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Telehealth Application in Occupational Health

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Abstract. While occupational health is a significant driver of population health, productivity, and well-being in Canadian society, most workers do not currently have adequate access to qualified occupational health services. A case study is used to demonstrate the utility of a telehealth approach to service delivery.

Keywords. Occupational health, telehealth, Canada, underserved populations

Introduction

While most adults spend a significant portion of their waking hours in paid employment, occupational health services are currently only available to those working for the largest, most concentrated, and well-funded employers. Employees of small to medium sized firms, who make up the bulk of the Canadian work force, or those in workplaces spread across wide geographic areas, remain an underserved population.

Telehealth programs have often been implemented in an attempt to apply a technological solution to the problems of regional disparities in care, limited resources, and large geographic/demographic/healthcare provider distances. Telehealth is defined as "the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration" [1]. Some examples of telehealth applications include the use of health information networks, electronic health record systems, health portals, telemedicine, and personal wearable and portable communication systems [2].

This paper takes the position that telehealth methods could be a way to provide occupational health services to currently underserved worker populations. An example of a telehealth application in healthcare is provided as an illustration of the utility of a telehealth approach to occupational health services.

1. Context – Why Is This Important?

Occupational health and wellbeing has a significant impact on population health. Workplace injuries and illnesses caused by poorly designed equipment, work processes, or work environments lead to temporary or permanent disability, decreased productivity, and may result in loss of employment and a poor quality of life for both

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individuals and their families. On an individual level, poorly designed work or work practices are a factor in the development of workplace stress and its effects: cardio-vascular disease and psychological illnesses such as depression, anxiety, and anger/violence issues. Moreover, the risk of occupational disease has recently been highlighted by the death of over 349 health care workers in the recent ebola outbreak [3]. Health care and other workers are routinely exposed to more common infectious diseases (for example hepatitis, HIV, influenza, mumps, measles, whooping cough, etc.) that also carry the risk of illness, chronic disease, and death.

Without access to high quality and readily accessible occupational health services, the majority of the working population lack information about how they can understand, prevent or mitigate risks, or where they can seek advice regarding injuries or illnesses arising from their occupational exposures.

2. Case Study

The case study describes the implementation of a telehealth system in the occupational health nursing service of a large suburban health authority in British Columbia – the Workplace Health Call Centre (WHCC). This health authority employs approximately 29,000 workers over a wide geographic area comprising 12 acute care sites and 7600 residential care beds. The occupational health nursing service employs 11 full time equivalent occupational health nurses (OHNs). The OHN service focuses on communicable disease exposure, prevention, and control.

Prior to 2009, the OHNs were situated in the acute care sites of the health authority. In 2008 a quick succession of infectious disease outbreaks (mumps, measles and chickenpox) in the community resulting in employee exposures, overwhelmed the service capabilities of the OHN staff. It quickly became apparent that the OHN service simply did not have any surge capacity to deal with rapidly developing outbreaks. Furthermore, employees' occupational health histories, and in particular, records of their immunizations, either did not exist (only about 10-20% of employees had immunity records on file) or were not readily available. The lack of immunity records added to an already difficult staffing situation since non-immune staff could not be scheduled to work in areas where they might be exposed to an infectious disease.

It was decided to re-organize the department to create a centralized workplace health call centre with corresponding field services teams. A key component of the call centre approach would be the adoption of the WHITE (Workplace Health Indicator Tracking and Evaluation) database as an electronic health record. WHITE had originally been developed by the Occupational Health and Safety Agency for Healthcare (OHSAH), a joint venture of health care employers, researchers and unions in British Columbia, in order to develop a comprehensive, province wide database of health care incident, injury and illness data. Work had begun on WHITE in 2002 and it was first released in 2004. Over time it evolved into a web based system containing 5 modules covering functions such as incident and injury reporting and documentation; electronic submission of Workers' Compensation Claim documents and claims cost tracking; recording and tracking of long and short term disability; and documentation of worker training and education. It also had the capability to be used as an employee health record to document and record employee health histories, immunizations, communicable disease exposures, and allergies. The OHNs began using this in 2009.

