

Bookshelf Evolution: Modelling Order Out of Chaos

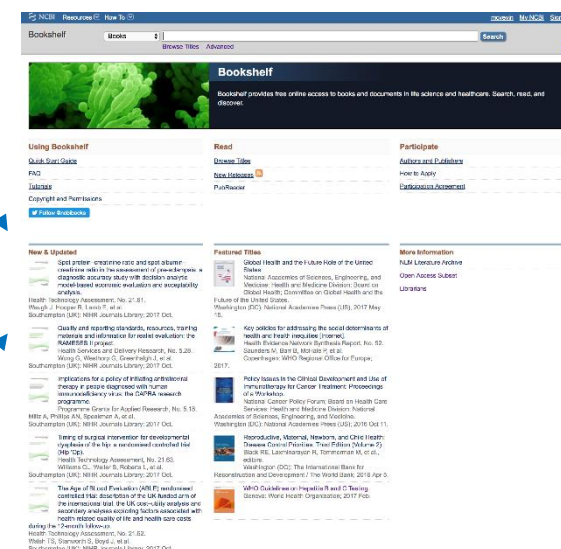
Stacy Lathrop – Bookshelf Program Manager



U.S. National Library of Medicine
National Center for Biotechnology Information

What is Bookshelf?

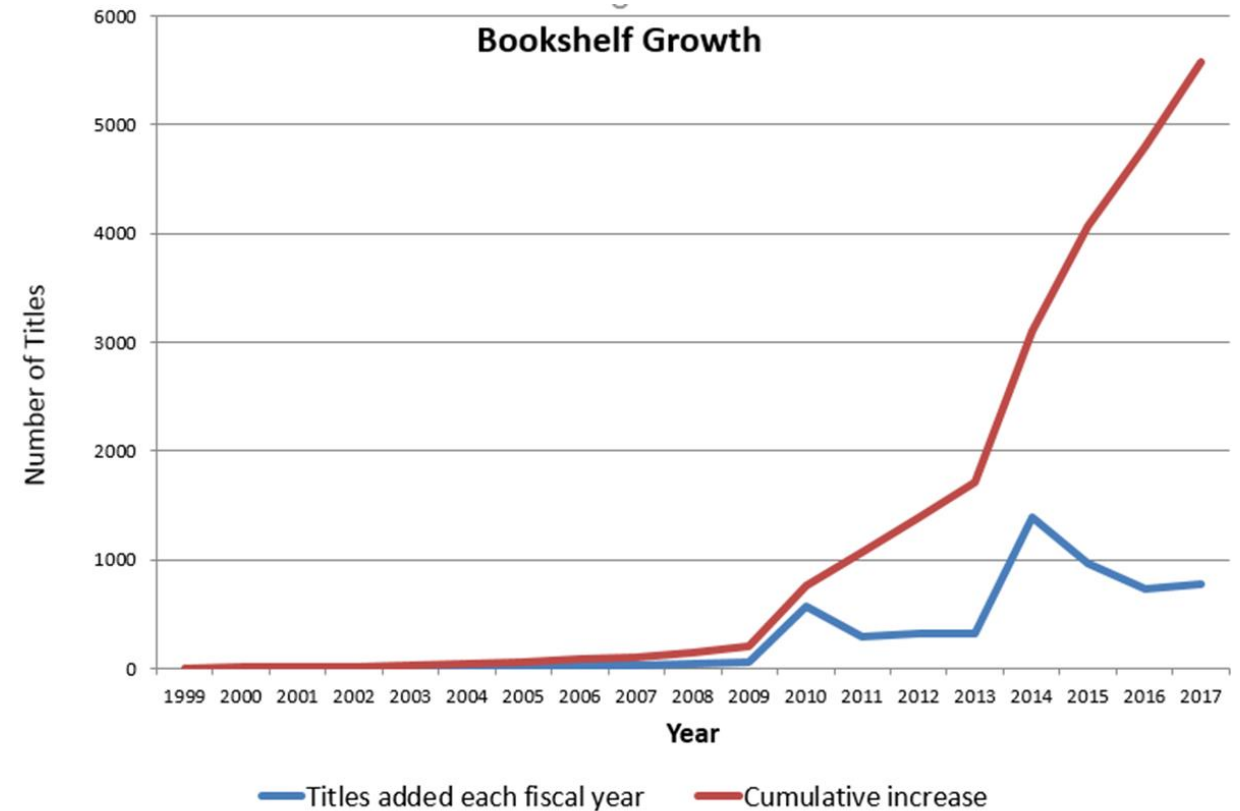
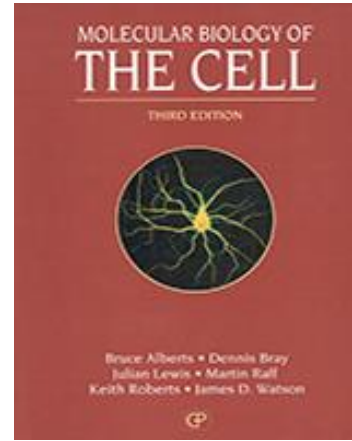
- Over 6,600 books and documents in life sciences and healthcare
- Full text browse and search
- Free for users



