



# SNAPSHOTS

IMMUNIZATION REGISTRY NEWS *from the* AMERICAN IMMUNIZATION REGISTRY ASSOCIATION (AIRA)

## PRESIDENT'S REPORT

Dear IIS Partners,

Welcome to the September edition of *SnapShots*! I'm sure we are all looking forward to everything that fall has to offer: cooler weather, leaves changing colors, and a bounty of pumpkin spice products. We should also remember the importance of preparing for the respiratory virus season. This includes ensuring our communities are protected against influenza, RSV, and COVID-19 infections.

In this edition of *SnapShots*, we learn about a randomized controlled trial performed by the Minnesota Department of Health focused on comparing two reminder/recall methodologies. We also delve into the new AIRA IIS Data Quality Resource Hub, created to summarize the current IIS data quality ecosystem. In addition, we are introduced to a research project titled "How Immunization Information Systems Inform Age-Based HPV Vaccination Recommendations in the United States: A Mixed-Methods Study," performed by the University of North Carolina at Chapel Hill.

The Tech Corner for this edition contains a description and Q&A focused on large language models in public health. The Education Exchange for September highlights some of AIRA's educational offerings, including AIRA's new IIS 101 video and Public Health Informatics Institute (PHII) IIS learning opportunities.

**I also want to express what a pleasure it was to serve as AIRA Board President this year. It was a privilege supporting and learning from the IIS community during this time of unprecedented change.** I'm looking forward to continuing to engage with you all through various AIRA initiatives.

Be well!

### Melissa Mickle-Hope, MPH

Director, Citywide Immunization Registry (CIR), Bureau of Immunization  
NYC Department of Health and Mental Hygiene  
AIRA Board President

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Welcome to *SnapShots*, the American Immunization Registry Association's newsletter about the progress, best practices, and accomplishments of immunization information systems (IIS) across the country. We invite you to share news about your IIS. Email us at [info@immregistries.org](mailto:info@immregistries.org) with information about a successful programmatic or technical innovation, major accomplishment, or milestone that your IIS has reached.



# IMMUNIZATION RECALL EFFECTIVENESS: COMPARING POSTAL MAIL AND TEXT MESSAGE-BASED RECALL IN MINNESOTA

## Project background

Reminder/recall notifies people about vaccines they are recommended or overdue for. It is a commonly used, evidence-based strategy for improving immunization rates.

The Minnesota Department of Health (MDH) regularly uses data from the Minnesota Immunization Information Connection (MIIC) to send reminder/recall messages to its statewide population, employing two primary methods: postal mailings (i.e., letters, postcards) and SMS text messages. Since this work can be both resource- and time-intensive, MIIC staff sought to compare the overall effectiveness and cost of these two methods in both childhood and adolescent populations.

MIIC operations staff conducted a randomized controlled trial in 2023, with children (2 years of age) and adolescents (13 years of age) randomized into three groups: postal mail, text message, or control (no recall notifications). Minnesota residents were included if they met the age requirements, had valid and complete contact information in MIIC, had not opted out of MIIC or reminder/recall, and were overdue for any of the standard Advisory Committee on Immunization Practices (ACIP) recommended vaccines for their age group. Throughout 2023, participants received up to three rounds of their assigned randomized intervention. Those randomized to postal mail received a mailed recall notification (which included a parent letter, immunization record, vaccine schedule resource, opt-out card, and return envelope) for each round of eligibility. Those randomized to SMS text messages received two recall text messages, sent three weeks apart, for each round of eligibility. To evaluate the cost of each recall program for this project, material costs, staff time, and salary data were used.

## Recall effectiveness

In this study, recall effectiveness varied across age group, vaccine type, recall method, and round of notification. While there was no overall difference between the childhood postal mail, SMS text message, or control groups in receiving vaccines or being “on track” (defined as no longer overdue for vaccines) at the end of the study, more children who received either the mail or text recall notifications got vaccinated compared to the control group when looking at just the first round individually. Conversely, recall notifications (both mail and text) sent to the adolescent cohort were shown to be effective overall in both receiving at least one vaccine and being on track for all vaccines by the end of the study. When broken down by vaccine type, this overall improvement in adolescent vaccination was primarily driven by the recall’s effectiveness in increasing uptake of the human papillomavirus (HPV) vaccine.



