Post Publication Review

Review

This paper seeks to highlight and advance the ongoing debate of undertaking multi practitioner service delivery in regional, rural/remote locations and the impact of effective data warehousing and sharing technologies. What is apparent from the research undertaken by Burmeister, Islam, Dayhew and Crichton (2015), is the fragmentation of communication and information exchange. As proposed in the paper, one way to solve this is the instigation of technical software capability to bridge the existing service delivery data exchange divide.

The authors do clearly articulate the need to consider the privacy, confidentiality and patient/client rights who are accessing services both on a voluntary or involuntary basis. The discussion regarding the ethical and unsolicited receipt of private client data is key, however, I see the need to challenge the assumption that professionals do not have a role in maintaining their professional competence around changes to privacy legalisation. Whilst what is proposed is a significant step forward, it does not negate the need to maintain contemporary knowledge for practice. What is demonstrated in this paper are the clear practice points implications such as practitioners maintaining knowledge of their statutory obligations, the handling of personal information across vast distances, and the mobility of clients across these rural/regional area that was utilised in the sample population (p. 3). The paper may also be a platform to challenge the raised service delivery issues on a policy level and advocate for less metro centric policy and service delivery (Russell, Humphreys, Ward, Chisholm, Buykx, McGrail, & Wakerman, 2013; Smith, Humphreys, & Wilson, 2008; Wakerman, Humphreys, Wells, Kuipers, Entwistle, & Jones, 2008).

The methodological approach was a sound one. The use of a qualitative approach in this particular case assisted the researchers to build meaning from the data collection. It also provides the reader with clear case scenarios and vignettes throughout that highlight the issues at hand in a way and directly links issues and solution building, both from a human service delivery respond, and technological infrastructures and applications.

In examining the proposed data capturing, sharing, warehousing functionality, this is a dramatic step forward, but the paper raises further questions. How does this application interface with existing ehealth systems and applications at both Commonwealth and State levels (Australian Department of Health, 2016; NSW Government, 2016)? Who determines user access and on what level of access? If his model does in fact successfully achieve data integration with a range of other existing platforms and provides an upgrade of functionality and local responsive to existing service systems and providers, then such technology should be further explored.

What is refreshing is that the application has multiple functionality and actually goes beyond just improving communication between practitioners to deliver better outcomes. If the forecasting ability is in fact functional then this would assist human service delivery agencies (and academics) to examine forecasts and trends of potential health and social implications into the future such as the example described on pages 10-11. But again the question is raised in terms of risk management… who is actually responsibility for the data, who manages the upkeep of the data sharing capability and further questions are raised regarding who determines the indicators for forecasting purposes. For example, different health professionals will have different parameters and determinants of health and well-being. So this presents the question of purpose – what comes first – academic considerations, professional applicability

or client outcomes? Is this process one of default standardised decision making (Falzer, 2013; Mossman, 2015)?

More contextual discussion behind the qualitative aspects of the research would have provided additional insight to the diversity and breath of professionals that could potentially utilise this software program, as to, more conversation around the integration and functionality of existing systems. Coming from a Human Services perspective, the paper, even though clearly aiming to improve and enhance client outcomes for those accessing mental health services in the nominated catchment areas, could have strengthened practical examples of how this in fact would take place.

The authors are to be commended on taking a practical approach to resolving a local referral and communication issues for patients and service providers with the generation of software which responds directly to the need. However, from a human services systems view, the software needs to be seen as valuing-adding to existing online, data warehousing systems that are available as opposed to a separate system that may be in competition as if not may potentially open an information gap. Whilst there is no doubt of the competence of the software development team, and of course due consideration given to ethical and privacy legislation, further discussion and debate of the practicalities of implementation is required.