Why Bookshelf?

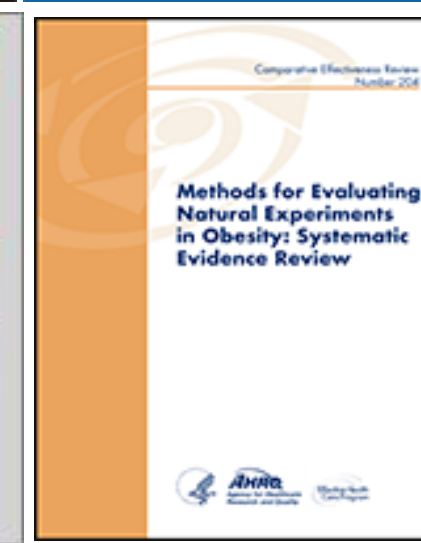
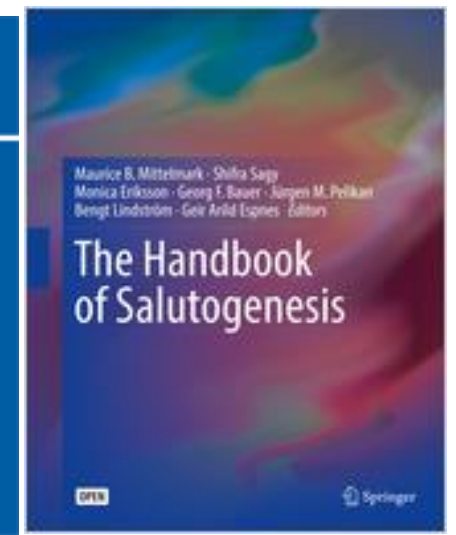
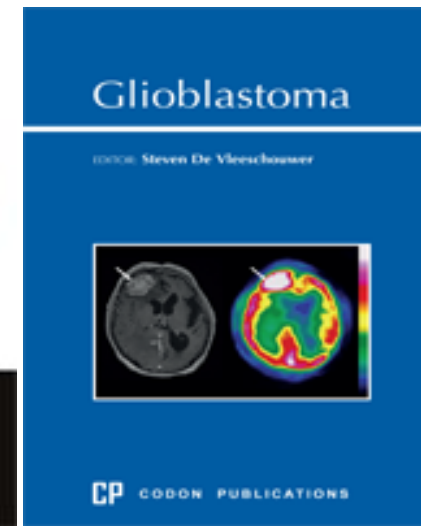
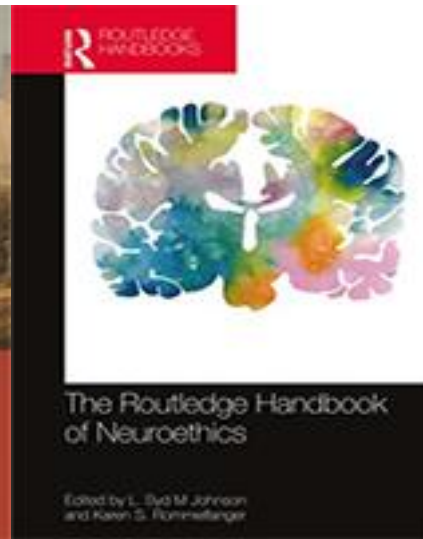
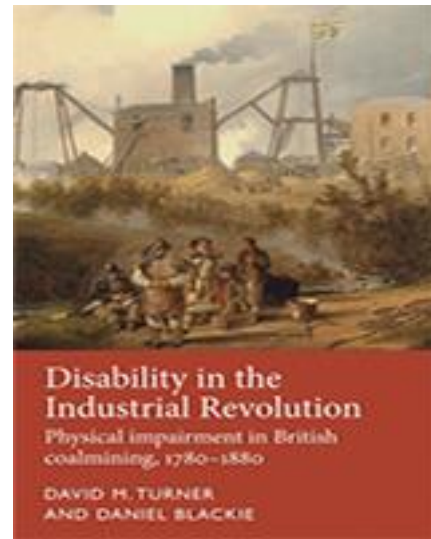
- Provides reference information for biological data and facilitates its discovery
- Reaches diverse audiences through PubMed and Google Scholar indexing
- Increases educational and scientific impact of sponsored public access content