# IMMUNIZATION RECALL EFFECTIVENESS: COMPARING POSTAL MAIL AND TEXT MESSAGE-BASED RECALL IN MINNESOTA

*Continued from page 2*

Finally, although their results comparing recall (either method) to no recall differed, both age cohorts showed a slight difference in effectiveness between the two recall methods. Those who received postal mail recall were 8% more likely to be on track by the end of the study, compared to those who received SMS text message-based recall.

## Cost comparison

There were notable cost differences between the two recall programs. The overall cost of the project was estimated to be \$58,389, with the estimated cost for each method differing substantially: \$55,285 for the postal mail arm versus \$3,104 for the SMS texting arm. This meant the inclusive cost per mailed recall notification was \$1.52, while the cost per texted recall notification was just \$0.08. The large cost difference was due in part to higher supply costs (more materials, cost of printing) in the mailing arm, as well as more staff time required to manually compile mailings and process returned mail.

## Project takeaways

The results of this study suggest that:

- Recall notifications are effective in improving HPV vaccine uptake in adolescents.
- Initial rounds of recall notifications are effective for both children and adolescents.
- Postal mail recall may be slightly more effective than text recall but was far more expensive.

In this study, HPV was the only ACIP-recommended vaccine that was not part of the required vaccines for school entry. Therefore, it is possible that reminder/recall is more effective for vaccines that are not required for other purposes (i.e., school or child care). Similarly, the timing of notifications could have impacted the results. Round two was sent in August, when back-to-school vaccination efforts were in full swing, and round three was sent in December, which was after the deadline for receiving required school vaccines. The effectiveness difference between the two methods, which was slight and observed in only one outcome, could also be due to several factors, including different message content (i.e., an immunization record was included in the mailing but not the text) and potential quality differences in MIIC's address and phone information. On the other hand, the cost savings of the texting program were clearly evident, with the texting arm's cost amounting to just 5.6% of the mailing arm's cost.

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## IMMUNIZATION RECALL EFFECTIVENESS: COMPARING POSTAL MAIL AND TEXT MESSAGE-BASED RECALL IN MINNESOTA *Continued from page 3*

Overall, it is important to consider the target vaccines and populations, as well as the timing of notifications, in the context of other known reminder/recall or vaccine requirements when setting up a reminder/recall program. Notably, immunization recall was effective in this study, and texting was shown to be a viable, inexpensive option. This is an important consideration when trying to promote vaccination with limited funding or when a more rapid public health response is needed.

### For more information

More detail on this study can be found in the published article, "[The effectiveness of postal mail and text message-based childhood and adolescent immunization recall in Minnesota](#)," which is included in the September issue of the [Journal of Public Health Management and Practice](#).

*- Submitted by Naomi Jiter, MPH, Epidemiologist, Minnesota Department of Health*

## LEARN HOW IIS JURISDICTIONS ARE USING AIRA'S DQ RESOURCE HUB TO SCALE THE MOUNTAIN OF DATA QUALITY RESOURCES AND CHOOSE THEIR UNIQUE PATH TO DATA QUALITY IMPROVEMENT

Data quality is at the forefront of public health information systems and is especially relevant for immunization information systems (IIS). For IIS to be utilized to their fullest capacity, the data available in IIS must be accurate and reliable.

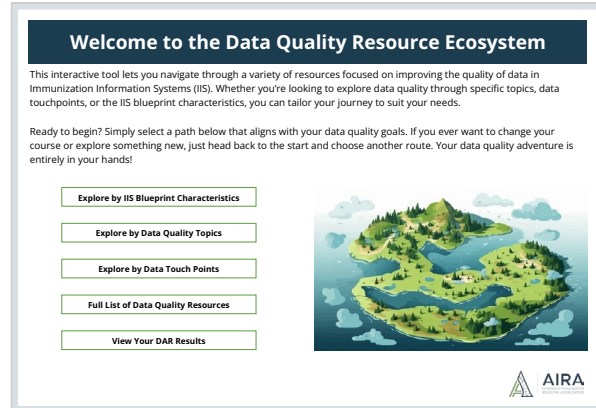
To catalogue the current ecosystem, AIRA took a comprehensive inventory of existing data quality resources. Consulting with subject matter experts from AIRA and CDC, the list was curated to include only the most relevant resources for IIS jurisdictions, based on the timeliness and relevance of each resource. This list was used to populate an interactive dashboard in Tableau called the [DQ Resource Hub](#), a tool created to assist IIS with their approach to data quality in the face of an overwhelming number of data quality resources available to the IIS community. It also provides an overview as to how these resources flow together into a comprehensive data quality ecosystem.



