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# PARTNERSHIPS IN MEDICAL EDUCATION: AN EXPLORATION OF LIBRARY SERVICE MODELS FOR POSTGRADUATE MEDICINE AT MACQUARIE UNIVERSITY

*Mary Simons*

Macquarie University's new medical school, The Australian School of Advanced Medicine (ASAM), is developing a postgraduate program that incorporates a partnership with Macquarie University Library. The curriculum encompasses contemporary models of competency-based assessment, teamwork and lifelong learning that are integrated with research and patient care. This exploratory paper shows how ASAM differs from other medical schools in ways that will necessitate an innovative response from the Library. Results of a Library survey identified key online services and the importance of integrating information skills training into ASAM's curriculum. The ensuing discussion demonstrates how ASAM and the Library can share current technologies and educational principles to facilitate lifelong learning, health care and collaboration.

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Australian and overseas models of medical education are being reviewed in response to our changing health care environment. The growth of biomedical knowledge, along with other factors such as medical workforce shortages, subspecialisation and diminishing training resources have

necessitated a re-evaluation of many training programs worldwide. Methods of assessment are changing and there is growing recognition for clinicians' skills to encompass lifelong learning, teamwork, insight and reflection. The expectations and learning styles of technologically astute Net Generation students are also influencing the ways in which medical education is evolving.

Authors in the US, Canada and Europe have written extensively on the need to revise time-based surgical apprenticeship programs that utilise rote learning and exit examinations. Long recommended the implementation of competency-based education that links progress to competencies rather than duration of training.<sup>1</sup> Surveys conducted in the US and Australia have questioned the value of exit examinations in predicting future surgical competence.<sup>2</sup> Morgan et al. recommended performance assessment in Australia be competency-based, incorporating insight, reflection and lifelong learning skills.<sup>3</sup> The Royal Australasian College of Surgeons' training programs are being revised in 2008 to include competency-based assessment.<sup>4</sup> The College also defines key roles of surgeons, including 'Scholar-teacher' and 'Communicator' which encompass essential attributes of lifelong learning and teamwork. Training programs are expanding across Australia, with at least seven new medical schools established since 2000 to address local workforce shortages while incorporating educational reforms and inter-institutional collaboration.<sup>5</sup> Although the intern shortfall is being addressed by these new schools, current specialist training programs will not, however, be able to cope with demand as more interns seek to move into postgraduate education.

Principles of competency-based assessment, lifelong learning and teamwork have significant implications for library services. Rapidly changing technologies have created a greater need for clinicians to be instructed in the use of advanced search strategies to effectively access electronic information from a wide range of resources. A study of barriers to clinicians' electronic information seeking found that the problem of information overload was exacerbated by users' lack of skills and time to manage large amounts of information effectively.<sup>6</sup> McGowan's study of medical graduates demonstrated the important role librarians have in embedding information skills training into the curriculum as well as providing help when needed.<sup>7</sup> 'Lifelong learning must include the adoption of appropriate attitudes and habits, and these can be instilled only through curricular integration with emphasis on appropriate sources and methods'.<sup>8</sup> She recommended that more be done to involve librarians in the teaching mainstream of medical education. Shumway also emphasised the need for clinicians to develop skills in accessing and evaluating the latest literature, but questioned whether medical schools make adequate provision for information skills training.<sup>9</sup>

## **MEDICINE AT MACQUARIE: THE AUSTRALIAN SCHOOL OF ADVANCED MEDICINE**

Recognising a gap in Australian postgraduate medical education that necessitates overseas training for surgeons wishing to subspecialise, Sydney neurosurgeon Professor Michael Morgan entered into an agreement with Macquarie University

to establish Australia's first postgraduate subspecialty medical school on campus. Work has commenced on the building of the Australian School of Advanced Medicine (ASAM). Plans for a new private hospital, Macquarie University Private Hospital, alongside ASAM are also being finalised. Construction of the Hospital and School, a joint undertaking, will be completed in 2009. ASAM will integrate clinical, research and educational streams to facilitate its mission of improving medicine. Programs in neurosurgery have begun in temporary premises, with other surgical and medical subspecialty programs to follow. Pivotal to the learning environment will be the use of advanced technologies, including integrated patient records, iPhone technology, interactive patient screens and digital recording of all operations for teaching and learning purposes. ASAM will also collaborate with other research programs offered at Macquarie University, including neuroscience, clinical psychology, speech pathology and audiology.