Under the new system new employees call the WHCC and can complete their immunization history with an OHN in less than 10 minutes – formerly this required a face-to-face visit and took about 30 minutes. An employee who experiences contact with blood or body fluids can call the WHCC and speak directly with an OHN. Using WHITE the OHN documents the incident, provides individual counseling to the employee and if necessary, emails laboratory requisitions, refers to medical treatment, or if applicable, advises on the availability of immunization clinics offered by the field services team. A follow up protocol is implemented that tracks laboratory results, matches incident source and victim results, and if necessary, flags the file for future follow up. The WHCC also receives notification of blood and body fluid exposures of health care workers reported to Emergency Departments and all follow up laboratory results are centralized to the call centre for a more consistent approach to documentation and management.

The final piece of the service was to centralize the documentation and follow up of all occupational communicable disease exposures within the call centre. Examples of these diseases include meningococcal disease, mumps, measles, pertussis, and tuberculosis. In the event of an exposure, the OHNs are notified by the health authority Infection Control Practitioners. The OHNs use protocols based on the guidelines of the British Columbia Centre for Disease Control to determine if employees meet the definition of exposure and if they require protection through furloughing, immunization, or prophylaxis.

OHN field services teams serve as the interface between the WHCC and the employee. The field services teams have regularly scheduled clinics throughout the health authority; however in the event that mass immunizations are required, for example in the fall when mass immunization for influenza is required, team size can be increased and additional clinics scheduled. Likewise in the event of disease outbreaks, a 'flying squad' can be assigned to conduct immunizations at a specific facility.

Aside from better service availability and increased efficiency, it quickly became apparent that the call centre approach had other immediate benefits. In addition to a fourfold improvement in compliance with new employee health histories, data on communicable disease contacts such as tuberculosis, needlestick injuries, and blood and body fluid exposures could now be systematically collected for trend analysis. Importantly, the system's surge capacity was demonstrated during an outbreak of pertussis (whooping cough) in the summer of 2012 and again in 2013 during a measles outbreak.

The WHCC approach was so successful in this health authority that it has subsequently been expanded to serve the entire province, a total of 110,000 health care employees.

3. Discussion

The case study described above is an example of a successful implementation of an occupational health telehealth system designed to deliver specific services to a health care worker population. However, it could be argued that telehealth applications in occupational health could provide broader and much needed services to a wider population.

The Canadian workforce reflects many of the health problems common to developing countries:

- An ageing workforce – the number of workers aged 65 or greater is increasing [4] which means that workers may have one or more chronic illnesses such as diabetes, cancer, obesity, or some form of physical or cognitive impairment.
- There is an increased risk of exposure to infectious diseases, emerging diseases, and new risks in the workplace, for example nano-technology and new chemicals.
- Mental health issues and co-morbidities such as alcohol and drug abuse, and smoking.

In the United Kingdom, a recent task force report from the Council for Work & Health [5] called for a more proactive and expanded approach to occupational health services. This approach would see a wider application of occupational health services to include the provision of health coaching to workers to prevent the development of chronic illnesses, and to provide support for workers with chronic health conditions to help them manage their conditions while they stay at work. The report also called for services to be extended to those who are currently unable to work due to chronic illness or disability with a view to assisting them to return to paid employment. These, and other health promoting efforts, are certainly amenable to telehealth applications.

3.1. Positioning Occupational Telehealth

The task force [5] also questioned the positioning of occupational health promotion services with employers and suggested that these services might be better aligned with public or community health providers. Currently, the majority of occupational health services available to working Canadians are provided by workplace regulators, compensation boards, and employers. The main thrust of these efforts focus on the vested interests of those providers: regulatory compliance, and returning workers to work following injury. While unions play a significant role in occupational health and safety advocacy only about one third of Canadian employees are currently represented by unions [6]. Consequently, in all but the largest organizations, there is little or no emphasis placed on health promotion for workers or their families, and workers seeking balanced and unbiased advice regarding their occupational health have few sources to turn to. To overcome this inequity it would make sense that occupational telehealth would make its greatest impact situated within a public or community health service.