Bookshelf started in 1999, with a single book ...
... the third edition of Alberts' *Molecular Biology of the Cell*.



What types of content does Bookshelf host?

- Monographs
- Biographical Works
- Collected Works
- Government Publications
- Handbooks and Manuals
- Reference Works
- Standards and Guidelines
- Statistical Works
- Technical Reports
- Textbooks
- Web Content
- Other Grey Literature



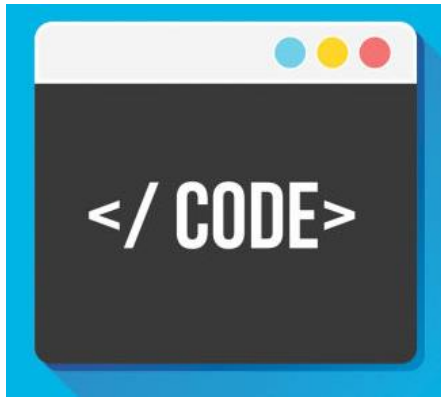
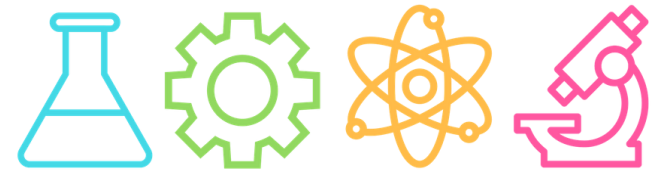
How does Bookshelf decide what to take?

- Scope review
- Scientific review
- Technical review



Scope reviewed by the NLM Collection Development and Acquisitions Section (CDAS)

Scientific quality reviewed by the NLM Technical Services Division



Technical quality reviewed by the NCBI Bookshelf

How does Bookshelf support its XML providers?

- BITS Collaboration
- Tagging Guidelines
- Validation Tools
- Style Checker
- File Specifications
- Content Review
- Technical Review

<https://www.ncbi.nlm.nih.gov/books/about/filespec/>

<book> Book

Top-level element for this DTD. A “book”, as defined in this DTD, covers a single work or book component such as a technical monograph, government report, volume of a monographic series, STM reference work, etc.

Attributes

book-type Type of Book

dtd-version Version of the Tag Set (DTD)

id Document Internal Identifier

indexed Indexed

xml:base Base

xml:lang Language

xmlns:ali NISO ALI Namespace (NISO Access License and Indicators)

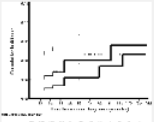
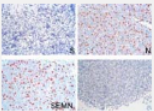
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xmlns:xid

xmlns:xli

xmlns:xsi

2. Figure Graphic Formatting Guidelines

Image Type	Description	Example	Recommended Format	Color Mode	Resolution
Line Art	An image composed of lines and text, which does not contain tonal or shaded areas		tif or eps	Monochrome 1-bit or RGB	900 - 1200 dpi
Halftone	A continuous tone photograph, which contains no text		tif	RGB or Grayscale	300 dpi

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<front-matter-part>
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<given-names>

Home

Elements

Attributes

Parameter Entities

<front-matter> Front Matter

Wrapper element for narrative introductory material such as "Introduction to the Fifth Edition", etc.

