

Chapter x.x.x

TEACHING AND LEARNING IN AGRICULTURAL HEALTH

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Introduction

This chapter focuses on teaching and learning in agricultural health as a distinct expertise of rural physicians.

While this may seem a self-evident skill set for rural doctors, there are few formal programmes focusing on preparing health professionals in agricultural health and medicine.¹ This essential element of rural practice is generally developed in practice through trial and error, ideally informed by other learnings such as the socio-economic determinants of health in rural communities, the cultural aspects of community rural practice, environmental health, occupational health, the impact of disease in (the agricultural) industry, trauma, zoonotic diseases, respiratory disease, and so on.

This chapter describes programmes that bring these disparate aspects of rural health education together with a particular focus on agricultural health teaching and learning for local cultural competence.

The evidence for teaching agricultural health

Agriculture as the socio-economic base for rural communities

In many nations rural-urban health disparities relate to socio-economic disadvantage, ethnicity, higher levels of environmental risk, occupational and transportation conditions – all of which can be exacerbated by limited access to health care.² In most rural areas, food and fibre production, forestry and fishing industries - and the value chains supporting these - are central to the economy, the community and rural life. Understanding the nature of this agricultural base and the intimate association with social life is a foundation to understanding the socio-economic determinants of rural health.

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Health in agricultural industries

The International Labour Organisation (ILO) presents staggering figures regarding agricultural industries globally. They employ a third of the world's workforce, are the largest employers of women, have the highest prevalence of child labour, have a high involvement of migrant workers, are mostly in developing nations – and is one of the most hazardous sectors in which to work.^{3,4} Certainly it is among the most dangerous industries in Australia.^{5,6}

Australian farms are predominantly small family-owned and operated businesses. Half of all declared workers are self-employed, with many informal workers including children contributing to productivity; they have large itinerant workforces.^{7,8} Although not too different to the global workforce, these aspects of the workforce and community are major determinants of health, and warrant inclusion in the professional, legal and ethical components of any medical curricula.

Agriculture and families

While whole families are often engaged in informal farm work, there is also the ill health of families living in proximity to agricultural workplaces.⁹ Regardless of whether or not they are workers, children living near farms have an inordinate risk of childhood injuries¹⁰ - although their ill health is not limited to acute injuries but include factors like longer term environmental exposures to respirable antigens and contaminants. In addition, families can suffer from mental health issues arising from the uncertain economic environment, vagaries of climate change and weather-dependent primary industries.

As these issues are aggravated by less access to health care for rural families, agricultural health transcends being a subset of occupational health in a medical course; rather it is becoming a core requirement for a bio-psycho-social understanding of health in an agricultural community, as distinct from metropolitan communities. In nations with a significant proportion of the population living and working in agricultural communities, this must be included in a distinct and cohesive manner in medical curricula.

Illustrative applicability: The teaching and learning framework for agricultural medicine

As with any medical teaching and learning, the nature of the achievable learning objectives and the contexts in which they occur are important, particularly so with agricultural health. A number of different approaches are illustrated here.

Multi-disciplinary approach

Deakin University conducts postgraduate education for health professionals and others involved in agriculture, adapted from a long-standing course in Iowa, USA which is also replicated in other agricultural states of the USA.^{1,11,12} These take a multi-disciplinary approach within the sociological and public health contexts of the rural areas in which they operate.

There is a need for teaching and learning in the application of agricultural health and medicine in rural medical practice. This would include the roles of other health disciplines grounded in occupational health and safety, as well as community health issues presenting and managed in rural practice. Such an applied agricultural *medicine* programme also requires deeper applied clinical knowledge of specific pathophysiology, as well as medical management of diseases and mental health issues associated with agriculture, imbedded in the model of care in rural practice.

Agricultural medical model

Rural medical teaching programmes in Queensland, Australia, have evolved over the past two decades. The feedback of medical students and graduates studying in these rural clinical schools was that all students need to be familiar with the determinants of health in agricultural communities, as well as having detailed knowledge of specific health issues, which could be developed through structured teaching and practical experiences.¹³ They agreed that specific, even short, agricultural medicine teaching was valuable preparation for rural practice as a student or doctor-in-training.

Experiential learning opportunities are more effective in developing deeper awareness of agricultural medicine. Real clinical experiences with patients from agricultural communities, supported by supervision and teaching, are the most valuable way of learning communication, professionalism and of reinforcing applied clinical knowledge. Speaking to farmers places clinical knowledge in the local environmental context.

