How the National Library of Medicine Can Add Evidence To Your mHealth App

Susan Halpin
*University of Massachusetts Medical School*

*Et al.*

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How the National Library of Medicine (NLM) Resources Can Add Evidence to Your Mobile Health App

Presented by National Network of Libraries of Medicine & UConn Center for mHealth and Social Media
About your Webinar Hosts

Susan Halpin
susan.halpin@umassmed.edu
NNLM NER,
Education & Outreach Coordinator
University of Massachusetts
Medical School
Worcester, Massachusetts

Sherry Pagoto, PhD
sherry.pagoto@uconn.edu
UConn Center for mHealth and Social Media
University of Connecticut
Storrs, Connecticut
Many commercial health apps lack evidence-based strategies

- Physical activity (Modave et al 2015, Conroy et al 2014)
- Arthritis (Geuens et al 2016)
- Stress management (Coulon et al 2016)
- Eating disorders (Juarascio et al 2016)
- Smoking cessation (Jacobs et al 2014)
- HIV prevention (Muessig et al 2013)
Ways to incorporate evidence into apps

Have app deliver an evidence-based behavior change strategy

- Self-monitoring is most popular example employed by apps
- Michie's behavior change taxonomy includes numerous behavioral strategies
- Evidence-based protocols available for many behavioral issues

Have app provide user with evidence-based health information

- Big question is: what is an evidence-based resource? Is it vetted? Up-to-date?
Purpose of Today’s Webinar

• Introduce you to NLM and the FREE Health & Medical websites databases and tools. Why are NLM resources better than commercial websites such as WebMd?

• Demonstrate how NLM resources carry out the mission to improve public health.

• Provide examples of how these health related resources can add value to your app
What Makes a Resource Good?

- **Ease of Use**
- **Links to Original Articles**
- **Freedom from Advertisements**
- **Evidence, Not Expert Opinion**
- **Ease of Access**
- **Disclosure of Conflict of Interest**
About National Library of Medicine (NLM)

Physical library is Bethesda, MD part of the NIH campus.

Largest biomedical library in the world

One of the federal government’s largest providers of digital content

The library is open to everyone

**NLMs mission**

*Advance the progress of medicine and improve public health by making biomedical information accessible to everyone.*
NLM Carries Out its Mission Through National Network of Libraries of Medicine (NNLM)

- Nationwide network of health sciences libraries, public libraries & information centers
- Each region has a partnership with a regional medical library
- Outreach provided through Free access to online resources Training & PD Grant funding opportunities
NLM Resources you know...


https://medlineplus.gov/
Why Use NLM Resources?

What is the AD?

What is the information you were looking for?
MedlinePlus Connect

Linking Patient Portals and EHRs to Consumer Health Information

MedlinePlus Connect helps patients and health care providers access consumer health information at the point of need in a health IT system. Patient portals, patient health record (PHR) systems, and electronic health record (EHR) systems can use MedlinePlus Connect to provide health information for patients, families, and healthcare providers using standard clinical vocabularies for diagnoses (problem codes), medications, and lab tests.

MedlinePlus Connect is a free service of the National Library of Medicine (NLM), National Institutes of Health (NIH), and the Department of Health and Human Services (HHS).

MedlinePlus API is available as a Web application or a Web service.
DailyMed

Search for Adderall in DailyMed

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Adderall (dextroamphetamine and amphetamine) - view full title
NDC Codes: 57844-110-01, 57844-110-05, 57844-110-07, 57844-112-01, 57844-112-05, 57844-115-01, view more
Package: Sandoz Pharmaceuticals

---

Adderall XR (dextroamphetamine and amphetamine) - view full title
NDC Codes: 54092-381-01, 54092-381-05, 54092-381-07, 54092-381-09, 54092-381-11, view more
Package: Shire US Manufacturing Inc.

