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Translational Personas and Hospital Library Services

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ABSTRACT

Academic health centers, CTSA hubs, and hospital libraries experience similar funding challenges and charges to *do more with less*. In recent years academic health center and hospital librarians have risen to these challenges by examining their service models, and beyond that, examining their patron base and users' needs. To meet the needs of employees, patients, and those who assist patients, hospital librarians can employ the CTS Personas, a project of the Clinical and Translational Science Awards (CTSA) Program National Center for Data to Health. The Persona profiles, which outline the motivations, goals, pain points, wants, and needs of twelve employees and two patients in translational science, provide vital information and insights that can inform everything from designing software tools and educational services, to advertising these services, to designing impactful and collaborative library spaces.

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Introduction

Across academic health centers, Clinical and Translational Science Awards (CTSA) institutions (or "hubs"), and hospital libraries, financial and staffing challenges are common. Service-based entities within these organizations face several challenges: shrinking budgets and staff, the ubiquitous charge to *do more with less*, and organizational restructuring that necessitates new service models. To meet these challenges, hospital libraries must provide the best quality services to their key constituents and beyond. In some cases these constituents may be known, while in other areas, potential client bases have not been fully identified. Like all service organizations, hospital libraries must

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identify their clients and understand their needs in order to meet the optimal standards of service.

Closures and consolidations of hospital libraries in recent years have been an alarming trend, in terms of both the reduction of services and reduction of staff. Harrow notes a 30% decrease in medical libraries in the ten years between 2007 and 2017. She questions which librarian service models may prove most successful in the future, to ensure informational needs are met in the hospital setting (1). Several library systems have engaged in strategic planning efforts which have included surveying stakeholders to gain insights into their knowledge and usage of library services, in order to ensure needs are met and ensure the long-term sustainability of the library as an information service and librarian positions as service providers. The results have been surprising. Through individual meetings with stakeholders at their strategic planning sessions, librarians of the Oregon region's Providence Health & Services found that across disciplines and institutions there was a lack of awareness of available library services, uncertainty of how to access resources, and requests for more resources and training opportunities (2). At the Medical Library Association InSight Initiative Summit 2, held September 27–28, 2018 in Chicago, Illinois, Jeff D. Williams presented the results of his focus group sessions at the New York University Health Sciences Library, which examined librarians' observations on library user behaviors and needs (3). Focus group respondents who later participated in library strategic planning both at NYU and The University of California, San Diego Library had similar observations to share about library user beliefs and behaviors, such as users *suggested that the library develop services that we already offered* and that users *were surprised that the library provided services that librarians assumed everyone would know about.*

Williams and the NYU Health Sciences Library team worked to meet the stated needs of their constituents by creating a liaison librarian program at the New York University Health Sciences Library. By establishing the liaison program, they acknowledged that *building personal relationships* to serve users is key, particularly for the opportunity to *observe how users discover needed information and manage knowledge* as a critical method of *understanding the unique requirements of multiple user communities served by the library* (4).

Hospital librarians, clinical informationists, liaisons, and research librarians face the constant challenge of balancing an awareness of the informational needs of the professionals whom they serve. These might include roles spanning clinician scientists, clinical research coordinators, patient navigators, and beyond, with the awareness that these busy professionals have little time to fully familiarize themselves with both the range of library services and information offerings, and how they may best take advantage of them. Gillum and Williams, in their efforts to initiate creative new programming at the Harriet

F. Ginsburg Health Sciences Library at the University of Central Florida College of Medicine, took steps to bridge this gap by identifying specific user groups such as faculty, staff, and students, and then fleshing out their ideas about the information needs of these groups by establishing *personalities* for them. *Personalities included such details as communication preferences, the types of programming that may be beneficial (e.g. educational, informational), and the optimal times within the academic year to engage with each group* (5).

Efforts such as Gillum's and Williams' to discover the needs of user groups through the use of personalities are necessary and important, and they follow a long line of similar implementations in the for-profit sector. Personalities are well established in the field of software user experience (UX) design, where they are termed personas. Personas were popularized by the 2004 publication of Alan Cooper's *The Inmates are Running the Asylum: Why High-Tech Products Drive us Crazy and how to Restore the Sanity*, a book outlining how to create user personas in order to design more effective and intuitive software user interfaces. According to Usability.gov, a Federal resource focused on improving the user's experience with software tools, *the purpose of personas is to create reliable and realistic representations of your key audience segments for reference* (6).

If personas can offer effective insights for software design as well as health science library services and programming, what more could they offer in the context of the field of academic health centers at large, or in the context of the CTSAs?

