2015

Development of an Australian practice-based research network as a community of practice

Bridget R. Dijkmans-Hadley
University of Wollongong, bdh@uow.edu.au

Andrew D. Bonney
University of Wollongong, abonney@uow.edu.au

Stephen Barnett
University of Wollongong, sbarnett@uow.edu.au

Publication Details

Dijkmans-Hadley, B., Bonney, A. & Barnett, S. R. (2015). Development of an Australian practice-based research network as a community of practice. Australian Journal of Primary Health, 21 (4), 373-378.

Development of an Australian practice-based research network as a community of practice

Abstract
There are many aspects of the communities of practice (CoP) framework that are applicable to the development of a practice-based research network (PBRN), where the focus is upon building primary health-care workers' research capacity and research questions. However, there is limited literature focussed on the application of CoP principles applied to research capacity building in Australia. The purpose of this paper is to demonstrate, through a case study, how a developing PBRN, the Illawarra and Southern Practice Research Network, successfully applied the theoretical foundation of CoP to develop a PBRN in a time- and resource-limited context.

Disciplines
Medicine and Health Sciences | Social and Behavioral Sciences

Publication Details
Dijkmans-Hadley, B., Bonney, A. & Barnett, S. R. (2015). Development of an Australian practice-based research network as a community of practice. Australian Journal of Primary Health, 21 (4), 373-378.

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;

PY14099

Practice & Innovation

Development of an Australian practice-based research network as a community of practice

Bridget Dijkmans-Hadley[A,D], *Andrew Bonney*[A,] *and Stephen R. Barnett*[A,]

[A]Graduate School of Medicine, University of Wollongong, Northfields Avenue, Wollongong, NSW 2522, Australia.

[D]Corresponding author. Email: bdh@uow.edu.au

There are many aspects of the communities of practice (CoP) framework that are applicable to the development of a practice-based research network (PBRN), where the focus is upon building primary health-care workers' research capacity and research questions. However, there is limited literature focussed on the application of CoP principles applied to research capacity building in Australia. The purpose of this paper is to demonstrate, through a case study, how a developing PBRN, the Illawarra and Southern Practice Research Network (ISPRN), successfully applied the theoretical foundation of CoP to develop a PBRN in a time- and resource-limited context.

What is known about the topic?

• The communities of practice theoretical framework is well established; however, there is limited description of its application to practice-based research networks or research regarding relevant outcomes.

What does this paper add?

• This paper demonstrates relevant outcomes from the successful application of a community of practice theoretical framework to the development of a practice-based research network in a time- and resource-limited context.

Introduction

The concept of communities of practice (CoP) entails a group of people who share a concern, a set of problems or a passion about a topic and through interaction on an ongoing basis, extend their knowledge and expertise around the topic (Jiwa *et al*. 2011; Wenger 2011). Comparably, practice-based research networks (PBRNs) are collaborative learning communities that identify, disseminate and integrate new knowledge to improve primary care processes and patient outcomes (Mold and Peterson 2005). When PBRNs are constructed to facilitate non-hierarchical relationships based on trust and co-operation (Griffiths *et al*. 2000), they reflect the components of a community of practice. Therefore, there are many aspects of the CoP framework that are applicable to the development of a PBRN, although there is limited description of its application to

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;
PBRNs or research regarding relevant outcomes. The purpose of this paper is to demonstrate, through a case study, how a developing PBRN, the Illawarra and Southern Practice Research Network (ISPRN), successfully applied the theoretical foundation of CoP in its establishment.

Context

The Australian Government's Primary Health Care Research, Evaluation and Development (PHCRED) Strategy commenced in 2000 (Department of Health and Ageing 2010). On 31 December 2011, the government terminated the research capacity building initiative (RCBI) component of the PHCRED Strategy. RCBI funding had supported the development of novice researchers as well as funding support for the development of PBRNs in Australia (Department of Health and Ageing 2010). This funding was replaced with the Centres for Research Excellence (CRE) competitive funding scheme, as Phase 3 of the PHRCED Strategy, targeting primary health-care priority areas in Australia aimed at post-doctoral and early career researchers, not novice researchers (van Weel and Rosser 2004).