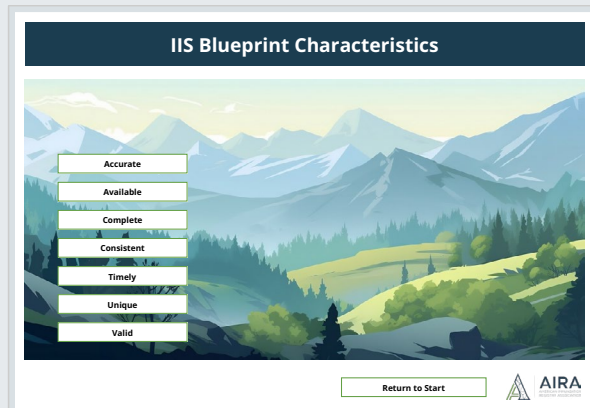
# DQ RESOURCE HUB *Continued from page 4*

## About the Hub

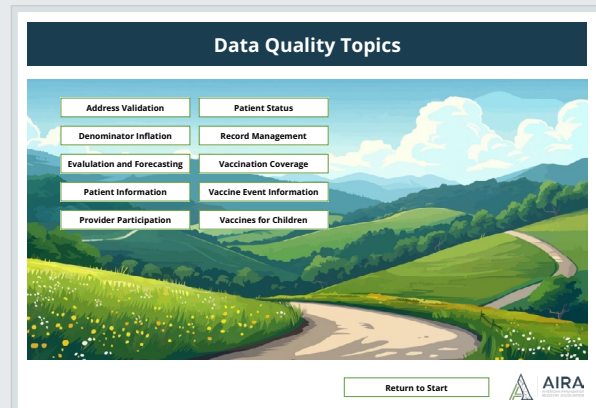
The [DQ Resource Hub](#) offers three different journeys for IIS jurisdictions to take to improve their data quality: IIS Blueprint Characteristics, Data Quality Topics, and Data Touch Points. A full list of resources is downloadable and exportable, and an additional pathway is available for IIS-specific Data at Rest (DAR) results.



### EXAMPLE JOURNEY: IIS BLUEPRINT CHARACTERISTICS



### EXAMPLE JOURNEY: DATA QUALITY TOPICS



## Feedback from IIS Jurisdictions

In April and May, AIRA met with 10 IIS jurisdictions in 30-minute virtual meetings to discuss IIS data quality and to demo the DQ Resource Hub. During these check-ins, IIS provided feedback on the Hub, along with recommendations for changes.

IIS jurisdictions that participated in the virtual check-ins had positive feedback about the Hub and found it to be helpful, easy to navigate, and time-saving. They appreciated its Tableau-based design, liked the visual of the data quality journey, and valued its interactive components. Notable feedback included “It’s great to have all the resources in one area” and “It’s dreamy!”



## DQ RESOURCE HUB *Continued from page 5*

Those same 10 jurisdictions that participated in the check-ins also agreed to serve as pilot sites. After testing the Hub, individuals responded to a brief online survey. Survey respondents found the Hub to be well organized, practical, and easy to use. On a scale of 1 to 10, with 10 being very useful, respondents rated the usefulness of the Hub a 9. One respondent noted, “I ADORE this new tool. I can finally delete all the bookmarks I have. I am also ecstatic at finding additional resources I had not come across.”

The Hub was officially launched during the July Tableau User Group (TUG) meeting. During this meeting, TUG members heard from three jurisdictions—Kentucky, Louisiana, and Missouri—who shared their experiences piloting the Hub and discussed how they planned to use it to improve data quality in their jurisdictions. All three jurisdictions found the Hub to be intuitive and easy to use, with a user-friendly, objective-oriented design. They appreciated its ability to simplify the discovery process for relevant data quality materials.

