

SHORT REPORT

Agricultural health and medicine in rural medicine training: Evaluation of “Farm Days”

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Abstract

Introduction: Agricultural industries in Australia provide food, forestry and fibre self-sufficiency, as well as significant exports. They are among the most hazardous industries in Australia, primarily because of socio-economic factors, environmental hazards and limited healthcare access. Other relevant factors are the proximity of families to farming industry hazards and the age of the workforce. Agricultural health and medicine (AHM) is an integral part of the expertise required in rural medical practice. To this end, the Queensland Rural Medical Education (QRME) program delivers AHM teaching for rurally-based graduate medical students and rural pathway postgraduate vocational trainees.

Context: Themed rural and agricultural medicine seminars are delivered to all Griffith University medical students, with additional specific AHM teaching and research provided for students choosing the longitudinal rurally-based integrated clerkships during their third and fourth years. For rural pathway primary care vocational trainees, AHM is introduced and taught as a distinct topic in multiple modes, including discussions and instruction at a working farm. Farm visits have been developed and evaluated over a period of 5 years.

Evaluation: Since 2011, 188 registrars and students have attended farms days, with 115 participants completing evaluations. Farm days were generally very well received, with participants reporting that the information provided was relevant and suitably presented, their learning needs were met and the activity was well-timed in the education programs.

Conclusions: Within rural longitudinal integrated clerkships and rural pathways vocational training, it seems appropriate to deliver specific learning opportunities in agricultural health and medicine. The learning approaches described in this paper

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illustrate one way of addressing these needs and focus on the “farm day” as an exemplar. Exposure to real farming environments and the associated learning was valued by the majority of participants.

Keywords: agricultural health and medicine; rural medicine; vocational training.

Introduction

Australian agricultural industries produce approximately 12% of the gross domestic product of the nation, allowing the country to be self-sufficient in food, forestry and fibre production, in addition to exporting approximately 60% of all agricultural production (ABS, 2015). However, farming the land and marine environments is hazardous to health, ranking among industries with the highest rate of workplace injury claims (Safe Work Australia, 2012). Traumatic injury, physical hazards, biological agents, chemical exposures, climatic extremes and psychological and lifestyle factors all influence the health of farmers (Hegney, 1993). Over half of all agricultural workers are engaged in sheep, cattle and grain farming, and these sectors lead to the most injury claims (Fragar, Thomas, & Morton, 2005). In Queensland 15% of farms report lost days due to injuries in a typical year, representing an average of nine workdays lost due to on-farm injuries per farm (Lower, Fragar, & Temperley, 2011). On-farm injuries bring up to 60 presentations to rural hospitals and practices per 100 farms (Fragar, 1996). In Central Queensland, this translates to 70 young males per 1000 presenting at rural hospitals and practices with farm injuries per annum (with males accounting for 80% of all presentations) (Franklin, Charter, Fragar, & Ferguson, 2000).

These are only part of the health issues arising from the agricultural industry. Farming families are exposed to agricultural industrial risks, as the majority of Australian farms are family enterprises with the family living on the farm. The median age of an Australian farmer is 52 years, with over 30,000 farmers still working over 65 years of age. One-third of all farm-related deaths occur within this group (NFF, 2013; Safe Work Australia, 2013).

Despite hazardous occupational exposures, the determinants of health in rural agricultural communities are socio-economic and environmental influences, exacerbated by limited healthcare access (Smith, Humphreys, & Wilson, 2008). The environmental challenges of climate change and natural disasters aggravate the marginal economic situation of many agricultural enterprises (Bi & Parton, 2008). Ill-considered government agricultural policy (CCA, 2015), over-concentration of food and fibre retail interests in Australia (Mortimer & Parker, 2013) and exposure to global variations in agricultural commodities (Vanclay, 2003) also impact upon Australian farmers. The socio-economic status of most farming families is both low and fragile, as profitability inside the farm gate remains a major issue in Australia (Finlay, 2014). Such an environment not only creates greater risks in occupational health but also aggravates mental health, cardiovascular disease, other lifestyle-related health conditions and cancer. These conditions combined make up the majority of diseases presenting in rural agricultural communities in Queensland, Australia (Queensland Health, 2010).