Catherine Thomas
Charles Sturt University
cthomas@csu.edu.au

References

Australian Department of Health. (2016). Digital Health. Retrieved 9 March 2016, from http://www.health.gov.au/internet/main/publishing.nsf/content/ehealth

Burmeister, O. K., Islam, M. Z., Dayhew, M., & Crichton, M. (2015). Enhancing client welfare through better communication of private mental health data between rural service providers. *Australasian Journal of Information Systems, 19*, 1-14. doi: http://dx.doi.org/10.3127/ajis.v19i0.1206

Falzer, P. R. (2013). Valuing Structured Professional Judgment: Predictive Validity, Decision-making, and the Clinical-Actuarial Conflict. *Behavioral Sciences & the Law, 31*(1), 40-54. doi: 10.1002/bsl.2043

Mossman, D. (2015). From Group Data to Useful Probabilities: The Relevance of Actuarial Risk Assessment in Individual Instances. *J Am Acad Psychiatry Law, 43*(1), 93-102.

NSW Government. (2016). HSNet. Retrieved 9 March 2016, from https://www.hsnet.nsw.gov.au/

Russell, D. J., Humphreys, J. S., Ward, B., Chisholm, M., Buykx, P., McGrail, M., & Wakerman, J. (2013). Helping policy-makers address rural health access problems. *Australian Journal of Rural Health, 21*(2), 61-71. doi: 10.1111/ajr.12023

Smith, K. B., Humphreys, J. S., & Wilson, M. G. A. (2008). Addressing the health disadvantage of rural populations: How does epidemiological evidence inform rural health policies and research? *Australian Journal of Rural Health, 16*(2), 56-66. doi: 10.1111/j.1440-1584.2008.00953.x

Wakerman, J., Humphreys, J. S., Wells, R., Kuipers, P., Entwistle, P., & Jones, J. (2008). Primary health care delivery models in rural and remote Australia – a systematic review. *BMC Health Services Research, 8*(1), 1-10. doi: 10.1186/1472-6963-8-276

Author Response

We appreciate the thorough and generally affirming review. The issue of challenging the assumption that practitioners do not have a role in maintaining their professional competence around changes to privacy legislation is not what we were trying to say. Rather, our article

simply states that it is difficult for service providers to keep up with legislative changes, not that they don't have such a role.

Linking to the eHealth system is an interesting concept that we didn't explore and that will be a reasonable future action when it is recognised that eHealth is being widely adopted. The issue of forecasting and data use also raises an opportunity for future exploration and managing the diverse paradigms that exist over the various professional disciplines with which a patient with a mental health issue may interact. Data management and security are directed by the legislation so these are a given and would be attended in the development of any proprietary offering.

As the review indicates, our concern was for the clients. Whilst early detection of mental illness, particularly in the young, will often facilitate return to health, recovery, that is learning to live with the illness and managing its effects is the experience of many, particularly people who experience such in later life (Burmeister & Marks, 2016; Young & Ensing, 1999). Many consumers of mental health services can be considered vulnerable users and for some such vulnerability may even increase (Bernoth, Dietsch, Burmeister, & Schwartz, 2014). Another example recently seen in this journal was the vulnerability of people with suicidal ideation (Carlson, Farrelly, Frazer, & Borthwick, 2015). Thus a system that protects consumer privacy is important and even more so for vulnerable consumers: the young, people with intellectual disabilities, and older people with neuro-degenerative diseases, as shown in various studies (Pakrasi, Burmeister, McCallum, Coppola, & Loeb, 2015; Teipel et al., 2016; van Wynsberghe, 2015).

It is a pleasure to see that the review acknowledges the contribution of the proposed private data sharing model in going beyond just an improved communication system between various parties through proposing backend data mining facilities through classification (Siers & Islam, 2015; Adnan & Islam, 2016), clustering (Rahman & Islam, 2014) and data pre-processing (Rahman & Islam, 2012) for better knowledge discovery (Beg & Islam, 2016). Various privacy preserving data mining techniques (Islam & Brankovic, 2011; Fletcher & Islam, 2015) can also be modified and used in this scenario to enhance privacy while allowing knowledge discovery. Regarding the question raised in the review on the authority of the forecasting parameter selection, we suggest that different parties can choose their parameters as they need and then can get their data mining results accordingly. The suggestion made by the review for interfacing the existing e-health systems is a very reasonable one. Although we did not explore this in detail in this paper we always had that in mind. A more specific study on this can definitely be an interesting future work.

