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## Gaining Traction in Research Data Management Support: A Case Study

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## **Introduction**

In early 2013 librarians at the University of Vermont (UVM) implemented ScholarWorks @ UVM, the university's institutional repository. Marketing of the repository to the UVM community elicited several inquiries about the repository's data management capabilities. Those questions, combined with a growing awareness of librarian involvement in e-Science (Raboin et al. 2012, Tenopir et al. 2014), led UVM librarians to review their support of research data management.

## **Gathering Expertise**

In November of 2013 the author and another UVM librarian attended a workshop entitled "Teaching Research Data Management with the New England Collaborative Data Management Curriculum." The New England Collaborative Data Management Curriculum (NECDMC) consists of seven case-based modules, complete with lesson plans, annotated slide decks, and suggestions for activities. The workshop provided instruction in the use of these teaching materials (Frameworks for a Data Management Curriculum 2012).

On their return to Vermont, the two librarians, both from the Dana Medical Library, discussed introducing this material to both colleagues and patrons. There were no known research data management instructional initiatives at the university. The author was not certain to what extent UVM librarians were already supporting data management, or if they were, whether they recognized their work as such. It was decided to focus on discovering what UVM librarians thought their role was and could be around research data management.

The author developed a workshop entitled Research Data Management for Librarians to be held in March 2014. The workshop was based on Module One of the New England

Collaborative Data Management Curriculum, modified to include resources and practices at the University of Vermont. Module One is an overview of research data management that provides an introduction to the topic. Ideally, workshop attendees would have the opportunity to attend all seven modules in order to gain a thorough understanding of research data management practices, but in this case the author decided to begin with Module One to explore needs at UVM.

Adding local resources to the presentation proved a challenge, due to the decentralized nature of research support at the University of Vermont. Several offices at UVM and FAHC provide helpful resources on their web sites including: Sponsored Projects Administration, Office of Research Protections, campus Enterprise Technology (IT) Services, College of Medicine IT Services, and the Fletcher Allen Clinical Research Center (at the affiliated hospital). Some information was unavailable on UVM web pages. A meeting with a UVM IT director, for example, revealed that large data storage services are offered on a cost recovery basis, and are negotiated with each individual researcher.

Another local expert contacted was the UVM College of Medicine (COM) Technology Services Assistant Director, who is also a member of the UVM campus-wide Information Security Operations Team. She agreed to suggest changes and additions to the PowerPoint presentation and to describe her own experiences supporting data storage and information security requirements and alerting researchers to their responsibilities.

Upon reviewing the PowerPoint slides, the Technology Services Assistant Director declared that she was not comfortable with several aspects of the security portion of the presentation. She was alarmed by some of the insecure practices described, for example, a chart in the detailing real-life researchers' use of Dropbox and other non-secured storage media, and recommendations to not encrypt data in order to facilitate data sharing. She was particularly

concerned that workshop attendees consult with their university IT support personnel before beginning their research, and ideally before applying for funding.

As a result, the presentation was modified to be more definitive about advising researchers to contact IT support and information security support, and to follow best practices in information security. The resulting presentation met her goal of getting the word out about information security support at the university.

The final list of local resources for data management planning was guided by the resources discussed in Module One of the NECDMC, with additions from the Technology Services Assistant Director.

- Intellectual property policy
- Records retention policy
- Information security contact information, policy, and procedures
- Large-capacity research data storage services
- Software resources: REDCap, LimeSurvey
- University and hospital Institutional Review Boards
- Office of Technology Commercialization
- *Manual for Human Subjects Research*

## **The First Workshop**

The first workshop was advertised to all UVM librarians and staff through email and word of mouth. UVM employs 63 librarians and staff in the main library and 17 in the medical

library. There were eight attendees at the workshop, six from the medical library and two from the main campus library. Two other main campus librarians expressed interest in working on data management efforts together. The workshop was designed to achieve five objectives, based on the objectives of Module One of the NECDMC.

- Describe what research data is and what data management entails.
- Review why managing data is important for a research career.
- Identify common data management issues.
- Identify best practices and resources for managing these issues.
- Facilitate discussion of how UVM librarians might help identify data management resources, tools, and best practices for our patrons.

The session lasted 90 minutes. The author presented the modified version of Module One of the NECDMC. The module calls for the creation of a data management plan based on a research case study. Curriculum documents recommend selecting a case appropriate to the workshop attendees. Since the goal of the instruction was to explore librarian support for research data management, the author omitted the case study activity. Attendees were provided with a sample data management plan instead (Example Data Management Plan: NSF General 2011). In addition, the Technology Services Assistant Director spoke about her services and experiences and answered questions from attendees. The session concluded with a review of research data management services offered by other libraries, and a discussion of what services UVM librarians have provided, would feel comfortable providing, and could learn to provide.

### **Results and Evaluation of the First Workshop**

The original Module One presentation from the NECDMC described services that patrons could request of their librarian as they create their data management plans. In addition, the presentation also notes that librarians can help with other data-related activities such as finding a data set, citing a data set, publishing a data set, and measuring the citation impact of a data set.

During the discussion session of the first workshop, UVM Librarians revealed that they have already been involved three of these activities: finding a data set for a patron, submitting data to a repository, and interpreting funder or publisher repository requirements. This last activity involved collaboration with UVM's Sponsored Projects Administration. Librarians were also willing to help with data set citation. Librarians had been asked in the past if the library could generate DOI names for files, but the library does not provide this service.