---

Adderall (dextroamphetamine and amphetamine) - view full title
NDC Codes: 65629-3768-1
Package: Bryant Ranch Prepak
This is a repackaged label.
Source NDC Code: 0555-0764

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Adderall XR (dextroamphetamine and amphetamine) - view full title
NDC Codes: 65629-3769-1
Package: Bryant Ranch Prepak

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WARNING: POTENTIAL FOR ABUSE
Amphetamines have a high potential for abuse. Administration of amphetamines for prolonged periods of time may lead to drug dependence. Pay particular attention to the possibility of subjects obtaining amphetamines for non-therapeutic use or distribution to others and the drugs should be prescribed or dispensed sparingly.

Mouse of amphetamine may cause sudden death and serious cardiovascular adverse reactions.

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HIGHLIGHTS OF PRESCRIBING INFORMATION
These highlights do not include all the information needed to use ADDERALL XR safely and effectively. See full prescribing information for ADDERALL XR.

FULL PRESCRIBING INFORMATION: CONTENTS
Table of Contents

1. INDICATIONS AND USAGE
   1.1 Attention Deficit Hyperactivity Disorder - ADDERALL XR® is indicated for the treatment of attention deficit hyperactivity disorder (ADHD). The efficacy of...

2. DOSAGE AND ADMINISTRATION
   2.1 Dosing Considerations for all Patients - Individualize the dosage according to the therapeutic needs and response of the patient. Administer ADDERALL XR at the...

3. DOSAGE FORMS AND STRENGTHS
   ADDERALL XR 5 mg capsules/Oral/Rectal (imprisoned) ADDERALL XR 5 mg ADDERALL XR 10 mg
NLM Disaster Resources and Apps

How Does NLM Select Partner Sites/Organizations?


This is a 2 page promotional flyer you can print out (.PDF)
# NLM Trending Health Topics Infographic

## NLM Resources for These 10 Trending Health Topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction, Opioid &amp; Toxicology</td>
<td>TOXNET, MedlinePlus Opioids, MedlinePlus Drugs</td>
</tr>
<tr>
<td>Mental Health</td>
<td>MentalHealth, National Institute of Mental Health</td>
</tr>
<tr>
<td>Complementary &amp; Integrative Medicine</td>
<td>National Center for Complementary Integrative Health, MedlinePlus C&amp;G Medicine</td>
</tr>
<tr>
<td>Multicultural Minority &amp; Refugee Health</td>
<td>American Indian Health, Arctic Health, HealthReach (Refugees and many languages health)</td>
</tr>
<tr>
<td>Environmental Health &amp; Disaster Preparedness</td>
<td>TOXNET, ToxTown, ToxLearn</td>
</tr>
<tr>
<td>Pet Health</td>
<td>MedlinePlus, KidsHealth, AVMA</td>
</tr>
<tr>
<td>Food, Nutrition &amp; Fitness</td>
<td>American Society of Sports Medicine, MedlinePlus Nutrition, MedlinePlus Exercise &amp; Fitness</td>
</tr>
<tr>
<td>K-12 Education &amp; Career Exploration</td>
<td>Harry Potter’s World: Renaissance Science, Magic and Medicine, Frankenstein: Penetrating the Secrets of Science</td>
</tr>
<tr>
<td>Clinical Trials in Your City &amp; State</td>
<td>ClinicalTrials</td>
</tr>
<tr>
<td>Genetics, Pregnancy &amp; Breastfeeding</td>
<td>Genetic Home Reference, LastMed, MedlinePlus Pregnancy</td>
</tr>
</tbody>
</table>

**Link to NLM Home Page**


Addiction, Opioid & Toxicology

Topics of Interest

More

Stay Connected
NLM Nutrition Related Resources

https://medlineplus.gov/nutrition.html
PHPartners Nutrition Related Resources

Public Health Topic Pages
- Biotechnology
- Dental Public Health
- Environmental Health
- HIV/AIDS
- How to Access Journal Articles
- Nutrition
- Obesity
- Public Health Genomics
- Veterans Public Health
- Workforce Development

Main Topic Pages
- Health Promotion and Health Education
- Literature and Guidelines
- Health Data Tools and Statistics
- Public Health Workforce Data
- Grants and Funding
- Education and Training
- Legislation and Policy
- Conferences and Meetings
- Finding People
- Discussion and E-mail Lists
- Jobs and Careers