Related Elements

A BITS <book> may be divided into several components:

1. the <book-meta> (the bibliographic information about the book)
2. the <front-matter> (the narrative front matter of the book)
3. the <book-body> (the textual and graphical content of the book)
4. any <book-back> (any ancillary information such as errata)

Attributes

id Document Internal Identifier

xml:base Base

Content Model

```
<!ELEMENT front-matter %front-matter-model;
```

Expanded Content Model

```
(ack | bio | dedication | fn-group | glossar  
preface | notes | ref-list | xi:include)+
```

Description

One or more of any of:

- <ack> Acknowledgments
- <bio> Biography
- <dedication> Dedication

Bookshelf

NCBI Bookshelf Tagging Guidelines

[Introduction](#)
[General Tagging Practice](#)
[Document Objects](#)
[Elements](#)
[Update History](#)

Tools & Resources

[Style Checker](#)
[Fully-Tagged Samples](#)
[Fully-Tagged Citations](#)
[Tag Library](#)

Document Objects

These Document Objects refer to parts of the document (author/affiliation relationships, copyright, etc.) and are used for document tagging.

Index of objects

- Abstracts
 - Translated Abstracts
 - Structured Abstracts
 - PubMed excerpts
- Affiliations
- Alternate Versions of a Single Object
 - Affiliation Alternatives
 - Citation Alternatives
 - Author Name Alternatives
- Author Names
- Author Notes
- Author/Affiliation Relationship
- Back
- Body
- Boxed Text
- Collaborative Authors
- Contributor ID
- Copyright Information
- Data Citations
- Dates
- Disclaimers
- Display Formula
- Display Object Groups
- Display Quote
- DOCTYPE declaration
- External Links
- Figures
- Figures & Tables
- Footnotes
- Funding Information
- Grant and Contract Information
- Inline formula
- Inline images
- Inline tabular material
- Labels
- Licensing Information
- Lists
- Math
- Pull Quotes
- References
 - Multiple citations in one reference
 - Notes or end notes in a reference
 - Note with a citation
 - Note with citations and text mixed
- Related Articles
- Related Objects
- Sections/Subsections
- Signatures
- Supplementary Material
- Tables
 - Table Groups
 - Table Coloring and Shading

Abstracts

Chapters may contain multiple abstracts.

Translated Abstracts

Data delivery

- FTP submissions
- Common archive format (zip, tar, gzip)
- Consistency, consistency, consistency!
- XML and associated files linked by filename



```
ForNCBI.zip
|-- 1.tif
|-- 2.TIF
|-- FULL.PDF.pdf
|-- Full\ REport\ v5\ rev20180417_final\ READY.xml
```