ASAM is developing an innovative way of providing postgraduate medical education that will necessarily involve close collaboration with Macquarie University Library. The University's goal of facilitating excellence in research, learning and teaching underpins ASAM's philosophy and is supported by the Library's liaison librarians who coordinate outreach services for academics and postgraduate students.<sup>10</sup> Through ASAM, Macquarie University now offers postgraduate medical training that will create challenges and opportunities for all stakeholders, including the Library. ASAM and the Library are incorporating several new technologies and models of education, as described in the aforementioned literature. As part of the educational team, two liaison librarians will integrate information skills training into relevant stages of ASAM's curriculum and will use current technologies to enhance the learning environment. A 2007 Library survey of ASAM's information needs raised the following questions:

- How are ASAM clients' information needs different to those of other students and staff of Macquarie University?
- How can the Library provide optimal support to ASAM?
- In what ways can we add value to medical education and the School's innovative technology?
- How can ASAM and the Library respond to the future together?

## **WHAT IS DIFFERENT ABOUT ASAM?**

ASAM is the first medical school in Australia to be linked to a private teaching hospital on a university campus.<sup>11</sup> The Hospital and School will encompass the Mayo Clinic principles of education and health care to provide progressive medical education and patient care. The Mayo Clinic Model of Care underpinning ASAM's philosophy emphasises principles of teamwork, advanced technology and modern systems, where patient-centred care predominates.<sup>12</sup> ASAM programs also incorporate key elements of the Mayo Model of Education, including lifelong learning, mentoring, collaboration and advancing medicine. Students and teachers of ASAM are encouraged to engage in self-directed lifelong

learning and research. Within this context students are known as 'Scholars' and teachers are 'Advanced Scholars'. Scholars and Advanced Scholars are regarded as colleagues who work and learn together to achieve improved educational and patient outcomes. Scholar numbers will be limited to facilitate a collaborative, personalised environment in which small-group and one-to-one learning will replace lectures and tutorials. ASAM programs enable Scholars to take the necessary time, either less or more, to complete courses. There are not the usual service requirements, such as hospital employment; consequently a degree of flexibility not offered elsewhere is provided. Advanced Scholars will undertake studies in adult learning at Macquarie University to enhance their learning, teaching and mentoring skills. A strong emphasis on partnerships permeates ASAM's philosophy. For example, there will be close collaboration between ASAM and other Macquarie University disciplines, such as Psychology to create assessment instruments for communication skills, and Philosophy and Law to develop curriculum materials in, and assessment of, medical professionalism. A collaborative approach to health care, education and research will predominate, because the private hospital works with and is partly owned by Macquarie University. Licensing and firewall issues will require careful negotiation to ensure online information is readily available at the appropriate point of need. It will be important for all stakeholders to collectively facilitate the flow of information between the Hospital, School and Library.

The Scholars are different in several respects from other university students and, for this reason, the Library's role in supporting ASAM programs must differ in some ways from its support of other Macquarie disciplines. ASAM Scholars are experienced medical practitioners from a range of clinical, research and academic backgrounds. They may not have studied for some time, so their skills in using technology could lag behind those of younger students. Scholars will require varying degrees of assistance to increase their awareness of available resources and to use current technologies for accessing information. As the number of Scholars will be limited, the liaison librarians can engage in one-to-one and small-group communication, instruction and support. Interactions such as this are not always possible in other disciplines with large student enrolments. Library support to students is usually provided on a needs basis, where individuals contact the Library when help is required. ASAM Scholars, however, have busy schedules and may not be able to visit the Library. The liaison librarians need to promote library services and resources by increasing their online presence and engaging with the Scholars in their own environments, rather than waiting for them to initiate contact. As the librarians proactively promote information services in this way they must also accommodate Scholars' schedules and competing priorities that will, at times, preclude regular interaction with the Library.

### **HOW CAN THE LIBRARY PROVIDE OPTIMAL SUPPORT TO ASAM?**

The liaison librarians conducted a survey of ASAM's information needs in 2007. Scholars and Advanced Scholars from the School's clinical, educational and research streams participated. The survey was carried out before construction of the School and hospital began, when ASAM's facilities were fragmented across

the University campus and within an off-campus private hospital. The following methodologies were used:

- Evaluation of library impact statements (prepared by academics when they propose new courses) determined key library resources and services required by ASAM;
- User feedback was assessed from orientation sessions, where Scholars and Advanced Scholars were introduced to online library services and resources. Discussions of the Library collection's strengths and weaknesses as well as ways of making its web site more intuitive provided valuable planning information;
- Analysis of individual and group interviews with ASAM Scholars and Advanced Scholars laid the groundwork for strategic discussions between ASAM and the Library;
- Meetings with Advanced Scholars generated collection development strategies, information literacy principles and other library service requirements; and,
- Benchmarking and networking with other university and hospital libraries provided useful planning criteria. Informal benchmarking was undertaken against the library services made available by members of a newly formed academic Medical Librarians group in NSW and ACT. The initial group meetings and ongoing communications provided helpful guidelines from other librarians who have set up, or are in the process of setting up, library services for newly established medical schools in NSW and the ACT. A range of online services were evaluated, including point-of-care tools, e-books, online tutorials, Web 2.0 applications and PDA software. Any benchmarking activity, however, needs to be mindful of the unique nature of ASAM and the Hospital. ASAM shares some features with other new medical schools but is unique in its focus on postgraduate subspecialty training and flexible, competency-based learning within a private hospital setting. To illustrate, basic textbooks will not be needed at this level of training; core titles recommended by the Royal Australasian College of Surgeons, with whom ASAM has signed a Memorandum of Understanding, may, however, be purchased. The survey results support this decision by indicating that approximately 95% of ASAM's collection needs will be met through electronic journal subscriptions.

