

## Essential components of a medical editing internship

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**Abstract** The objectives of establishing a medical editing internship program are to offer education, training and practical experience to biomedical professionals aiming to pursue a career in medical editing. The essential components of such a program are described in this paper. Once established, the internship program can facilitate qualified education in biomedical editing and writing, as well as enhancing the reputation and academic standing of a training institution.

**Keywords** Education; internship; biomedical editing.

### Introduction

A medical editing internship program should provide a setting for training editors skilled to support authors in writing and publishing their manuscripts in high-quality scholarly publications. The implementation of such a program is possible in universities that have a medical communications centre or a relevant department capable of providing electronic editorial services.<sup>1</sup> The ultimate aim of a well-structured program is to transfer essential knowledge and skills.<sup>2</sup> It is thus necessary to pay attention to the planning, supervision and follow-up of the programme.<sup>3</sup>

**Objectives and design** - The main aim of an internship is to train qualified medical communication professionals to be capable of rendering a full range of editing services.<sup>4</sup> Trained editors should possess skills in medical nomenclature and understand the importance of evidence-based science editing.

**Benefits** - Interns acquire the experience necessary for science editing and editor-author communication. This experience is a milestone for professional orientation and an opportunity to build up their resume.

**Duration** - The editing activities can be carried out daily. However, the schedule can also be tailored to the participants' needs, with at least 2-days attendance per week. A minimum of one year is recommended for a long-term program, with the first three months as a probation period.

**Participants and qualifications** - To fully benefit from the program, the intern should have at least a bachelor degree in any biomedical field, some writing and editing experience, knowledge of the structure of different types of scientific papers, basic computer proficiency, and good interpersonal skills.

**Qualities of a good mentor** - A good mentor shares knowledge, skills and experience, and overcomes stylistic differences.<sup>4</sup> He/she is a highly skilled medical doctor or biomedical expert with a good track record of publications in high-quality publications, extensive experience in lecturing in medicine and science editing, and successful mentoring of interns.

**Importance of feedback** - To reinforce strengths and maintain morale during the internship, feedback is necessary. It includes the assessment of areas requiring further improvement.

### Essential components of an editing internship program

**Substantive editing** - Substantive editing of textual information,<sup>1</sup> tables<sup>5</sup> and figures<sup>6,7</sup> should be taught to help interns obtain professional copy-editing skills. These skills can then be used to contribute to high-quality journals.<sup>1,8</sup>

**Understanding types and structures of medical articles** - It is imperative for interns to understand the structure and composition of different types of medical papers, such as original papers, case reports and reviews.<sup>9,10</sup>

**Critical appraisal of manuscripts** - Activities aimed at developing skills in editing introductions<sup>11</sup>, materials and methods<sup>12</sup>, results<sup>9</sup> and discussion sections<sup>9,13</sup> of a manuscript enable better appraisal and critical evaluation of the scientific merit of the results and of the validity of the conclusions.

**Creating and editing tables and graphs, and reporting biomedical images** - The program must broaden the knowledge of the general structures of good tables<sup>5</sup> and accurate graphs.<sup>7</sup> Activities can be arranged to enhance skills for publishing biomedical images (ie diagnostic images in clinical medicine and analytical images in basic sciences).<sup>6</sup>

### Interpreting common statistical presentations

The program should be designed to teach principles of research designs, statistical analyses and interpretation of statistical findings.<sup>14,15</sup> Familiarity with specific statistical tests used, confidence intervals, *p*-values, and statistical power enables a more comprehensive appraisal of the results of a manuscript.<sup>16</sup>

**Communicating with authors** - Consultation with authors is an extremely important component for clarification of manuscripts and maintaining the author-editor relationship.<sup>1</sup>

**Ethical issues** - A clear understanding of ethical issues such as authorship, scientific misconduct, conflicts of interest, or confidentiality is instrumental for holistic science editing.<sup>17</sup> Distinctions between medical writers and ghostwriters should be presented.<sup>18</sup> Also, information on authorship criteria,<sup>19</sup> detection and avoidance of plagiarism<sup>20</sup> and ethics in medical writing (eg duplicate publication)<sup>21</sup> must be imparted.

**Online databases** - Searching online databases such as

MEDLINE<sup>22</sup> is an added skill. Guiding interns on how to use search engines and access biomedical information<sup>23</sup> is a pivotal component of the internship.

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In June, EASE issued the 2012 edition of EASE Guidelines, available in 20 languages. The updated edition includes some new material, such as practical tips for junior researchers. Besides, EASE supports the global initiative Healthcare Information For All by 2015 ([www.HIFA2015.org](http://www.HIFA2015.org)) by advising authors to make abstracts of their papers highly informative, reliable, and easily understandable.

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