Theoretical development

Establishing the Illawarra and Southern Practice Research Network

To support the establishment of ISPRN, a literature review was undertaken focusing upon the development of other PBRNs and appropriate supporting theoretical frameworks. The themes that arose from the literature indicated that PBRNs serve a variety of objectives and can be developed using frameworks such as knowledge translation ((Armstrong and Kendall 2010; Tapp and Dulin 2010), quality assurance (Mold and Peterson 2005; Brouwer *et al*. 2006), research capacity building (Del Mar and Askew 2004; Green *et al*. 2005) and CoPs (Wenger *et al*. 2002; Agrawal and Joshi 2011). The literature suggested that the evolution of CoPs can be intentionally fostered if appropriate seeding conditions are present (Agrawal and Joshi 2011). Given the commonalities that existed between organisations in the Illawarra involving the community of general practitioners (GPs) (Agrawal and Joshi 2011), favourable seeding conditions were identified for the development for a PBRN using a CoP framework. The organisations involved were the University of Wollongong's Graduate School of Medicine (GSM), Coast City Country General Practice Training (CCCGPT) and the Illawarra Health and Medical Research Institute (IHMRI) (Fig. 1).

Communities of Practice framework

Illawarra and Southern Practice Research Network uses both face-to-face and online interaction with its primary care members. As a result, Barnett *et al*.'s (2012) health virtual community of practice framework was used as a starting point for conceptualising ISPRN's organisation and activities. Barnett *et al*. used the Probst and Borzillo (2008) model of successful CoPs as an analytical template to review the evidence for using virtual communities of practice in reducing professional and structural isolation among GP trainers and trainees . The framework developed by Barnett et al. (2012) was found to be more useful in its application to ISPRN, which had a better

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;
balance of face-to-face interaction than online interaction, when the seven principles were collapsed into five, as illustrated in Fig. 2. Key aspects of CoPs that can be applied to PBRNs (adapted from Barnett *et al*. 2012) include: (1) the establishment of a recognised leader (to promote and facilitate research idea development); (2) the development of relationships (between network members and stakeholders); (3) the evolution of communication pathways (through various mediums); (4) the collaboration of CoP members involved in developing shared goals and objectives; and (5) the role of evaluation in improving the CoP (Ried *et al*. 2006; Agrawal and Joshi 2011). The application of the CoP framework to the development of ISPRN is discussed in the following sections.

ISPRN development within a CoP framework

Evaluation of network outcomes is broader than the traditional measures of productivity that academic institutions use; that is, grant income and research papers (Griffiths *et al*. 2000). In this case study, data were collected from the start of the network in February 2011. These data included workshop and conference evaluations, project records, academic outputs, an annual survey of its members about the types of research capacity building activities they would like run over a year, general monitoring of preferred methods of engagement and members' comments in newsletters. These data were collated from the perspective of a developing CoP and are presented in the next sections.

Outcomes

Leadership

The importance of good leadership during the launching phase of a CoP was identified in the literature as important to its success (Jiwa *et al*. 2011). The network Director is a long-standing GP in the area who now has a senior academic role with the Graduate School of Medicine, University of Wollongong. The Director, as a GP peer, provides an experienced perspective regarding the reality of implementing research within general practice. This leadership has provided a rallying point for interested GP researchers wishing to explore their research ideas, as noted in this quotation from an ISPRN member:

> *I was at a GP supervisor's workshop, and I attended a session that* [the ISPRN director] *was running on GP research and the plans to form ISPRN. It was inspiring to hear* [the director's] *vision for primary care research, as well as the interesting research ideas being discussed.* (Quote from a GP in the ISPRN News, Autumn/Winter 2012)

Another important component of CoP leadership is the coordinator and facilitator of the CoP activities who links members to helpful resources and works with members to solve any problems that arise (Wenger *et al*. 2002; Agrawal and Joshi 2011). A PBRN Coordinator was recruited in March 2011, to provide day-to-day support for the network members. The Coordinator has

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;
provided a much-appreciated role and has been a central part of the ISPRN team, as remarked in a newsletter:

> *ISPRN has supported me tremendously in developing my research idea. I have had support with the design of the research methodology, survey instruments, and in planning how to undertake the project. I have also had support behind the scenes, including administrative assistance from* [the PBRN Coordinator] *and assistance with the literature review*. (Quote from a GP in the ISPRN News, Autumn/Winter 2012)

Building shared goals, objectives and relationships

The development of relationships is necessary to the success of any CoP (Wenger *et al*. 2002). ISPRN has evolved through face-to-face conferences and workshops in addition to engagement through online webinars, the ISPRN blog and phone link-ups for project meetings. The main focus of these interactions is to share knowledge as well as to build knowledge of what other members encounter in their own practices. ISPRN relationships were built on a variety of levels in order to incorporate different perspectives into the shared goals and objectives within the network. Other ways that ISPRN has developed relationships over time in the organisation and implementation of projects has been through establishing a dual relationship with the practice manager and key GPs involved in the project. As identified by Graffy and Stubbes (2005), practice managers have a key role in the management and governance of research in general practice. In many cases of relationship building, the knowledge shared was found to have real value when applied by members to their own work (Wenger *et al*. 2002). Therefore, by engaging with a variety of members, ISPRN was able to create a shared vision for the network.