Analysis of the survey results suggested possible models of Library support for ASAM that should be further explored. A significant finding of the survey has shown that for ASAM, the Library should exist less as a physical space, and more as a service space where electronic resources are provided at the point of need. For this reason online services supported by an onsite liaison librarian presence will be the preferred means of communication. Unlike other medical schools, there will be no physical library within ASAM. Instead, a flexible learning space

that supports a librarian presence will be incorporated into ASAM's Scholars' Lounge. The librarians' role within this online environment could move from that of a provider of secondary information resources to an integrator and provider of online primary and secondary information resources. For example, the liaison librarians could develop and coordinate an ASAM repository of primary generated knowledge, including DVDs of operations (expert performances) for learning purposes. They could also, in collaboration with a quality assurance team, find the latest evidence from the literature to support clinical protocols on the Hospital's intranet.

The liaison librarians will work across a range of client environments within ASAM where learning in context is paramount. The survey results demonstrated how the information needs of ASAM's clinical, educational and research streams differ in ways that will require varying levels and types of Library support. For on-campus Scholars there could be a librarian available to guide individuals as they access, evaluate and utilise the academic literature during their allocated days of research and reflection. In their clinical environments, however, these Scholars may need current technologies, including PDA services, to find point-of-care information on an anytime/anywhere basis. In contrast, off-campus Scholars may derive more benefit from using electronic media such as vodcasts (video podcasts) that facilitate interactive distance learning and communication. The provision of such timely, relevant services can only take place through the coordinated efforts of the Library, IT services and ASAM.

The Library already supports the University's allied health programs in Psychology, Audiology, Speech Pathology, Cognitive Science, Health, Ageing and Chiropractic. As ASAM and the Hospital grow, the Library will support new programs in surgery, medicine, medical education and medical research. These new areas of collection building and service provision are being followed with interest by many other Macquarie University academics who will benefit from forming interdisciplinary partnerships with ASAM and the Hospital. For example, the Macquarie Centre for Cognitive Science is a research facility that shares similar areas of neuroscience study with ASAM. Both centres would benefit from collection development initiatives that recognise their mutual research interests. This type of collaborative activity can strengthen clinical, research and educational synergies between ASAM, the Library and academics from other Macquarie disciplines as information and ideas are shared.

## **INNOVATIVE USE OF LEARNING SPACES**

Libraries are creating new spaces to accommodate current learning styles and technologies. The popularity of flexible learning spaces, from single workstations to small group study and larger training areas, has been recognised as an effective means of facilitating learning in an electronic information environment.<sup>13</sup> 'The evolution of library space and services is moving from highly divided and delineated to integrated and complementary'.<sup>14</sup>

Learning spaces within ASAM will be flexible, incorporating individual and group areas that reflect current models of interactive learning within a wireless environment. A Scholars' Lounge and an Advanced Scholars' Lounge will be developed for this purpose. Library staff were consulted about the potential uses of flexible learning spaces during the planning of the Scholars' Lounge. This area will include a flexible, group interaction space with plasma screens at one end, a lounge area and separate, private work booths in a quiet space at the opposite end. Plasma screens will enable interactive medical education and could also be used by the liaison librarians for online information skills training, demonstrations and communication. The librarians will have their own space in the Scholars' Lounge for individual and group consultations, informal meetings, updates and demonstrations of new resources. There is a desk assigned for librarian consultations in the current temporary school but the librarians have not yet used it, preferring instead to provide point-of-need assistance by engaging with Scholars and Advanced Scholars at their workstations.