Oliver Burmeister
Charles Sturt University
oburmeister@csu.edu.au

Md Zahidul Islam
Charles Sturt University
zislam@csu.edu.au

Miriam Dayhew
Charles Sturt University
mdayhew@csu.edu.au

Merrilyn Crichton
Charles Sturt University
mcrichton@csu.edu.au

References

Adnan, M. N. and Islam, M. Z. (2016): Forest CERN: A New Decision Forest Building Technique, In *Proc. of the 20th Pacific Asia Conference on Knowledge Discovery and Data Mining (PAKDD) 2016*, April 19-22, Auckland, New Zealand.

Beg, A. H. and Islam, M. Z. (2016): A Novel Genetic Algorithm-Based Clustering Technique and its Suitability for Knowledge Discovery from a Brain Dataset, In *Proc. of the IEEE Congress on Evolutionary Computation (IEEE CEC 2016),* Vancouver, Canada, July 24 - 29, 2016.

Bernoth, M., Dietsch, E., Burmeister, O. K., & Schwartz, M. (2014). Information Management in Aged Care: Cases of Confidentiality and Elder Abuse. *Journal of Business Ethics, 122*, 453-460. doi: 10.1007/s10551-013-1770-7

Burmeister, O. K., & Marks, E. (2016). Rural and remote communities, technology and mental health recovery. *Journal of Information, Communication and Ethics in Society, 14*(2).

Carlson, B. L., Farrelly, T., Frazer, R., & Borthwick, F. (2015). Mediating Tragedy: Facebook, Aboriginal Peoples and Suicide. *Australasian Journal of Information Systems, 19.* doi: 10.3127/ajis.v19i0.1174

Fletcher, S. and Islam, M. Z. (2015): A Differentially-Private Random Decision Forest using Reliable Signal-to-Noise Ratios, In *Proc. of the 28th Australasian Joint Conference on Artificial Intelligence (AI 2015),* Canberra, Australia, 30 November - 4 December, 2015, Lecture Notes in Computer Science (LNCS), pp. 192-203, Vol. 9457, ISBN 978-3-319-26350-2.

Islam, M. Z., and Brankovic, L.(2011): Privacy Preserving Data Mining: A Noise Addition Framework Using a Novel Clustering Technique, *Knowledge-Based Systems* Vol. 24, Issue 8, ISBN 0950-7051,(December 2011) pg. 1214-1223.

Pakrasi, S., Burmeister, O. K., McCallum, T. J., Coppola, J. F., & Loeb, G. (2015). Ethical telehealth design for users with dementia. *Gerontechnology, 13*(4), 383-387. doi: 10.4017/gt.2015.13.4.002.00

Rahman, M. A., and Islam, M. Z. (2014): A Hybrid Clustering Technique Combining a Novel Genetic Algorithm with K-Means, *Knowledge-Based Systems*, Vol. 71, November 2014, pp. 345-365.

Rahman, M. G., Islam, M. Z., Bossomaier, T., and Gao, J. (2012): CAIRAD: A Co-appearance based Analysis for Incorrect Records and Attribute-values Detection, In *Proc. of IEEE International Joint Conference on Neural Networks (IJCNN 12),* Brisbane, Australia. June 10 - June 15, 2012, pg. 2190-2199.

Siers, M., and Islam, M. Z. (2015): Software Defect Prediction Using a Cost Sensitive Decision Forest and Voting, and a Potential Solution to the Class Imbalance Problem, *Information Systems*, Vol. 51, pg. 62-71.

Teipel, S., Babiloni, C., Hoey, J., Kaye, J., Kirste, T., & Burmeister, O. K. (2016). Information and communication technology solutions for outdoor navigation in dementia. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*, 1-13. doi: 10.1016/j.jalz.2015.11.003

van Wynsberghe, A. (2015). *Healthcare Robots: Ethics, Design and Implementation*: Ashgate Publishing, Ltd.

Young, S., & Ensing, D. (1999). Exploring recovery from the perspective of people with psychiatric disabilities. *Psychiatric rehabilitation Journal, 22*(3), 219–231.