Nutrition

Nutrition News
- Access to Public Benefits among Dual Eligible Seniors Reduced Risk of Nursing Home and Hospital Admission and Costs (August 2017) - SRE - SEP 2017
- Researchers studied the impact of access to food and energy assistance on healthcare utilization among all community-dwelling seniors (age 65+) in Maryland who received both Medicare and Medicaid. (University of Maryland)

- Rollbacks to school meal nutrition requirements threaten health: Public health regulations under fire - SRE - SEP 2017
- On May 1, U.S. Secretary of Agriculture Sonny Perdue announced that USDA would relax school nutrition requirements related to whole grains, sodium and milk. Under the new rules, schools are only required to make 50 percent of their grain products whole-grain rich, as opposed to 100 percent, for the 2017-18 school year; schools are exempt from achieving the highest sodium targets then school years 2017-18 through 2020; and schools are allowed to serve flavored 1 percent milk. (The Nation’s Health)

- A Community-Based Marketing Campaign at Farmers Markets to Encourage Fruit and Vegetable Purchases in Rural Counties With High Rates of Obesity, Kentucky, 2015-2016 - SEP 2017
- Researchers conducted a community-based marketing campaign, Plate It Up! Kentucky Proud (PIUKP), in 6 rural communities over 2 years to determine the association between exposure to the campaign and fruit and vegetable purchases. Adjusted for Supplemental Nutrition Assistance Program (SNAP) participation status. (Centers for Disease Control and Prevention (CDC), HHS)

- Study evaluates the effectiveness of the National Early Care and Education Learning Collaborative project in facilitating best practices in nutrition, physical activity, screen time, and infant feeding among early care and education programs.

- Food-Spending Patterns of Households Participating in the Supplemental Nutrition Assistance Program: Findings From USDA's FoodAPS (August 2017) - AUG 2017
- This study finds that, when adjusted for household size and composition, average food spending in SNAP households is lower than in other U.S. households, even those that are eligible for SNAP but choose not to participate. Food-at-home spending accounts for a greater share of the total food expenditures of SNAP households than of other households. (Agricultural Research Service (ARS), USDA)

Associations and Organizations

Federal
- CDC Division of Nutrition, Physical Activity and Obesity: The mission of CDC's Division of Nutrition, Physical Activity and Obesity is to lead strategic public health efforts to prevent and control obesity, chronic disease, and other health conditions through regular physical activity and good nutrition. (Centers for Disease Control and Prevention (CDC), HHS)

- FDA Food Safety: Food safety resources from the FDA (U.S. Food & Drug Administration (FDA), HHS)

- Food and Nutrition Service (FNS): FNS increases food security and reduces hunger in partnership with cooperating organizations by providing children and low-income people access to food, a healthy diet, and nutrition education in a manner that supports American agriculture and insures public confidence. (U.S. Department of Agriculture (USDA))
NLM Resources Related to Physical Activity and Exercise

MedlinePlus offers information in multiple languages

MedlinePlus also has a quarterly magazine available online and in print

MedlinePlus also allows you to choose to search on External Health Links to locate info from external organizations (that have been vetted by NLM)
For example,
* American College of Obstetricians and Gynecologists
* National Center for Health Statistics
* National Multiple Sclerosis Society

https://medlineplus.gov/
# Gallery of NLM Mobile Apps

**Biomedical Literature**

- PubMed Mobile
  - Database of more than 20 million citations for biomedical literature from MEDLINE, life science journals, and online books.

- PubMed for Handhelds (PubMed4HH)
  - Mobile website and app for Android and iOS
  - Unique PubMed tools, including PICO (clinical queries), CME/CE (continuing education), and CASER (clinical abstracts search), and Consensus Abstracts.

**HIV/AIDS Guidelines**

- AIDSinfo
  - Mobile-optimized website: [https://aidsinfo.nih.gov/](https://aidsinfo.nih.gov/)
  - Federally approved HIV/AIDS medical practice guidelines, HIV treatment and prevention clinical trials, and research.

- AIDSinfo HIV/AIDS Drug Database
  - Mobile app for Android and iOS
  - [https://aidsinfo.nih.gov/app](https://aidsinfo.nih.gov/app)
  - Information about drugs approved to treat HIV infection and other infections or diseases common to people living with HIV.