### **HOW CAN LIBRARY SERVICES ADD VALUE TO MEDICAL EDUCATION AND ASAM'S INNOVATIVE TECHNOLOGY?**

ASAM's mission and principles encompass current technologies and interpersonal communication as competencies, teamwork and research skills are developed. Within this context the Library will have a key role in offering technologically advanced services alongside valuable face-to-face interactions. Survey feedback has raised awareness of the opportunities that exist for the Library to work closely with ASAM to integrate the lifelong learning skills that underpin its philosophy. For example, in reviewing the management options in relation to a specific patient, the Scholar will be required to produce a written, referenced exploration of management options, the rationale for each, the Scholar's decision, and the justification of their decision. At this point the Scholar could receive support from a librarian to find the latest evidence. Formative assessment requires each Scholar to supply a written account of how they arrived at a conclusion and be able to defend it orally. The liaison librarian, as part of the team assessing the Scholar's evidence-searching quality, may provide an evaluation of the search strategies used. Scholars will also, as part of their program evaluation, provide an appraisal of library services utilised during their studies.

Web 2.0 applications encourage active learning, teamwork and communication. Academic and health libraries have been using wikis, blogs and podcasts in various ways to create dynamic learning communities.<sup>15</sup> Scholars will work with handheld devices (portfolios or e-logs) that will enable them to not only record their assessment requirements, but also search library databases and journals at their point of need. Web 2.0 technologies, such as podcasts and wikis, may be particularly useful ways for Advanced Scholars and librarians to interact with off-campus Scholars, either within Australia or overseas. Applications of advanced podcasting technologies are beginning to appear in the medical literature. Whitehead, Bray and Harries explored a cost-effective means of distributing audiovisual teaching material to distance surgical trainees through the use of enhanced podcasting in the operating theatre.<sup>16</sup> Operations were



successfully recorded as training DVDs and podcasts with voiceovers that were later accessed by students. The liaison librarians could facilitate self-directed learning by adding value to these technologies in new ways. For example, ASAM is developing interactive podcasting applications as a formative assessment tool for Scholars' surgical skills. An off-campus Scholar will film their operation and add commentary using GarageBand 08 software.<sup>17</sup> This is relayed to ASAM Advanced Scholars as an audiovisual podcast. The Advanced Scholars can then use the software to integrate their expert opinion as interactive feedback into relevant sections of the podcast. They may also incorporate evidence-based medicine resources such as PDFs of articles supplied by the liaison librarians. These multimedia podcasts can be downloaded onto handheld devices such as iPods or iPhones with screens for anywhere/anytime access. The Hospital and School will use cutting-edge technology to deliver first-class health care. A range of library resources, including electronic reference tools such as Netter's *Atlas of Human Anatomy*, could be readily accessed via plasma screens in the operating theatres and simulation laboratories.

ASAM's need for an online environment has prompted the liaison librarians to plan a subject guide or 'one-stop shop' for ASAM by creating a single access point that simplifies the organisation and retrieval of the Library's online medical resources. The ASAM guide will differ from other subject-specific guides on the Library website, as it will include not only medical reference tools, databases and web sites, but also evidence-based medicine resources, alerting services, tutorials and research bibliographies of Advanced Scholars. The guide could also be converted into a wiki where ASAM Scholars and Advanced Scholars are able to learn from each other as they contribute to its content. However, ASAM is distinguished by its small, scholarly community where the opportunities for valuable face-to-face interaction are greater than in traditional medical school settings. The rationale for any Web 2.0 applications such as wikis must be considered within this context. For example, Scholars and Advanced Scholars may prefer to meet and discuss pertinent issues as well as, or instead of, communicating through a wiki.

## **CONCLUSION: WHERE TO FROM HERE?**

The survey and exploration process have proven valuable for identifying library services and resources that would provide optimal support for the School's programs. ASAM's goal of improving medicine through the integration of lifelong learning, collaboration, research and health care will require the Library to respond in new ways. The Scholars will challenge us to understand and support their particular information needs and learning styles. For ASAM, Macquarie University Library will primarily be a library without walls, where services and resources are provided for clients using the latest technologies along with face-to-face support. As the Library strives to add value to ASAM's curriculum and models of patient care, several challenges must be overcome if we are to find a way forward. In addition to the questions already raised in this paper, the Library should also investigate the following:

1. How would further research into other library models of support enable us to respond more effectively to the unique characteristics of the ASAM philosophy?
2. In what ways will the different library services offered to ASAM affect the types of services we offer to other students at Macquarie? Is our level of support for ASAM sustainable?
3. In what ways will the ASAM model of partnership and collaboration influence the way we work within the Library?
4. How will the Library's role change as the School grows and training programs are introduced for other medical, nursing and allied health disciplines? How will it impact on Library staffing, resources and service delivery?

These issues may be further explored by the liaison librarians through a proposal for a grant that could be jointly funded by the Library and ASAM and would enable models of Library support to be trialled and evaluated. ASAM and the Library are well placed to take advantage of current theories of education, new technologies and flexible learning spaces that prevail in today's world of higher education. An appropriate service model would allow a Library-ASAM alliance to enhance and accelerate learning, health care and research in a predominantly virtual information environment. As their partnership develops, they will continue to collaborate, learn from each other and respond to the future together.

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