These jurisdictions anticipate leveraging the Hub for training (onboarding for new hires and refreshers for existing staff), standard operating procedure (SOP) development, HL7 troubleshooting, and guiding data quality strategy. In terms of its usefulness, presenters noted the Hub’s positive contributions to resource and time management, especially for smaller teams handling large workloads. In summary, IIS jurisdictions found that the Hub streamlined access to resources, supported onboarding, improved communication with providers, and helped to prioritize DQ efforts at the jurisdictional level.

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### Access the Hub and Get Started

Access the [DQ Resource Hub](#) and its companion resource document, [Charting Your Course: A Data Quality Adventure](#), to guide your team down the path to data quality improvement. Lace up those hiking boots and begin your jurisdiction’s unique data quality journey today!

– **Submitted by Jody Dial, MPH**, Program Manager, American Immunization Registry Association (AIRA); **Maureen Neary**, Director of Strategic Initiatives, AIRA; **Sarah Stich, MPH**, Epidemiologist, AIRA; **Courtney Londo**, Consultant



# HOW IMMUNIZATION INFORMATION SYSTEMS INFORM AGE-BASED HPV VACCINATION RECOMMENDATIONS IN THE UNITED STATES: A MIXED-METHODS STUDY

Human papillomavirus (HPV) infections cause nearly 35,000 cervical, anal, oropharyngeal, and other cancers a year in the United States.

Up-to-date (UTD) HPV vaccination (i.e., two doses by age 13) is only at 49% coverage for the recommended population as of 2021, far behind the >85% coverage for tetanus-diphtheria-acellular pertussis and meningococcal conjugate vaccines also recommended at this age. A provider's clear recommendation for HPV vaccination has a large effect on uptake, and recommending HPV vaccination at ages 9–10 is associated with higher rates of UTD HPV vaccination [19–21].

IIS employ vaccination forecasting to determine due dates for immunizations based on age, allowing providers to order and administer vaccines, schedule future vaccinations, and identify under-vaccinated patients who require follow-up. CDC's Advisory Committee on Immunization Practices (ACIP) recommends routine HPV vaccination at age 11 or 12 years. Vaccination can be given starting at age 9 years.

Disparate age-based forecasts for HPV vaccination in jurisdictional IIS could influence how HPV vaccination recommendations are made by providers, but these data are not documented. We conducted this mixed-methods study to (1) document the age at which jurisdictional IIS forecast HPV vaccination and (2) describe how jurisdictional immunization programs determine and implement HPV vaccination forecasts.

In summary, varied IIS implementation due to the lack of a clear ACIP age-specific HPV vaccine recommendation could potentially contribute to missed opportunities and geographic disparities in vaccine uptake. In an effort to increase on-time HPV vaccination before age 13, several jurisdictions are utilizing the IIS forecast to more clearly promote HPV vaccination at the earliest age of 9 years. In fact, as of July 2025, at least 16 of 64 US jurisdictions forecast HPV vaccination at age 9. The findings can guide jurisdictions on IIS capabilities for forecasting HPV vaccination, and unique insights from IIS stakeholders can inform clinical practice and national recommendations.

**Varied IIS implementation due to the lack of a clear ACIP age-specific HPV vaccine recommendation could potentially contribute to missed opportunities and geographic disparities in vaccine uptake.**

**Want to dive deeper?** [Read the full article here](#) for additional insights and details.

*– Submitted by Nadja Vielot, PhD, Assistant Professor, Family Medicine, University of North Carolina at Chapel Hill*



**TECH CORNER**

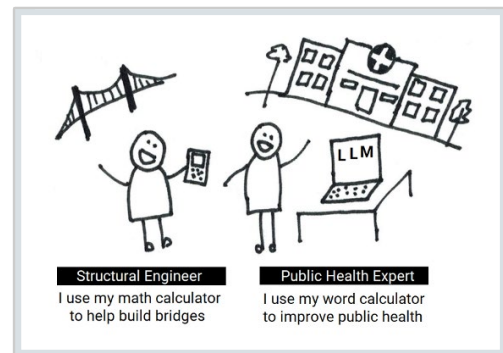
PROVIDING PUBLIC HEALTH EXPERTS WITH PRAGMATIC EXPLANATIONS OF TECHNICAL CONCEPTS

# PRACTICAL USES OF LARGE LANGUAGE MODELS IN PUBLIC HEALTH

Large language models (LLMs) like ChatGPT have generated a lot of excitement and confusion. Some people imagine them replacing entire teams or transforming businesses overnight.