- AIDSinfo HIV/AIDS Glossary
  - Mobile app for Android and iOS
  - [https://aidsinfo.nih.gov/app](https://aidsinfo.nih.gov/app)
  - Definitions for HIV/AIDS-related terms, written in concise and easy-to-understand language, in both English and Spanish.

**Public Health**

- PHP Partners (Partners in Information Access for the Public Health Workforce)
  - Mobile-optimized website: [https://compartners.org/](https://compartners.org/)
  - Provides timely, convenient access to selected public health resources, including data, tools, and statistics.

**Drugs and Medical Devices**

- Drug Information Portal Mobile
  - Gateway to drug information from US Government agencies including NIB, FDA, and CDC.

- DailyMed
  - Comprehensive resource of medication content and labeling found in FDA label information.

- LastMed
  - Mobile app for Android and iOS
  - [https://lastmed.lastmed.com/](https://lastmed.lastmed.com/)
  - Information about maternal and infant drugs and dietary supplement levels, effects on lactation and on breastfed infants, and alternative drugs to consider.

- Pillbox
  - Mobile app for iOS
  - [https://itunes.apple.com/app/id6820534923](https://itunes.apple.com/app/id6820534923)
  - Identify unknown prescription, over-the-counter, homeopathic, and veterinary medications.

- AccessGUUD (Global Unique Device Identification Database)
  - Mobile-optimized website: [https://cures.gov/unique-device-identification/](https://cures.gov/unique-device-identification/)
  - Key device identification information about medical devices that have Unique Device Identifiers (UDI).

**Consumer Health**

- MedicinePlus
  - Covers diseases, conditions, medications, wellness topics, and the latest news, in both English and Spanish.

**Educational**

- Digital Collections
  - Access NLM's electronic and fully searchable historical biomedical books and videos.

- Embryo
  - Mobile app for iOS
  - Explore human embryo development through videos, micrographs, images, interactive tools, and related resources.

- Native Voices
  - Mobile app for iPad and Android
  - Explore the interconnectedness of wellness, illness, and cultural life for Native Americans, Alaska Natives, and Native Hawaiians.

- TOXinvaders
  - Mobile app for iPad
  - Game that supports middle school science concepts about environment and health.

- Turning the Pages
  - Mobile app for iPad
  - Virtually flip through rare books and manuscripts and learn more about them through historian and curator annotations.

Examples of Mobile app Use
Aidsinfo, LactMed
Promotional Items & Printable Handouts

NLM Also Provides Grant Funding Opportunities

- **Community Engagement (up to $10,000)** - short-term outreach projects to advance health information resources in collaboration community groups.
- **Knowledge and Data Management (up to $10,000)** – projects that support innovations data management and research services at the health care or research institution.
- **Member Programs (up to $5,000)** – Projects & programs that improve the knowledge and skills of librarians & health information professionals
- **Technology (up to $7,000)** - Improve technology access and delivery of health information for network members
Example of mHealth Project
MedlinePlus and LactMed for Patient Education

https://vimeo.com/217207971
Using NLM Resources
A Win/Win
For mHealth Developers & Users
National Network of Libraries of Medicine

NNLM has about 6800 Network Members

Anyone can join the network, it’s FREE

To Join the NNLM Network:
https://nnlm.gov/members/join-network
Benefits of NNLM Membership
How Will Use NLM Resources in Your mHealth App?

For more information about how to incorporate MedlinePlus in your application development

[https://medlineplus.gov/fordevelopers.html](https://medlineplus.gov/fordevelopers.html)

Please share your ideas, comments, and questions in the Chat Box
Thank you for Attending this Webinar!

Webinar Evaluation Link
http://www.surveygizmo.com/s3/3529624/47e6102b9be5

For more information about how you can benefit from NNLM NER outreach contact Susan Halpin, Education & Outreach Coordinator susan.halpin@umassmed.edu

For more information about the University of Connecticut Center for mHealth & Social Media contact Dr. Sherry Pagoto sherry.pagoto@uconn.edu