Finally, living immersed in an agricultural community for an extended placement is invaluable to creating cultural competence in a way that is not able to be taught in classes or tutorials.

Several approaches are evident in the Queensland medical schools and rural vocational training programmes.

- The **University of Queensland** (UQ) Rural and Remote Medicine Discipline, supported by the Rural Clinical School, provides comprehensive teaching in zoonotic diseases and agricultural safety in a lecture block opening the Rural and Remote Medicine (RRM) term, in which all students are immersed in rural practice for six weeks. This is followed by on-line modules during the term.
- **James Cook University School of Medicine**, which conducts extensive rural placements in agricultural communities throughout the six-year programme, delivers a block of teaching on Rural, Remote, Indigenous and Tropical Health in second year. This includes agricultural health topics embedded in clinical examples used for teaching, illustrating the socio-economic and mental health issues in farming along with rural and remote health outcomes of agricultural injuries and zoonotic diseases.
- **Griffith School of Medicine** students have a series of rural and agricultural health seminars in each of their first three years (of four). First year students learn about
 - the nature of rural and agricultural populations, particularly in Queensland;
 - local socio-economic issues;
 - the nature of health care provision available; and
 - the population health issues arising.

In second year, the seminar extends contemporary clinical learning to the experience of people in rural agricultural communities with the nine conditions of the Australian National Health Priority Areas.

In the third year seminar, specific agricultural medicine topics are covered in detail, including

- mental health issues of farming families;
- occupational health and safety on farms; and
- environmental health of agricultural respiratory illness, pesticide exposures, skin cancer, and zoonotic diseases.

Those Griffith students choosing a rural path of scholarship for third and/or fourth year are placed for immersive clinical experiences in agricultural communities.¹⁴ The curriculum is covered in the context of rural agricultural community practice supported by local workshops which, conducted at working farms, are inevitably the most popular experiences and learning.¹⁵

- In vocational training, the **Remote Vocational Training Scheme (RVTS)** delivers specific teaching and workshops as well as a blog site on agricultural health. Previously, a similar programme was conducted in Queensland for Rural General Practice registrars and students. An evaluation of this programme and the curriculum are available.¹⁵

Accommodating diversity of learners

Medical schools teaching agricultural medicine find that teaching and learning must accommodate different backgrounds and experiences among learners, some of whom have never lived in rural areas. A foundational cultural understanding can be established by outlining rural and agricultural political, socio-economic and population health concepts through directed background reading and viewing, in lectures and in classroom discussions. Often misconceptions about agricultural communities need to be overcome.

The nature of learning objectives should be designed around developing clinical experience among learners. When clinical experience is available, clinical discussions and small group learning works well to shape thinking around agricultural medicine - both in general and in agricultural communities. Even those learners with metropolitan clinical experience can appreciate clinical conditions in the context of an agricultural community when provided with some of the social and environmental backgrounds.

Resources

Providing resources for learners after teaching must take into account their access to sources. If they have reasonable access to internet-based resources, learning guides and seminar material can be provided on-line with hyperlinks to *appropriate* resources. These include sites that provide

- up-to-date agricultural and veterinary chemical information;
- local biosecurity;
- current information on occupational health; and
- basic toolkits in agricultural medicine practice (see reference 16).

Learners can also be guided to popular literature sources regarding social issues in rural and agricultural communities and to relevant health journals and associations.^{17,18,19}

Engagement in clinical research in agricultural medicine

Having students engaged in clinical research not only addresses the paucity of evidence in agricultural health, but also provides a focal point for teaching and learning, potentially augmenting delivery of the curriculum. Learners on longitudinal placements in agricultural communities (e.g. Griffith Longlook) can readily engage in clinical research projects with local relevance to agricultural medicine, while students on short-term placements (e.g. UQ MIS) also become involved in more discrete projects with local relevance. All are important for learning and for the community. Projects lead to discussions on research methods and design as well as generating case discussions for clinical teaching sessions.

Relevant topics from each of these models in this region have addressed agricultural injuries, health and lifestyle of farmers, cardiovascular risk, respiratory disease and skin cancer among farmers, zoonotic diseases, suicide presentations and management, and opiate use.

