



ATLAS: An Evidence Based Web Resource for Pain Control in Laboratory Animals

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Summary

Prevention or alleviation of pain in laboratory animals is significantly hampered by insufficient knowledge of effective techniques for the particular situation and species or strain. Researchers often must rely on drug selection, dosing intervals, and doses that are empirically or anecdotally based. ATLAS is a web-based resource being developed to advance procedure- and species-specific treatment of pain in laboratory animals. Until we have enough good quality clinical studies to guide analgesia in laboratory animals, supporting information may be gleaned from basic and preclinical scientific literature.

Keywords: resource, analgesia, pain, ATLAS

The search for methods to control pain in laboratory animals has not kept pace with the need. There is an increasing awareness that pain is a complex phenomenon, often requiring multiple drugs when pain is expected to be severe. In addition, there is often a reluctance to use certain drugs or techniques in studies because of a concern that a given drug might have a confounding effect on the research. In those cases, veterinarians must look for an alternative analgesic method. Clinical research specifically examines pain control for the sake of that animal species itself, but the volume of this research is still small, particularly for rodents, rabbits, and primates, and it tends to focus on only a few drug types. However, a substantial body of basic or preclinical pain research is performed in animal models to guide pharmaceutical development and to investigate mechanisms, and a variety of analgesics are studied. Where species- or situation-specific information is not available, it may be possible to “translate” from another species or experimental model. We believe that information to support effective mitigation of pain in laboratory animals can be gleaned from both primary and clinical literature.

Treatment of pain involves expertise, cost, and a degree of risk. Medical consensus guidelines make use of systematic reviews about efficacy and harm, and the information is distilled into a concise format to guide physicians in clinical decision making. Disadvantages of published guidelines include: they often are static documents; they often represent a decade or more of clinical trials; new evidence is not readily incorporated; and, unless available online, they are not always widely accessible.

One solution is to regularly convene panels of experts to review and present new evidence as it becomes available on an internet site. An example of this is the PROSPECT Pain web resource for perioperative pain in humans (<http://www.postoppain.org/>). PROSPECT Pain is a collaborative effort to report procedure-specific outcomes from multiple trials and the strength of the evidence in support of a given technique. Procedure-specific pain treatment protocols are necessary because the type and amount of pain medications varies for different procedures, i.e., the type of pain control for hysterectomy is very different from that of hernia repair. Therefore, to maximize efficacy and minimize risk to patients, individual classes of common surgical procedures can be selected by clicking on an icon on the free access website, and a physician can easily find information for that procedure without having to resort to a comprehensive review of primary literature.

Inspired by the PROSPECT Pain resource, we have undertaken to create an evidence-based web resource for laboratory animal analgesia. The goal is to provide concise, easily understood information that will satisfy researcher, veterinarian, and regulatory officials. We compile information, interpret its potential relevance, and put it in a context that is easily accessible for professionals. More dynamic than a textbook, the ATLAS site can take advantage of new developments with yearly updates, and it can include links to related information, such as position statements and guidelines.

Using search terms for species and analgesia, analgesic, antinociception, and pain, as well as specific drug type, surgery, visceral, orthopedic, etc., we search the literature for studies



that may be specifically or indirectly supportive of effective doses for pain control. These are entered in a spreadsheet format structured so that the type of study, subjects, strengths and weaknesses are listed. The information is presented by species and by procedure. By clicking on a species, the user can then select a procedure and a summary PDF appears. The summary gives basic information about analgesic drugs, doses, timing, and interactions. A reference spreadsheet document also can be selected, which gives the citation and criteria that were used to prepare the summary PDF. At present, there are modules for mouse, rat, and dog. We also have included examples of successfully published and accepted work where the use of various analgesics is reported. The resource became publicly accessible on January 1, 2012 at: <https://wikis.uit.tufts.edu/confluence/display/ATLAS/Home>

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