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More than half of Queensland farmers and three-quarters of farming families will consult their rural doctor at least annually (Lower et al., 2011). Rural doctors in agricultural communities need to understand and respond to these agricultural health issues; however, agricultural health and medicine teaching and learning is limited in Australian medical schools. Students are required to integrate knowledge across clinical silos in order to form an understanding of what agricultural health is all about. Agricultural health and medicine is similarly represented in fragmented parts in the rural curricula of each of the primary care specialist medical colleges (ACRRM, n.d.; RACGP, n.d.). Content is interspersed throughout the curricula statements of internal medicine; population health; legal, ethical and professional aspects of practice; rural general practice and the context of rural medicine, rather than in a single collated focus.

Context: Agricultural health and medicine delivery

Agricultural health and medicine training and education is provided by Queensland Rural Medical Education (QRME), a regional training provider based at the Griffith University Darling Downs Clinical Training Centre, Toowoomba. QRME delivers the rural stream for the School of Medicine and the rural pathway of the Australian General Practice Training program (QRME, 2015; Department of Health, 2015).

The medical program at Griffith University is a 4-year graduate entry program. The first 2 years of the program are structured around a problem-based learning platform with early clinical exposure and intensive clinical skills training. Years 3 and 4 are primarily taught in four hospitals in South East Queensland and Northern New South Wales or in blended (4th-year) or comprehensive (3rd-year) rural longitudinal clerkships in rural agricultural communities on the Darling Downs (the Longlook Program) (Kitchener et al., 2015).

Students in the first 3 years of the medical program receive an annual themed seminar series in rural and agricultural health and medicine. Additionally, cases used in the problem-based learning platform integrate rural and agricultural issues for student groups to work through.

The Longlook program places students in rural generalist hospitals for their 3rd year or general practice and rural emergency departments for their 4th year. Students practise and study in the rural context in agricultural communities with local registrars and rural generalist practitioners as clinical supervisors and medical educators. Students come together monthly for lectures, small group learning and simulation training at the Clinical Training Centre in addition to having access to the online learning resources of both QRME and Griffith School of Medicine. Students participate in agricultural health research projects and participate in community visits, including visits to working farms. Some final-year students have participated in formal farm days with postgraduate trainees.

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Registrars who have participated in agricultural health and medicine training and education are in the Australian General Practice Training (AGPT) Program (AGPT, 2015), Rural Pathway. After at least 2 years in teaching hospitals, these registrars enter a minimum of 2 years in supervised rural practice. After beginning rural practice, registrars participate in a mid-year workshop seminar with specific focus on agricultural health and medicine, followed by a field day at a working farm.

Agricultural Health and Medicine is taught with interactive presentations and discussion groups, and the orientation program covers the context of rural practice and populations, attitudes and rural issues. The mid-year agricultural health and medicine workshop begins with an industry briefing from AgForce (Queensland); although we have been fortunate to have the Minister of Agriculture also lead a discussion with registrars and students. Online resources provide a stimulus for classroom discussions (e.g., around the topic of biosecurity). iPads are provided for the duration of the program, and trainees are encouraged to use them during teaching sessions. Industry-based resource packages for health professionals are also provided (see Australian Centre for Agricultural Health and Safety, <http://www.aghealth.org.au/> and Australian Pesticides and Veterinary Medicine Authority, <http://apvma.gov.au>) on the epidemiology of agricultural health issues, physical occupational health and safety issues on farms and service industries, environmental health on farms, agricultural cancers, respiratory disease, Australian zoonoses and biosecurity. Cases relating to musculoskeletal injuries, skin cancer and mental health associated with farming are discussed in workshops. The seminar program is complemented by online guideline-based learning modules integrated with case discussions applying knowledge to the rural and farming context.

Farm days

Farm days have been held at operating mixed farming properties under the supervision and instruction of farmers, agricultural trade teachers and medical educators. The aims of farm days are: to provide a context for previous learning, to learn how to interact with farmers and understand their working environment, and to appreciate the risks presented by the proximity of the family living environment to a working farm. The day is broken into “stations” with agricultural instructors discussing the use and risks of farm equipment, animals and rural workplaces. Simulated emergency scenarios are now included to complete the acute care training begun at the Darling Downs Clinical Training Centre simulation suite.