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|   `-- 978-1-23-456789-0-F3.tif
|-- pdf
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|-- xml
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|   | -- MR-M9-2012_appc-m001.pdf
| -- xml
|   | -- MR-M9-2012.xml
```



XML coding

- Full-text in XML!
- A “mutually agreed upon” DTD
- All submissions must be valid!
- Consistent quality in future submissions

Structural and textual elements

- Chapters, sections, subsections
- Titles, paragraphs
- Figures, tables, boxes
- Reference citations, footnotes
- Formatting, links

IDs

The following elements require an `eid` attribute:

Element	Context
<code><ack></code>	when child of <code><back></code> , <code><body></code> , <code><book-app-group></code> , <code><book-back></code> , <code><front-matter></code> , or <code><named-book-part-body></code>
<code><app></code>	all
<code><app-group></code>	all
<code><bio></code>	when child of <code><back></code> , <code><book-back></code> , or <code><front-matter></code>
<code><book-app></code>	all
<code><book-app-group></code>	all
<code><book-part></code>	all
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<code><dedication></code>	all
<code><element-citation></code>	outside <code><ref></code>
<code><fig></code>	all
<code><fig-group></code>	all
<code><foreword></code>	all
<code><front-matter-part></code>	all
<code><glossary></code>	when child of <code><back></code> , <code><book-back></code> , or <code><front-matter></code>
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<code><mixed-citation></code>	outside <code><ref></code>
<code><notes></code>	when child of <code><back></code> , <code><book-back></code> , or <code><front-matter></code>
<code><preface></code>	all
<code><ref></code>	all
<code><ref-list></code>	when child of <code><back></code> , <code><book-back></code> , or <code><front-matter></code>
<code><sec></code>	when child of <code><back></code> , <code><body></code> , <code><book-app-group></code> , or <code><named-book-part-body></code>
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<code><table-wrap-group></code>	all
<code><tex-math></code>	all



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Nam elit ex, laoreet ac cursus ac, consequat
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BITS submissions

- BITS preferred
- PMC style-checker recommended
- Tagging guidelines for additional help

Content review

- Content is adequately copyedited and structured
- How best might we map the content to a structure Bookshelf supports?
- Are there any specific content types such as chemical or gene names to be supported in the XML?

Concepts and Accessions

Term	Source	ID
Carbamazepine response	MedGen	CN077964
Carbamazepine hypersensitivity	MedGen	CN077825
HLA-B	Gene	3106
HLA-A	Gene	3105
Carbamazepine	UMLS	C0004482

MedGen

MedGen

LimitsAdvanced

Full Report Send to:

Carbamazepine hypersensitivity
MedGen UID: 478916 • Concept ID: C3277286 • Finding

Synonyms: Hypersensitivity syndrome, carbamazepine-induced, susceptibility to; Tegretol hypersensitivity
Drug: Carbamazepine

Gene (location): HLA-B (6p21.33)
OMIM®: 142800; 608579

Definition Go to:

Carbamazepine is an aromatic anticonvulsant used to treat epilepsy and other seizure disorders, as well as bipolar disorder and trigeminal neuralgia. Carbamazepine can cause a variety of cutaneous adverse reactions, ranging from mild maculopapular eruptions to Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN). The genetic variant HLA-B*15:02 is associated with the risk of SJS/TEN. Patients who have at least one copy of the HLA-B*15:02 allele (considered HLA-B*15:02-positive) have a significantly increased risk for SJS/TEN compared to non-carriers, and it is recommended that they receive an alternate drug. It is important to note that it is possible for a patient without HLA-B*15:02 to develop SJS/TEN. Guidelines regarding the use of pharmacogenomic tests in dosing for carbamazepine have been published in Clinical Pharmacology and Therapeutics by the Clinical Pharmacogenetics Implementation Consortium (CPIC) and are available on the PharmGKB website (<http://www.pharmgkb.org/drug/PA448785>). [from PharmGKB]

Additional description Go to:

From Medical Genetics Summaries

Carbamazepine is an antiseizure drug used in the treatment of epilepsy. It is also used to relieve pain in trigeminal neuralgia and is used to treat bipolar disorder. The human leukocyte antigens A and B (HLA-A and HLA-B) play an important role in how the immune system recognizes and responds to pathogens. HLA-A and -B belong to a class of molecules that are found on the surface of most cells. These molecules are responsible for presenting peptides to immune cells. Peptides derived from normal human proteins are recognized as such, whereas foreign peptides derived from pathogens trigger an immune response whose goal is to dispose of the pathogen or foreign body. The genes encoding HLA-A and -B are among the most polymorphic genes in the human genome, and

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Related Summaries by Gene

Abacavir Therapy and HLA-B*57:01 Genotype

Allopurinol Therapy and HLA-B*58:01 Genotype

Phenytoin Therapy and HLA-B*15:02 and CYP2C9 Genotypes

Related Summaries by Drug Class

Phenytoin Therapy and HLA-B*15:02 and CYP2C9 Genotypes

Tests in GTR by Condition

Carbamazepine response

Carbamazepine hypersensitivity

Tests in GTR by Gene

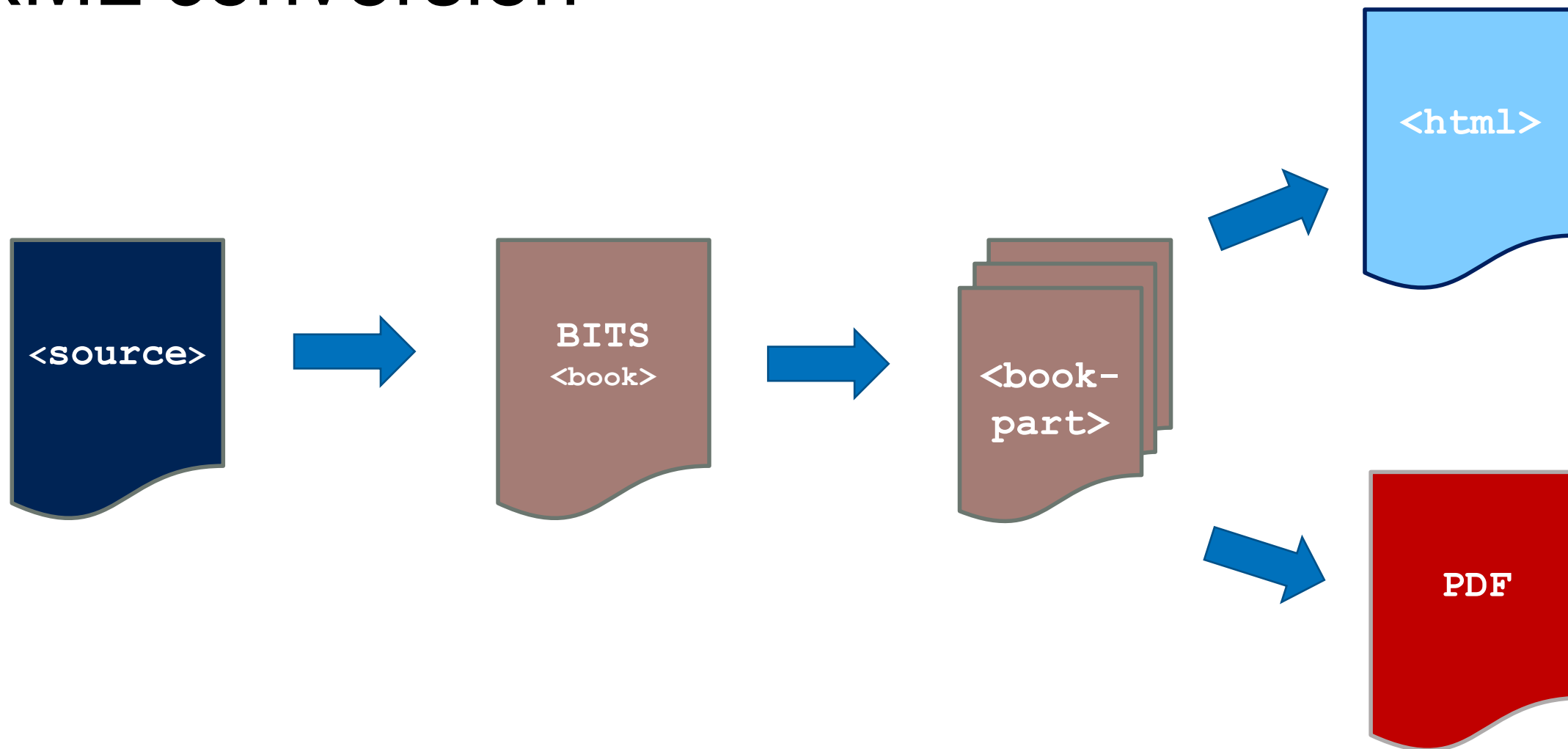
HLA-B gene

HLA-A gene

Technical review

- Evaluation of sample XML and associated files
- Machine validation and human QA
- Detailed feedback report with required fixes and suggested improvements

XML conversion

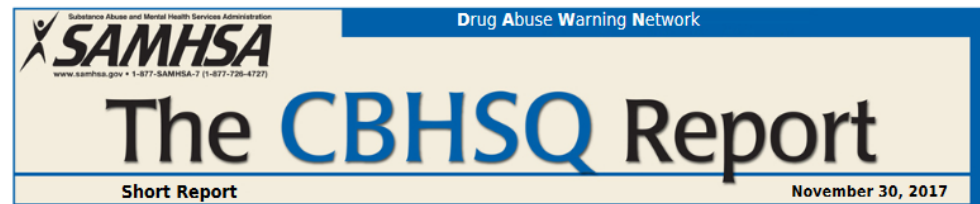


Why chop it up to BITS?



Must the HTML look like the PDF?

- Pre-published content
- Born digital content



EMERGENCY DEPARTMENT VISITS INVOLVING THE ACCIDENTAL INGESTION OF OPIOID PAIN RELIEVERS BY CHILDREN AGED 1 TO 5

AUTHORS

Elizabeth H. Crane, Ph.D., M.P.H.

INTRODUCTION

As soon as infants learn to crawl and especially once they learn to walk, their curiosity, and tendency to put things in their mouths make many situations a potential danger.¹ Although parents and other caregivers may be aware of the danger of accidental ingestion of medications. Every day, about 100 children are poisoned in the United States.² Many of these poisonings occur because of ingestion (i.e., children taking medications when parents/caregivers are not parents accidentally giving children the wrong medication).