The Center for Data to Health Project: CTS Personas

In 2017 the Clinical and Translational Science Awards (CTSA) Program National Center for Data to Health (CD2H, Grant U24TR002306) was established to accelerate advancements in informatics by promoting data reuse and interoperability, tool sharing, informatics fluency, and collaboration across the CTSA community (7). This community spans the full range of translational science, from basic science research to preclinical and clinical research, to clinical implementation, to public health, and through the coalescence of their efforts this community helps to move scientific discovery from bench to bedside. Through the CD2H, several projects and initiatives have been developed to serve the translational community's needs with regard to data and informatics, including data sharing platforms, informatics maturity and best practices guidelines, cloud-based informatics tools, and an ontology for credit and attribution. The project participants agreed that assessing the individual needs and motivations of key actors in translational science was essential to developing the most robust tools possible to serve them. To meet this need, a six-month-long project was completed

to create persona profiles to uncover the needs, motivations, goals, and pain points of workforce members in clinical and translational science (CTS). The goals of the resulting project, dubbed CTS Personas, were to not only better understand the diverse translational workforce and their needs, but also to understand their actions, habits, and software and communication preferences.

CTS Personas was launched as a Phase II project of the CD2H with a timeline spanning January to September 2019. A project team led by Northwestern University and consisting of librarians, data engineers, and informatics professionals from Washington University School of Medicine in St. Louis, Children's Hospital of Philadelphia, and Oregon Health & Science University undertook a stepwise process to identify key roles in translational science and create persona profiles for one dozen of them (8).

Examples of persona profiles that served as templates for this effort were found through various online resources, including Usability.gov (6), UX Magazine (9), and the European Bioinformatics Institute (10). Each of these organizations had created persona profiles using certain elements or descriptors, which the CTS Personas team logged and examined with regard to their relevance to the translational workforce. The team chose sixteen elements that encapsulated everything from job responsibilities to motivators, goals, and pain points, to software usage habits, to elements particularly important in the field of translational science, such as scholarly outputs and professional development habits and needs. These elements served as the template for each of our Persona profiles (Figure 1).

To obtain the most thorough picture possible of CTS roles, the Personas team examined staff lists and organizational charts available on the CTSA hubs' Web sites, tracking each resource discovered in a Google Sheet (11). For the 79 unique positions identified, the team obtained at least two and often three job postings for the position. Through an analysis of word frequency

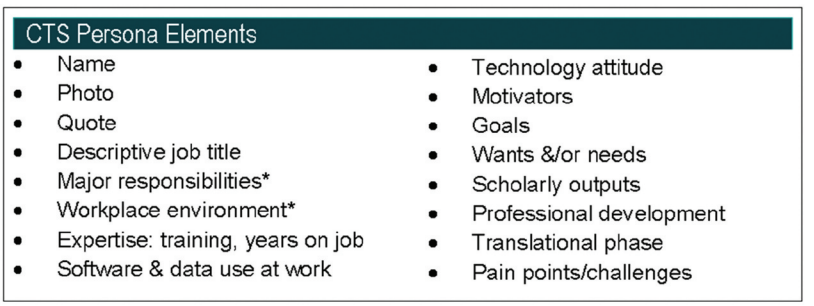

Figure 1. CTS Persona elements. Critical profile components used to profile the translational workforce through the CTS Personas project. *Incorporated in a biography section.

across the position descriptions, and weighting the results to ensure that the full ecosystem of translation was represented, the team determined one dozen key roles to profile in translational science:

- Basic Scientist
- Biostatistician
- Clinical Research Center Administrator
- Clinical Research Coordinator
- Community-Engaged Researcher
- Data Analyst
- Developer
- K Scholar
- Librarian
- Patient Navigator
- Physician Scientist
- Research Administrator

With a template in place and a selected list of CTS roles to profile, the next step was to research and write the profile documents. Through PubMed and Scopus searches only around 60 articles were identified as directly informative about the duties, habits, or challenges of employees in the CTS workforce, demonstrating that workforce studies merit greater consideration both within the CTS landscape, and among organizations providing it with services. The published literature was supplemented with information from Internet resources and professional organizations' Web sites such as the National Council of University Research Administrators (NCURA) and the Association of Clinical Research Professionals (ACRP) for various roles, as well as job descriptions from ads and employment Web sites (12,13).