Topics covered at stations are:

Farming machinery and vehicles:

- Identifying risks associated with common farming vehicles and larger equipment, including the relevance and maintenance of safety fittings.
- Recognising types of injuries related to quad bike and tractor rollovers. Tractor power take-off injuries, limb injuries from augurs and silo falls are discussed.

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Small equipment and chemicals:

- Identifying risks associated with smaller equipment and chemicals. These are discussed in the farm shed, with focus on the ergonomics and risks of a chain saw; handling (unloaded) fire arms, an arc welder, grinders, band and circular saws; and the use of relevant personal protective equipment.
- Understanding the prevention and management of welding flash, ocular foreign bodies, open dirty wounds and hearing loss in the context of occupational health and safety interventions.
- Identifying risks associated with chemicals discovered onsite and recognising signs and symptoms of contamination. Common and undiagnosed presentations of chemical exposures are described and their management discussed. Risks of proximity of chemical storage and use to the family environment is highlighted. Fence wire tensioning is demonstrated to identify the risks associated with this task.

Shearing:

- Demonstrating sheep shearing (with and without a sling), lamb marking, castration of male lambs and drafting to identify and discuss the ergonomics and physical hazards involved.

Moving stock:

- At the yards, drafting of cattle occurs into a crush for a demonstration of drenching and hazards of loading ramps.

Emergency care simulated scenarios in agricultural environments have been selected to demonstrate the management of:

- a snake bite
- a respiratory emergency near a silo
- organophosphate poisoning
- a head injury and/or pneumothorax associated with a quad bike roll over in a field
- a major laceration from a chain saw
- a major fracture associated with a fall from a horse near the yards
- an evolving myocardial infarction in an older farmer at their shed.

The day ends with a facilitated question and answer session with the instructing farmers and their families. Often this includes the re-telling of the farmers and their families' own stories of farm injuries, home births and experience of healthcare.

Evaluation

The farm day has been evaluated since its development in 2011. Participants were asked to rate its relevance to their training and education, whether the material was presented in a suitable manner, whether it met their learning needs and if the material

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was well timed within their learning program. The evaluation form used a Likert scale for each item, with space for comments. Comments were categorised and grouped. Lectures on the topics of agriculture today, agricultural medicine, cancer in farming communities, farm dangers, zoonoses and the biosecurity hypothetical were evaluated in the same way.

Findings

Of the 188 registrars and students who attended farms days, 114 completed evaluations. Evaluation results suggested that the farm day was very well received. Learners reported that they enjoyed this approach, feeling that it enhanced their learning and was practical and engaging. They said that they found it valuable to speak with farmers and expressed that they were previously unaware or unfamiliar with actual health issues in agriculture. The farm day information provided was considered relevant by 87% of attendees and suitably presented in this mode by 83%. Most (96%) felt the approach met their learning needs and was well timed within their program (95%). Lectures were scored between 6-6.5/7 (mean/maximum) in terms of adding to current knowledge, information being provided at an appropriate level, and maintaining interest and participation; however, the content of the biosecurity hypothetical was considered less applicable (5.3/7), although it rated higher than the lectures and discussions for learning objectives being met (6.7/7).

Conclusions

Our experience suggests that it is possible to combine relevant topics in an organised program of agricultural health and medicine, with the program being delivered using various modes of teaching and learning and providing direct exposure to farming environments. These farm days were well received by medical students and rural registrars who value the theoretical and experiential nature of the program and consider it relevant to their practice and training. There are, however, certain limitations, including the breadth of farming able to be demonstrated at the field day. Another limitation is the limited exposure to horticulture, fishing and aquaculture, cotton and broad acre cropping resulting from time restrictions and the nature of mixed farming at the teaching properties. Farming support services, particularly abattoirs, transportation and storage, are also absent from the program. The syllabus also provides only limited discourse regarding the socio-economic influences on the health of people in agricultural communities.

In addition, evaluation methods were limited, reflecting short-term reflections only. Whether the program achieves more interaction between local doctors and farming families and improved health outcomes for agricultural communities is yet to be determined and is a subject for further study.

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