In Brief

According to the Drug Abuse Warning Network (DAWN), in 2011 an estimated 4,321 emergency

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The CBHSQ Report.

[Show details](#)

[Contents](#)

Search this book

Emergency Department Visits Involving the Accidental Ingestion of Opioid Pain Relievers by Children Aged 1 to 5

Elizabeth H. Crane, Ph.D., M.P.H.

[Author Information](#)

Published: November 30, 2017.

Summary

Go to: [▼](#)

Background: The ingestion of opioid pain relievers is dangerous for children. This report analyzes emergency department (ED) visits for children aged 1 to 5 that involved opioid pain relievers that occurred in 2011, and also examines combined data from 2004 to 2011 to identify characteristics of the ED visits. **Method:** Estimates on ED visits involving opioid pain relievers where the patient was a child aged 1 to 5 were examined for trends, and combined 2004 to 2011 DAWN data were analyzed to identify which specific opioid pain relievers were involved in the ED visits, to assess whether the visits involved a single drug or multiple drugs, and to learn the outcome of the ED

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[In Brief](#)

[Introduction](#)

[ED Visits: Trends 2004 to 2011](#)

[ED Visits: Combined 2004 to 2011](#)

[Discussion](#)

[Suggested Citation](#)

[Endnotes](#)

Named content types

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Russell Thomas, Ph.D.

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Guidance on statistical and mathematical modeling methods

Shyamal Pedadda, Ph.D. (formerly at NIEHS/DNTP)

Contributors

[Go to: !\[\]\(626ce8ac21792b9405bfddfea8e0c96a_img.jpg\)](#)

**Division of Intramural Research, National Institute of Environmental Health
Sciences, Research Triangle Park, North Carolina, USA**

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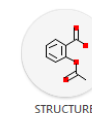

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<p content-type="contributor">Keith Shockley, Ph.D.</p>
<p content-type="contrib-affiliation">National Center for Computational
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<p content-type="contrib-affiliation">University of Pittsburgh, Graduate
Pittsburgh, Pennsylvania, USA</p>
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Data not in the provided XML

11126-35-5



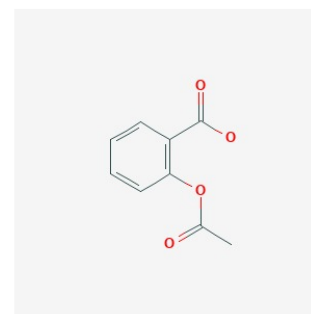
Drugs and Lactation Database (LactMed) [Internet].

[Show details](#)[Contents](#)

Aspirin

Last Revision: July 31, 2018.

CASRN: 50-78-2



Drug Levels and Effects

Go to: [▼](#)

Summary of Use during Lactation

