balance right. JAMA 280:300-2