But most of the value comes in quieter, more practical ways, such as helping professionals think through problems, communicate clearly, and complete routine tasks with more precision.

This isn't about flashy automation or risky delegation. It's about augmenting your own thinking. Proper use of LLMs can help you organize your ideas, write more clearly, and make progress on complex tasks even as we cope with limited resources.



Below are three practical, effective ways public health professionals can use LLMs today.

## 1. PLAN SMARTER: USE LLMs FOR STRUCTURED BRAINSTORMING

In public health, delays often come not from the difficulty of the work but from the uncertainty of where to begin. You're handed a task—write a report, respond to a crisis, prep for a meeting—and you hesitate, waiting for clarity that never quite arrives.

Here's where an LLM shines: it helps you start.

- **Describe the situation.**  
Don't worry about perfect wording. Just explain what you're trying to do—who it's for, what you know, and what you're unsure about.
- **Ask simple, open-ended questions. Try:**
  - What am I not thinking about?
  - What are common steps in a project like this?
  - What are the risks or trade-offs?



TECH CORNER

PROVIDING PUBLIC HEALTH EXPERTS WITH PRAGMATIC EXPLANATIONS OF TECHNICAL CONCEPTS

# PRACTICAL USES OF LARGE LANGUAGE MODELS IN PUBLIC HEALTH

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- **React, don't obey.**

You're not looking for final answers. You're looking for movement. The LLM gives you something to respond to—options to consider, structures to adjust, pitfalls to avoid.

- **Get to action quickly.**

Within minutes, you'll often have a clear first step and two or three things you can do today. That's momentum.

Leaders often arrive first not because they know more but because they start sooner. If you're stuck, don't wait for clarity. Use an LLM to help you think about where to begin.

## 2. WRITE BETTER: USE LLMS TO ORGANIZE AND EDIT COMPLEX CONTENT

LLMs work best when you give them too much information, not too little. The goal isn't to ask the model to come up with your content but to help you shape and clarify the content you already have.

Here's a process that works:

- **Start by giving the LLM context.**

Describe everything you know about the project: what it's for, who it's for, what constraints or background apply, and what outcomes you're aiming for. Don't be brief. If you want a one-page summary, expect to provide three to five pages of raw input first.

- **Have the LLM reflect your ideas.**

Ask it to summarize what you've said or to list your main points. This helps check that it understands you. And it surfaces anything you might have forgotten to mention. Ask it to take the perspective of your intended audience.

- **Ask for follow-up questions.**

Prompt the LLM to "interview" you like a thoughtful editor or a curious colleague. What's unclear? What's missing? What would the reader want to know next? These questions help you think through your own ideas more fully.

- **Answer those questions in detail.**

Treat this like a Q&A session with yourself. The better your answers, the better the next steps will be.

- **Now ask for a rough draft.**

At this point, you've handed over all the key material. The LLM isn't inventing; rather, it's arranging. You now have a solid starting point: a structured, readable version of your thoughts.



## PRACTICAL USES OF LARGE LANGUAGE MODELS IN PUBLIC HEALTH *Continued from page 9*

- **Review and revise heavily.**

Don't skip this part. The LLM is an intern, not a final editor. You are still the author, and your voice and judgment matter most. Edit for tone, clarity, accuracy, and structure.

Done right, this process speeds up the “thinking through” stage and gives you a cleaner place to begin. It doesn't save time by skipping steps. It saves time by making every step count.

### 3. COMMUNICATE CLEARLY: USE LLMS TO DRAFT AND REVIEW EMAILS

When replying to complex emails or public communications, paste the thread into the LLM.

Ask questions like:

- **What are they asking for?**
- **Does my reply address their concerns?**
- **Is my tone right?**

LLMs are especially helpful when stakes are high and there's no time for a colleague to review your draft. You still own the message, but now you have an on-demand coach to help tighten it up.

### WHY THIS APPROACH WORKS

Using an LLM the right way doesn't save you from thinking; it forces you to think more clearly. It doesn't make writing faster, but it does make it better. You'll still spend time explaining your goals, reviewing drafts, and refining your message. But the result is sharper, stronger, and more focused.