After aspirin ingestion, salicylic acid is excreted into breastmilk, with higher doses resulting in disproportionately higher milk levels. Long-term, high-dose maternal aspirin ingestion probably caused metabolic acidosis in one breastfed infant. Reye's syndrome is associated with aspirin administration to infants with viral infections, but the risk of Reye's syndrome from salicylate in breastmilk is unknown. An alternate drug is preferred over continuous high-dose, aspirin therapy. After daily low-dose aspirin (75 to 325 mg daily), no aspirin is excreted into breastmilk and salicylate levels are low. Daily low-dose aspirin therapy may be considered as an antiplatelet drug for use in breastfeeding women.[1][2][3].



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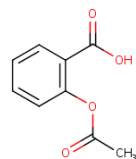
[Review Acetaminophen](#)[\[Drugs and Lactation Database \(...\)\]](#)[Review Caffeine](#)[\[Drugs and Lactation Database \(...\)\]](#)[Review Salsalate](#)[\[Drugs and Lactation Database \(...\)\]](#)[Review Salicylic Acid](#)[\[Drugs and Lactation Database \(...\)\]](#)[Review Trichloroacetic Acid](#)[\[Drugs and Lactation Database \(...\)\]](#)[See reviews...](#)[See all...](#)[TOXNET Home](#) > [LACTMED Home](#) > [LACTMED Search Results](#) > [Full Record](#) [Search Details](#) | [History](#)[« Previous Record](#) | [Next Record »](#)**LACTMED: ASPIRIN** CASRN: 50-78-2 This record appears in multiple databases.View record in another database: [LACTMED](#) [Recent related PubMed toxicology articles](#)

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☒ [Administrative Information](#)[Show Selected Items](#) [Clear](#)

Aspirin

CASRN: 50-78-2

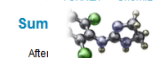


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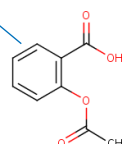
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Note

The prototypical analgesic used in the treatment of mild to moderate pain. It has anti-inflammatory and antipyretic properties and acts as an inhibitor of cyclooxygenase which results in the inhibition of the biosynthesis of prostaglandins. Aspirin also inhibits platelet aggregation and is used in the prevention of arterial and venous thrombosis. (From Martindale, The Extra Pharmacopoeia, 30th ed, p5)

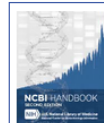
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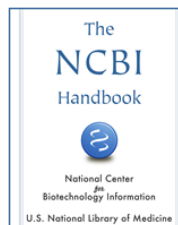
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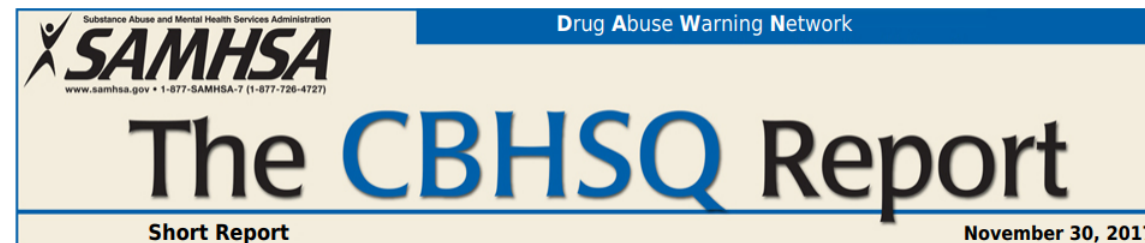
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3. Breast Cancer 45

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EMERGENCY DEPARTMENT VISITS INVOLVING THE ACCIDENTAL INGESTION OF OPIOID PAIN RELIEVERS BY CHILDREN AGED 1 TO 5

AUTHORS

Elizabeth H. Crane, Ph.D., M.P.H.

INTRODUCTION

As soon as infants learn to crawl and especially once they learn to walk, their mobility, curiosity, and tendency to put things in their mouths make many substances in the home a potential danger.¹ Although parents and other caregivers may be alert to securing obviously



In Brief

- According to the Drug Abuse Warning Network (DAWN), in 2011 an estimated 4,321 emergency department (ED) visits involved accidental ingestion of opioid pain relievers by children aged 1 to 5. The number of ED visits increased 2 percent from 1,437 visits in 2004 to 4,321 in 2011; however, the number of ED visits was

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And all of our participants and other collaborators