Large group projects (between 5 and 10 members) have particularly displayed strong group dynamics and a sense of a community of learning in their relationships. Often these large group projects have a strong GP project champion who motivates the group and encourages input from other members regarding the project structure and development. Table 1 details active projects, all of which have been undertaken by novice researchers and supported by University of Wollongong (UoW) academics.

Communication pathways

The review by Barnett *et al*. (2012) identified that flexible options for communication and sharing knowledge to overcome isolation, was commonly cited as highly important to the development of communities of practice. Hence, by offering numerous ways of staying in touch, ISPRN has strongly supported the CoP theoretical framework. Modes of communication include face-to-face discussion at network-wide conferences, email lists, one-on-one interaction with researchers during initial research idea development, support of small project groups, stakeholder and strategic meetings, as well as direct engagement with practice visits and research capacity workshops. Table 2 details the face-to-face ISPRN events that supported the development of project groups.

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;

Evaluation

Project records

The quality of interactions within a network is important to its success and is not measured through traditional benchmarks such as grant income and research papers (Griffiths *et al*. 2000). In this case study, project records involved feedback collected through various mediums to ensure ISPRN is meeting the needs and producing the outcomes that its stakeholders and membership require. These mediums include interviews with members for newsletters, an annual survey of its members each year about the types of research capacity building activities they would like run over a year and evaluation before and after conferences and workshops.

Membership growth

From ISPRN's commencement, the number of GP practices involved with the network has grown from 29 ISPRN members from 25 practices to 64 ISPRN members from 40 different practices; a 45% increase in membership and a 62% increase in the number of practices engaged with ISPRN over the past 2 years. ISPRN also has one Higher Degree Research (HDR) student (MPhil) commencing in 2014 from its GP membership and one GP Academic registrar is also commencing at this time. The ISPRN's cumulative growth in membership is illustrated in Fig. 3.

Academic output

Academic outputs that have been monitored since the ISPRN's development in 2011 include the number of new research projects commencing each year, current topics of projects run by ISPRN, as well as the total grant funding received to support these projects. Following the end of the PHCRED funding in 2011, ISPRN with the support of stakeholder small grants from the local training provider (CCCGPT) and the Illawarra Shoalhaven Medicare Local (ISML), facilitated primary care research capacity building locally (Table 3). It is worth noting the paucity of novice research in the region before ISPRN. The funding commitment from the two stakeholders saw the development of seven novice research projects that would have been unlikely to be supported by competitive funding due to their grassroots nature. This is particularly exemplified in the following quote that an ISPRN member made in a newsletter:

> *ISPRN has also been proactive in securing funding for these projects which has been essential to buy equipment and generally undertake the studies. I have been given administrative support and assisted with writing grants. ISPRN has also provided webinar sessions on how to utilise the university library and has been very supportive and patient throughout the development of my project*. (Quote from a GP in the ISPRN News, Spring 2012 edition)

Due to the organisational goals of the stakeholders, particular projects focussed on strengthening primary health-care professional development and education, as well as improving the health and

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;
wellbeing of community members in the Illawarra Shoalhaven regions. Details of the topics and type of ISPRN projects are detailed in Table 4.

What can be learnt from this case study?

The purpose of this paper was to describe how CoP theory can be used to support the development of a PBRN in a time- and resource-limited context. The current literature suggests that naturally occurring potential CoPs can be effectively fostered given favourable contextual factors (Agrawal and Joshi 2011). In the case of ISPRN, appropriate seeding conditions were identified in which to engage appropriate stakeholders and provide research opportunities to novice primary care researchers.

Throughout the development of ISPRN, we have actively engaged members in the development of their research projects, either via email or project teleconferences. Similar to Barnett *et al*. (2012), we believe that while active membership is essential in driving projects forward, passive users are also seen as legitimate peripheral participants, gaining support from watching the expert users. Through the experience of ISPRN, this has been the case, as new projects develop new practices tend to engage with projects surrounding topics that they are interested in.