Even with current Web resources and published literature, it can be difficult to compose well-informed and unbiased profiles of professionals without speaking to people currently working in the profiled roles. Personas experts from UX Magazine (9) and the European Bioinformatics Institute (10) advocate interviewing current employees in the roles being profiled in order to get a true and current sense of their job concerns, their motivations, and their everyday stresses. The CTS Personas team completed IRB review and began interviews with members of the translational workforce in Summer 2019, averaging two interviews per role. Interview data was de-identified, transcribed, and added to data gathered from the literature review to form the data pools from which the final Persona profiles were created. Two additional profiles of CTSA patients were created solely from literature review data (interviews not being possible per the terms of the institutional IRB), resulting in a total of fourteen profiles.

Figure 2. Sample Persona, here for a clinical research coordinator.

Figure 2 is an example of one completed persona profile, that of the Clinical Research Coordinator (CRC), Lucy Silonga. In addition to elements like job responsibilities, motivators, and goals, each profile includes a descriptive job title, name, quote, and picture of the person being profiled. Though these last elements are fictional, they are recommended for use in persona profiles because they humanize the profile, reminding the user that the one-page

document represents and stands in place of a real person, demonstrating their real job-related and professional needs.

While the CTS Personas were created chiefly with the goal of informing software-based projects of the CD2H and beyond, the designer of services, educational tools, or programming for this user group can glean much useful information from the profiles. The professional development and goals sections of the profile inform the reader that Lucy seeks certifications and promotions, and enjoys mentoring, suggesting that she could both utilize and employ tools to assist with professional study and continuing education. In the pain points section of her profile it is mentioned that she needs good mobile versions of many software tools, as she is constantly on the go. In the motivators section, it can be seen that compliance, accountability, and reproducibility of the science to which she contributes are important factors of Lucy's everyday work, suggesting that she would benefit greatly from service providers' help in guiding her toward tools for reproducible science.

The CTS Personas and hospital library services

As part of the CTS Personas project deliverables, a user guidebook was created to orient new users to the profile documents (14). This guidebook explains elements of the profiles, such as the meanings of the icons that appear alongside each software use section, and also contains the project's full bibliography. The guidebook also contains three sample use cases demonstrating how the Persona profiles can be used in real-world service scenarios. Use Case 2 is a particularly relevant example, as it outlines the challenges a clinical research center administrator faces in designing a schedule of trainings for researchers and clinical support staff at her CTSA site (14). The Center Administrator learns from reading Persona profiles that many CTS employees request classes in subjects outside their areas of expertise, such as Clinical Research Coordinators needing classes in Python and R to grow their burgeoning data management skills, Research Administrators needing courses in mathematics and statistics to increase their skills in budget management for pre- and post-award work, and Librarians and Data Analysts needing classes in Good Clinical Practices in order to better serve their patrons, who are overwhelmingly researchers and support staff engaged in clinical research.

The CTSA trainings use case is only one of the ways that the Personas can be employed to build value and sustainability for hospital and academic health center libraries. The Personas portfolio can provide evidence-based insights into the clinical user base that can inform and improve a library's service model, regardless of its size or resources. As a first step, the Personas can enable efficiencies and economies in librarians' time. Personas are powerful reference tools describing various users' needs in the clinical research landscape, assisting service providers with the challenges posed by the time and

person power needed to build insights into their user base. Time investments by liaison librarians in relationship-building often results in user information much like that contained in the Personas. The Persona profiles can serve as an introduction or training material for new liaison librarians, helping them to be more informed and prepared for initial engagements with users.

Before examining specific use cases of how librarians can use Personas to serve their users, it is important to consider librarians' needs as recipients of services. An examination of the profile for the Research Impact and Bioinformatics Librarian, Rachael Pereira, sheds light on her professional needs. Included on the CTS Personas GitHub page for each Persona is a chart that supplements the one-page profile document, and which outlines each persona's detailed software usage (15). The Librarian Persona uses the most and widest variety of software tools out of all of the profiles, in categories as varied as library software tools, and genomics, visualization, and data analysis software. As part of her commitment to lifelong learning and to serving researchers' needs in a variety of ways, Rachael is always eager and willing to learn new tools, and to teach them. Emphasizing diverse professional development needs by librarians, it is easy to see that a library setting that supports training in new technologies and makes available state-of-the-art tools to both learn and deliver technology trainings would assist Rachael greatly in her work, and have a great impact on the researchers and research teams with whom she collaborates.