**Using an LLM the right way doesn't save you from thinking; it forces you to think more clearly. It doesn't make writing faster, but it does make it better.**

Think of it like a calculator. A calculator doesn't know how to build a bridge; it just helps engineers avoid arithmetic mistakes and focus on the real problems. LLMs are the same. They don't understand your programs or your policies, but they can help you organize your thinking, tighten your writing, and avoid getting sidetracked by blank pages and fuzzy ideas.

They don't replace your expertise. They help you use it better.



**TECH CORNER**

PROVIDING PUBLIC HEALTH EXPERTS WITH PRAGMATIC EXPLANATIONS OF TECHNICAL CONCEPTS

# PRACTICAL USES OF LARGE LANGUAGE MODELS IN PUBLIC HEALTH

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## FAQ: USING LLMs IN PUBLIC HEALTH

### Q: What kinds of tasks are safe for LLMs to help with?

Use LLMs for understanding frameworks, organizing ideas, summarizing content, and improving language. Don't rely on them for facts, citations, or legal guidance. They sound confident even when wrong.

### Q: Can I use this with confidential information?

Not in public versions. Always strip out sensitive data. You can use internal/private systems securely, but public-facing tools like ChatGPT shouldn't receive personal or protected health information.

### Q: Do I have to be a good writer to use LLMs well?

No, but it helps. LLMs reward users who provide detailed, thoughtful input. The more clearly you explain your thinking, the more helpful LLMs become. The process improves your writing over time.

### Q: If it's not faster, why bother?

Because it gets you unstuck. Instead of spinning your wheels, you make progress. Your output improves. You stop wasting time writing unclear drafts and start delivering clearer communication.

### Q: Is using an LLM cheating?

Not at all. It's a tool. You're still doing the thinking. You're just using support to express it more clearly and get better results.

### Q: What if I disagree with its suggestions?

Great! Now you're thinking! LLMs are often wrong. Push back, give more context, and use disagreement to sharpen your own reasoning. That's the point.

### Q: Did you use an LLM to write this article?

Why yes, I did. I wrote about 5,000 words over eight prompts, ignored plenty of bad suggestions, pulled out a few insights I hadn't seen before, and heavily edited most sections. The result? A 1,000-word article drafted in about three hours—ready for human review.

It didn't write it for me. It helped me write it better.

*– Submitted by Nathan Bunker, Senior Technical Analyst,  
American Immunization Registry Association (AIRA)*

The "AIRA Tech Corner" is published as a blog. [Read more](#) on the AIRA website.



# EDUCATION EXCHANGE

Welcome to the Education Exchange, where we highlight valuable educational offerings and resources to support learning and professional development within our community.

1

## IIS 101 VIDEO

In collaboration with CDC, AIRA has launched a new educational resource, the IIS 101 Video. The video highlights the role of immunization information systems in supporting public health, improving vaccine delivery, and empowering both providers and patients with timely data.

The IIS 101 Video is an excellent tool for partner engagement, staff training, or public education.

We encourage you to share it widely within your networks.



[Watch the video](#)

2

## PHII ONLINE LEARNING AND RESOURCES ROUNDUP

The Public Health Informatics Institute (PHII) has released various IIS learning opportunities and resources.

- [New IIS data quality for providers course](#): For the provider audience, this Informatics Academy course highlights the importance of IIS high-quality data and how it's essential to making the best decisions for patients.
- [Procurement webinar series](#) (with CDC): Learn best practices, standards and use cases for acquiring new public health information systems.
- [Privacy Preserving Record Linkage \(PPRL\) webinar series](#) (with CDC): Explore PPRL's purpose, privacy and security considerations, benefits, and implementation examples for IIS.
- [IIS Baseline Requirements Traceability Matrix \(RTM\)](#): This downloadable Excel spreadsheet (found by clicking on the Documenting and Tracking Requirements tab) highlights recent updates by PHII and CDC to align with current CDC IIS Functional Standards.

Send any questions or comments on PHII's IIS resources to [iis@phii.org](mailto:iis@phii.org).

– Submitted by Lisa Jones, Communications Manager, Public Health Informatics Institute