3.2. Limitations

Workplaces are complex socio-technical environments shaped by organizational, regulatory and social rules, conventions, and norms. In many ways telehealth is a disruptive technology [7]. Normalization, the process by which an innovation becomes the normal way of working, requires the ongoing investment of meaning, commitment, effort, and appraisal by those involved [8, 9]. As can be seen in the case study, the success of the WHCC required buy-in and co-operation at many levels of the organization. Developing and implementing a successful telehealth initiative requires a thoughtful approach. Further, the expansion of occupational telehealth in Canada is currently limited by a lack of qualified health professionals: statistics published by their

professional associations show that there are only 716 certified occupational health nurses [10] and 54 certified occupational health physicians [11]. An expansion of occupational telehealth services would require increased health manpower, and the implementation of occupational health services standards and accreditation. [See for example 12].

Conclusion

Occupational health is a significant driver of population health and directly influences the productivity and well-being of Canadian society. Occupational telehealth has the potential to deliver high quality services to working Canadians, the majority of whom currently do not have the ability to access to this kind of service. The case study illustrates the utility of a telehealth system, combined with face-to-face field service teams, to deliver high quality occupational health services to a large, widely dispersed employee population. While this example was specific to health care, it could be adapted to provide a wide variety of proactive health promotion services.

References

[1] U.S. Department of Health Services, Telehealth, (n.d.), Retrieved from http://www.hrsa.gov/ruralhealth/about/telehealth/.
[2] British Columbia Alliance on Telehealth Policy and Research, What is telehealth? (n.d.), Retrieved from http://www.bcatpr.ca/telehealth.
[3] World Health Organization, Ebola response roadmap. Situation report December 10, 2014, Retrieved from http://www.who.int/csr/disease/ebola/situation-reports/archive/en/.
[4] Statistics Canada, Labour force characteristics by sex and age group, (2014), Retrieved from http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labor05-eng.htm.
[5] Council for Work & Health, Planning the future: Delivering a vision of good work and health in the UK for the next 5-20 years and the professional resources to deliver it, (2014), Retrieved from: https://www.som.org.uk/fileadmin/user_upload/Office/docs/Planning_the_Future-OH_and_its_Workforce-April_2014.pdf.
[6] Employment and Social Development Canada, Work: Unionization Rates, (2012), Retrieved from: http://www4.hrsdc.gc.ca/.3ndic.1t.4r@-eng.jsp?iid=17.
[7] J. Westbrook, & J. Braithwaite, Will information and communication technology disrupt the health system and deliver on its promise? Medical Journal of Australia 193, (2010), 399-400.
[8] C. May, Agency and implementation: Understanding the embedding of healthcare innovations in practice, Social Science and Medicine 78, (2012), 26-33. Retrieved from: http://dx.doi.org/10.1016/j.socscimed.2012.11.021.
[9] C. May, Implementing, embedding, and integrating practices: An outline of Normalization Process Theory, Sociology 43, (2009), 535-554.
[10] Canadian Nurses Association, Certification statistics, (2014), Retrieved from: http://nurseone.ca/~/media/nurseone/page-content/pdf-en/certification_stats_july_2014_e.pdf?la=en.
[11] Canadian Medical Association, Occupational medicine profile, (2013), Retrieved from: https://www.cma.ca/Assets/assets-library/document/en/advocacy/Occupational-Medicine-e.pdf.
[12] Royal College of Medicine, Faculty of Occupational Medicine, (2010), Occupational health services: Standards for accreditation, Retrieved from: https://www.seqohs.org/.