Assessment of agricultural health and medicine

These programmes are embedded in larger, assessed, medical programmes. Providing input in the form of agricultural medicine questions, scenarios and objective structured clinical examinations needs to recognise that not all students will be offered the opportunity of a full programme in agricultural health and medicine. It is equitable to limit agricultural medicine assessment to core understandings for all students. So while some students will learn more of agricultural medicine in practice, assessment must be limited to **core** seminars and case-based learning in agricultural medicine.

In programmes in which scope exists for clinical assessment within the workplace, agricultural medicine can be assessed in the requirement to demonstrate contextual understanding of clinical cases and care.

Practice pearls

- 'Farm Days' are very well received by students of all levels. They are enhanced by having real farmers provide the instruction. A 'farmers unplugged' question and answer session over a cup of tea and some fruitcake (an Australian farming thing) is valuable in developing cultural competence among learners.
- Home visits to farms for care and following up injuries and illnesses are valuable to develop an understanding of environmental determinants of health.

What to do

- Develop cultural competence as soon as possible — and keep talking about it.
- Stimulate an interest in agricultural issues as a means of developing rapport with patients from agricultural communities.
- Use experiential and context-relevant learning as much as possible.

What not to do

- Don't attempt to teach something in class that can be learned in practice.
- Don't ignore the value of real farmers, fishers, foresters and their families as teachers in the community and when they present as patients.
- Don't forget to include research to support the curriculum, develop specific interests among students and to generate local evidence.

References

1. Brumby S, Ruldolphi J, Rohlman D, Donham K. Translating agricultural health and medicine education across the Pacific: a United States and Australian comparison study. *Rural Remote Health* 2017; 17: 3931.
2. Smith KB, Humphreys JS, Wilson MGA. Addressing the health disadvantage of rural populations: How does epidemiological evidence inform rural health policies and research? *Aust J Rural Health* 2008; 16: 56-6.
3. Safety and health in agriculture. ILO code of practice. International Labour Organisation – Geneva: ILO, 2011.
4. *Agriculture: A hazardous work*. ILO. Available at: https://www.ilo.org/safework/areasofwork/hazardous-work/WCMS_110188/lang--en/index.htm
5. Work-related injuries in Australia, 2005-2006. Comparison of compensation data with all incurred work-related injuries. *Safe Work Australia*, August 2009.
6. Work-related traumatic injury fatalities, Australia 2010-11, *Safe Work Australia*, 2012.
7. Work-related injuries and fatalities on Australian farms, *Safe Work Australia*, 2013.
8. Guthrie R, Westaway J, Goldacre L. Workers compensation and occupational health and safety in the Australian agricultural industry. *Aust J Rural Health* 2009; 17: 77-85.
9. Hegney D. Agricultural occupational health and safety: farming families presenting a challenge to wellness. *Aust J Rural Health* 1993; **1(3)**: 27-33.
10. Fragar L, Stiller L, Thomas P. *Child injury on Australian – the facts 2005*. Available at www.rirdc.gov.au
11. National Centre for Farmers Health: <http://www.farmerhealth.org.au>
12. National Institute for Occupational Safety and Health (NIOSH) Centers for Agricultural Safety and Health: <http://www.cdc.gov/niosh/oep/agctrhom.html>
13. Workshop on Agricultural Health and Medicine teaching, Rural Doctors Association of Queensland, 2016.

14. Kitchener S, Day R, Faux D, Highes M, Koppen B, Manahan D, Lennox D, Harrison C, Broadley S. Longlook. Initial outcomes of a longitudinal integrated rural clinical placement program. *Aus J Rural Health* 2015; 23(3): 169-175.
15. Kitchener S, Brumpton K, Dillon J. Agricultural health and medicine in rural medicine training: Evaluation of 'farm days'. *Focus Health Prof Educ* 2015; 16(4): 74-81.
16. Fragar L, Depczynski J. Farm Health and Safety Toolkit for Rural General Practices. Australian Centre for Agricultural Health and Safety, 2009. Available at: https://sydney.edu.au/medicine/aghealth/uploaded/Health%20Workers/_gp_toolkit_booklet_lores.pdf
17. Rural and Remote Health. Available at: <https://www.rrh.org.au/>
18. *Australian Journal of Rural Health*. Available at: <https://onlinelibrary.wiley.com/journal/14401584>
19. National Rural Health Alliance. Available at: <http://ruralhealth.org.au/>

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