Probst and Borzillo (2008) detail that a major reason why CoPs fail is that members do not view their participation as meaningful for their daily work. An audit of the current ISPRN projects by topic has identified that a range of projects are focussed on clinically relevant projects for general practice. In the current literature, it has been argued that research networks can assist GPs in quality improvement, with involvement in current research assisting GPs in updating their knowledge and also assisting in the application of new clinical knowledge to their practices (Mold and Peterson 2005).

PBRNs constructed to facilitate non-hierarchical relationships based on trust and co-operation are complex organisations to use traditional outcome measures (Griffiths *et al*. 2000). By using the CoP theory in its development, ISPRN has shown the importance of factors core to the successful formation and sustainability of non-hierarchical PBRNs. By having a vision with which its novice research members can flexibly engage, ISPRN has provided researchers with access to opportunities to build research capacity. The development of relationships created awareness of how research may be developed to fit into the everyday workflow of a GP practice and developed communication pathways in which to meet the research needs of the GPs. Finally, by holding evaluation feedback from ISPRN members in high regard, ISPRN has seen the improvement in the quality of its research capacity building sessions and its application to its research projects from their observations. By applying all core aspects, ISPRN has been able to successfully develop a research network in a short period of time.

Conclusion

It is recognised internationally that having a strong primary health-care sector improves population health and drives down health expenditure (Starfield *et al*. 2005), although there is a recognised disconnection between research and everyday community-based practice (Griffiths *et al*. 2000). This paper has shown that using a CoP framework is a successful way in which to engage local primary health-care physicians. This may be of interest to other developing practice-based research networks.

Acknowledgements

We wish to thank the GSM and IHMRI for their support since the end of the PHCRED funding. Thanks are also extended to CCCGPT and ISML for their grant funding, which has supported the development of much needed grassroots research in Australia. Finally, we wish to thank the ISPRN members and staff whose time and energy has seen the development of this network.

References

Agrawal A, Joshi K (2011) ‘A review of community of practice in organizations: key findings and emerging themes’ in System Sciences’ HICSS 44th Hawaii International Conference, 4–7 January 2011. Available at http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5718736&tag=1 [Verified 28 April 2014]

Armstrong K, Kendall E (2010) Translating knowledge into practice and policy: the role of knowledge networks in primary health care. *Health Information Management Journal.* **39**(2), 9–17.

Barnett S, Jones SC, Bennett S, Iverson D, Bonney A (2012) General practice training and virtual communities of practice - a review of the literature. *BMC Family Practice* **13**(1), 87. doi:10.1186/1471-2296-13-87

Brouwer HJ, Bindels PJE, Weert HC (2006) Data quality improvement in general practice. *Family Practice* **23**(5), 529–536. doi:10.1093/fampra/cml040

Del Mar C, Askew D (2004) Building family/general practice research capacity. *Annals of Family Medicine* **2**(Suppl 2), S35–S40. doi:10.1370/afm.146

Department of Health and Ageing (2010) Primary Health Care Research Education and Development (PHCRED) strategy. Phase three: 2010–2014 in Ageing DoHa. Department of Health and Ageing, Canberra.

Graffy J, Stubbes K (2005) The role of the practice manager in primary care research. *Primary Health Care Research and Development* **6**, 24–30. doi:10.1191/1463423605pc208oa

Green LA, White LL, Barry HC, Nease DE, Jr, Hudson BL (2005) Infrastructure requirements for practice-based research networks. *Annals of Family Medicine* **3**(Suppl. 1), S5–S11. doi:10.1370/afm.299

Griffiths F, Wild A, Harvey J, Fenton E (2000) The productivity of primary care research networks. *The British Journal of General Practice* **50**(460), 913–915.

Jiwa M, Chan W, Ross J, Shaw T, Magin PJ (2011) Communities of practice - quality improvement or research in general practice. *Australian Family Physician* **40**(1–2), 72–75.