The librarians who attended this session were primarily reference librarians, and were reluctant to offer their services in locating and applying metadata or in cataloging and archiving laboratory notebooks. They were also not confident about selecting file formats for long-term preservation. Recommendations in the NECDMC presentation around creating file naming conventions seemed like common sense that did not require a librarian's expertise.

NECDMC includes a standard survey form for attendees to complete at the end of the module. A score of one on the evaluation form indicates "not at all well." A score of five indicates "very well." All eight attendees completed the evaluation form. Feedback was positive (Table 1).

The survey form also includes free-response questions. Answers to these questions included comments that "It's all so new that it's all good to learn about" and "Loved the video,

COM presenter, and issues raised...” One respondent would have preferred a hands on exercise and two requested further workshops.

## **The Second Workshop**

For the last five years, librarians at the Dana Medical Library have conducted an instructional program intended to reach patrons who are missed by curriculum-based instruction. These patrons include about 300 graduate students in doctoral programs within the College of Medicine and the College of Nursing and Health Sciences, as well as almost 200 medical residents and fellows. The program is also advertised to new faculty and clinicians. Instruction consists of a series of five or six one-hour sessions on topics such as PubMed, EndNote, scholarly publishing, and searching for grant information. Between ten and 30 patrons attend each session.

The author intends to deliver Module One as part of this series of classes in fall 2014. In order to test the workshop with patrons, a small pilot was conducted with these objectives, drawn directly from the NECDM.

- Recognize what research data is and what data management entails.
- Recognize why managing data is important for your research career.
- Identify common data management issues.
- Learn best practices and resources for managing these issues.
- Learn about how the library can help you identify data management resources, tools, and best practices.

This workshop was revised to eliminate the librarian discussion and the guest appearance by the COM Technology Services Assistant Director. Based on feedback from the first workshop, the author was able to confidently indicate that the following research data management services were offered by UVM librarians.

- Citing a data set
- Finding a data set for a patron
- Submitting data to a repository
- Interpreting funder or publisher repository requirements

Since this session was only 60 minutes long, attendees would not have an opportunity to analyze a research case. Instead attendees received an example of an exemplary National Science Foundation data management plan (Example Data Management Plan: NSF General 2011) and were asked to note how it met the NSF requirements. Then data management plans from different topic areas were made available to attendees (NSF Sample Data Management Plans 2014) They selected one from a research area similar to their own, read the plan, and noted which NSF elements were well described and which were missing. They then shared that information with the group.

### **Evaluation of the Second Workshop**

Two librarians, one faculty member, and one clinical research coordinator attended this workshop. In addition, two faculty requested copies of the PowerPoint presentation. The two non-librarian attendees completed the same evaluation form that was used in the first workshop

(Table 1), responding with 4's and 5' to all eight questions on the form. Their comments focused on the value of the information and links as reference material for later use.

Discussion of the sample data management plans with attendees was not very spirited, though the presence of only two non-librarian attendees may account for the lack of participation. In the next iteration of this workshop the author will develop targeted questions to stimulate discussion.

### **Conclusion and Next Steps**

Providing these two research data management workshops has allowed UVM librarians to learn more about data management at the university. UVM librarians support RDM through finding and citing data sets, interpreting data repository requirements, and assisting with submitting data to a repository. Resources exist at the university to guide research data management, but there are gaps. For example, patrons would appreciate a service that mints and maintains DOIs.

Collaboration with the COM information security official, the IT director, and Sponsored Projects Administration resulted in a more accurate and more customized workshop. The individuals from these offices were happy to help in exchange for increased exposure for their services. And yet some elements of the NECDMC appear to have no central support, such as metadata creation, data sharing, data preservation, and creation of data management plans. An ARL study reported that libraries in institutions within a similarly decentralized culture have found that success has come from working with individual researchers (Soehner et al. 2010).

For the immediate future, the author will lead this workshop again during the fall 2014 workshop series with modifications to emphasize the resources available from the library, at the

university, and in the research community. The author will also create a web page with links to local data management resources. The activity in the fall workshop will be revised to promote more attendee interaction. Further progress in understanding and supporting research data management at UVM may come from developing a relationship with a specific research team.

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Table 1. Feedback from attendees of the first workshop.

Questions	1	2	3	4	5
1. How well did this session prepare you to define what research data is?	0	0	1	5	2
2. How well did this module prepare you to explain the need for managing/sharing research data and identify relevant public policies?	0	1	0	7	0
3. How well did this module prepare you to explain the lifecycle continuum to manage and preserve research data?	0	0	4	2	2
4. How well did this module help you to understand that data should be managed differently in different phases of the life cycle?	0	1	3	2	2
5. How well did this module familiarize you with data management plan (DMP) requirements used to characterize and plan for the lifecycle of research data?	0	1	3	6	2
6. How well did this module prepare you to identify the value and relative importance of data management to the success of a research project?	0	0	0	6	2
7. How well did the objectives of this module meet your expectations for what you need to learn regarding data management?	0	0	2	2	4
8. How useful/relevant are the instructional materials to your learning needs?	0	1	1	3	3