As providers of services, librarians can examine the other Persona profiles to identify groups of users and examine common needs arising from users who share characteristics. Scientists and administrators will have different needs and approaches to a hospital library's resources than the research coordinators and analysts who support them. One of the CTS Personas scientists, Physician Scientist Simran Gupta, is a busy clinician in addition to being a researcher. Librarians in the clinical care environment may have the best opportunity to meet her information needs, providing on-site research assistance during rounds. Listed among Simran's needs are *effective infrastructure for communication, mentoring, and technology*, a need shared by Basic Scientists and other researchers, as well. Such infrastructure can take many forms, and often involves long-term institutional commitments, funding, and strategic planning. A successful result of such efforts can be seen in the TRAIL (Translational Research and Information Lab) collaborative research space at the University of Washington's Health Science Library. This state-of-the-art space was envisioned as a training and collaboration solution for researchers, offering amenities such as a data wall (a six-panel wall in which screens can be used as a block or separately) and virtual reality environments for image examination and manipulation by surgeons, radiologists, nurses, and researchers (16). TRAIL serves as an example of a successful implementation of a project tailored to directly meet the needs of local researchers. While

hospital libraries may be limited in size and budget for achieving similar solutions, they can pursue partnerships with other organizations within a health center or university, as in the University of Washington's model, to make such a space a reality.

The burgeoning field of data science and clinical data management offers many opportunities for library outreach to other user groups represented by the CTS Personas. Early stage investigators such as NIH Career Development K Award Scholars (K Scholars), as well as Clinical Research Coordinators may have different reasons for seeking classes in research data management. K Scholars, often beginning their projects with 75% funded research time, are responsible for designing and managing their first research project. They are a prime audience for data management and visualization classes, as they seek to gain the skills that will help them to do accountable and reproducible science throughout their careers. Similarly, Clinical Research Coordinators are often on the front lines of data collection, helping to design the forms, collect and process the data, and at times perform preliminary analyses as part of their duties on busy research teams. Research Coordinators must learn to handle data as quickly and efficiently as possible in order to best serve their teams, and they may be able to learn to do this more effectively by employing skills learned in data management and visualization courses. Training in robust data collection, for example using REDCap, can decrease stressors in generating adequate and well-designed data collection strategies (17). Quick courses for low-barrier visualization of research data could be offered in academic health center or hospital libraries, for example using the Tableau software suite (18). For those researchers needing more customized analysis resources, courses in introductory SQL, SAS, STATA, R, or Python programming could also be offered in libraries.

Patients and those who work directly on their behalf are another stakeholder group represented by the CTS Personas who can benefit greatly from hospital library services. As represented by the Patient profile of college-age student Emily Trinidad, many of today's patients are informed and connected. They actively seek information on their health conditions through Internet searches on Web sites and medical literature sources, as often on their mobile phones as on computers. They seek to come to appointments informed in order to ask relevant questions and be active participants in their own health care. Patients may be frustrated when trying to access sources behind paywalls, and may not be aware that hospital librarians can help them address these challenges. The Patient profile of the retired patient Tom Movell demonstrates many of the same desires. Tom also needs accessibility options when accessing health care Web sites and resources, such as larger type on Web sites and optional audio. Hospital libraries are poised to meet both Emily and Tom's needs.

In addition, the Patient Navigators who work to guide patients through lengthy treatments for cancer and other ailments can benefit from services provided by hospital librarians and even be a good potential partner. Often traveling with patients to their appointments, they may need to access trusted health information on the go, and often directly within the hospital setting. Part of the navigation experience is offering patients every possible resource to help them through their treatment. A close working relationship between patient navigators and hospital librarians can ensure that patients are aware of the services that librarians can offer to help them through treatment and beyond.

Like Patient Navigators, Community-Engaged Researchers work closely with patients participating in clinical trials, often bringing their research and resources directly to the community. Community members benefit from this interaction and from the high level of involvement in the work of research. Yet like patients, they also experience frustrations at reaching paywalls in their search for information resources. Hospital and academic health center libraries can leverage their resources and outreach strategies to meet the challenges facing this growing group of scientists and their community-based research collaborators. By becoming familiar with these groups' concerns through the Personas, library administrators can allocate resources to meet their needs.

Conclusion

Though created chiefly with a view to software usage, there is much that can be learned from the CTS Personas profiles about various roles in translational science and how they access, disseminate, and share informational resources. Understanding these patterns for each Persona can help to explain why individuals in these roles may not be aware of well-advertised library services, or may submit requests for services that already exist. We learned through the profiles that CTS professionals are often seeking further education or professional development opportunities, and not necessarily within their domains of expertise; they frequently work on the go and require mobile methods and platforms for accessing information resources; they partner frequently with outside collaborators who contribute to their grant-funded efforts and require access to information resources behind paywalls. They require state-of-the-art spaces in which to work and share their discoveries with colleagues. In the face of hospital closures and fiscal belt-tightening, meeting users where they are and working to address their stated needs is key. The CTS Personas profiles are a great place to start.

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Disclosure statement

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