Mold JW, Peterson KA (2005) Primary care practice-based research networks: working at the interface between research and quality improvement. *Annals of Family Medicine* **3**(Suppl. 1), S12–S20. doi:10.1370/afm.303

Probst G, Borzillo S (2008) Why communities of practice succeed and why they fail. *European Management Journal* **26**(5), 335–347. doi:10.1016/j.emj.2008.05.003

Ried K, Farmer EA, Weston KM (2006) Setting directions for capacity building in primary health care: a survey of a research network. *BMC Family Practice* **7**, 8. doi:10.1186/1471-2296-7-8

Starfield B, Shi LY, Macinko J (2005) Contribution of primary care to health systems and health. *The Milbank Quarterly* **83**(3), 457–502. doi:10.1111/j.1468-0009.2005.00409.x

Tapp H, Dulin M (2010) The science of primary health-care improvement: potential and use of community-based participatory research by practice-based research networks for translation of research into practice. *Experimental Biology and Medicine* **235**(3), 290–299. doi:10.1258/ebm.2009.009265

van Weel C, Rosser WW (2004) Improving health care globally: a critical review of the necessity of family medicine research and recommendations to build research capacity. *Annals of Family Medicine* **2**(Suppl. 2), S5–S16.

Wenger E (2011) Communities of practice: a brief introduction. Available at http://wenger-trayner.com/theory/ [Verified 28 April 2014]

Wenger E, McDermott R, Snyder W (2002) 7 Principles. Cultivating communities of practice. In ‘Cultivating communities of practice: a guide to managing knowledge’. pp. 49–65. (Harvard Business School Press: Boston)

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;

List of Figures and Tables:

Fig. 1 ISPRN stakeholders and their needs, providing seeding conditions for a PBRN

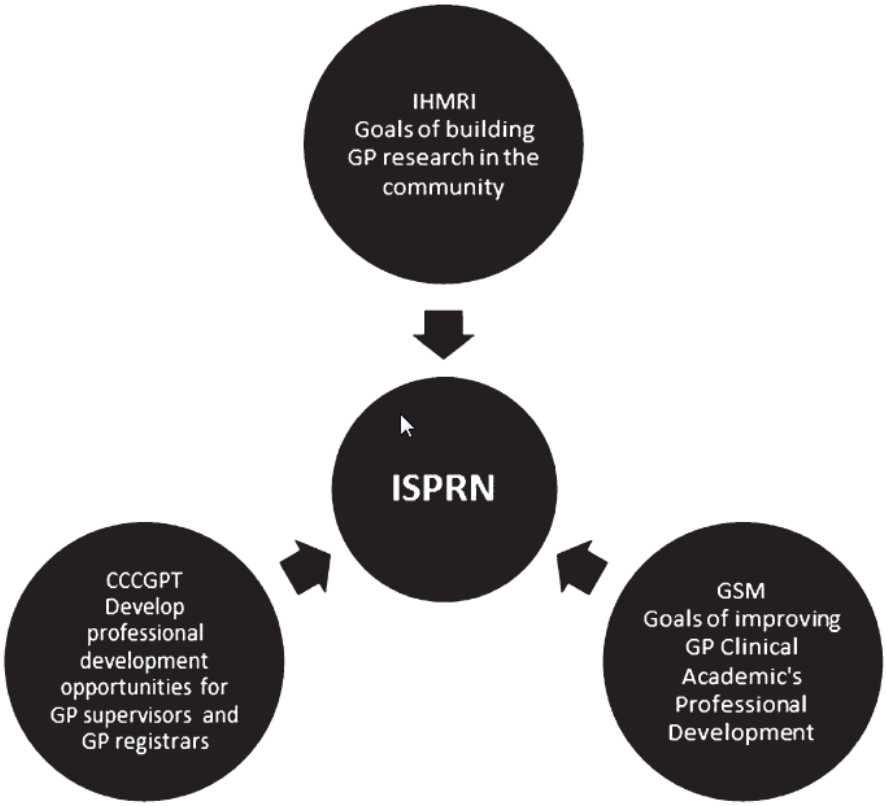

Fig. 2 PBRN CoP framework

Virtual communities of practice framework (Barnett *et al.* 2012)	ISPRN communities or practice framework
• Facilitation • Champion and support	Leadership
• Objectives and goals	Shared goals and objectives
• A broad church • Supportive environment	Development of relationships
• Technology and community	Communication pathways
• Measurement, benchmarking and feedback	Evaluation

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;

Fig. 3 ISPRN membership by year

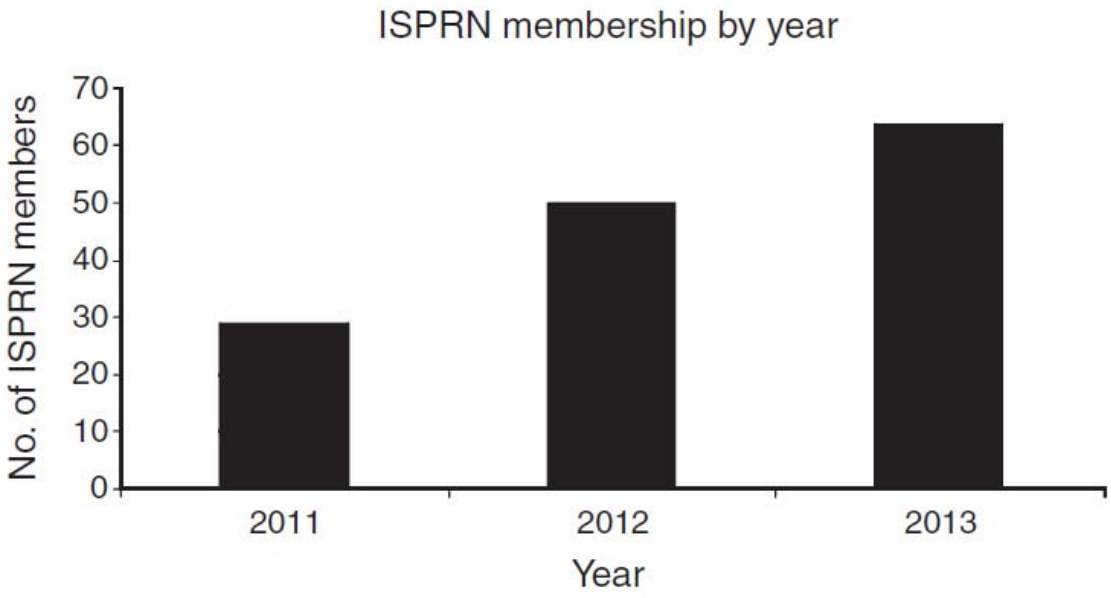

Table 1. Active ISPRN research projects undertaken by novice researchers

ISPRN, Illawarra and Southern Practice Research Network

ISPRN and partner projects	No. of novice research members involved in the project	No. of meetings/teleconferences
Project 1	2	11
Project 2	6	13
Project 3	5	9
Project 4	2	~10
Project 5	2	2
Project 6	3	9
Project 7	6	7
Project 8	10	9
Project 9	2	4
Project 10	2	5
Project 11	2	11
Project 12	2	3
Project 13	2	2
Project 14	7	4
Project 15	1	2
Project 16	2	1

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;

Table 2. ISPRN face-to-face research capacity building activities

Year	ISPRN event	No. of attendees	No. of practices engaged	No. of novice researchers commencing their first project as chief investigators following event
2011	ISPRN research development conference (28–29 May)	13 primary health care, 4 academics	13	3
	Literature review Skype webinar (30 August)	3 primary health care	3	-
	ISPRN research development workshop: qualitative and quantitative research methods (19 November)	6 primary health care, 4 academics	4	-
2012	ISPRN research development conference (26 May)	12 primary health care, 4 academics	11	5
	ISPRN literature review webinar (Adobe Connect) (14 September)	4 primary health care, 2 medical students	4	-
	ISPRN research development workshop: report and grant application writing (24 November)	8 primary health care, 2 academics	4	-
2013	ISPRN research development conference (4 May)	11 primary health care, 2 Medicare local, 4 academics	11	7
	ISPRN literature review workshop (Web-Ex) (12 September)	4 primary health care, 1 GSM staff member	4	-
	ISPRN research development workshop: introduction to research methodologies and critical analysis of the literature (16 November)	8 primary health care, 7 acute care	6	

Note: Fifty-one individual people have engaged in ISPRN events from its commencement in 2011. ISPRN, Illawarra and Southern Practice Research Network; GSM, Graduate School of Medicine

Table 3. ISPRN grant funding per year for novice researchers

Year of grant	**Total funding per year**	**Number of novice researchers supported by funding**
2011-early 2012	$95,042.00	7
2012	$40,000.00	3
2013	$40,000.00	4
Total	$175,042.00	14

Publisher: CSIRO; Journal: Australian Journal of Primary Health
Article Type: research-article; Article ID: PY14099
DOI: 10.1071/PY14099;

Table 4. ISPRN projects by topic

Topic of ISPRN project	Number of ISPRN projects
Clinical research	8
Health services research (policy)	3
Prevention research	1
Health informatics	2
GP registrar training	3
International comparative study	1