

# General practitioners with special interests

## *An integrative review of their role, impact and potential for the future*

**Victoria Yellamaty**, Lauren Ball, Lisa Crossland, Claire Jackson

### Background and objective

A 'general practitioner with special interest (GPwSI)' refers to a GP who functions as a clinical intermediary between primary, secondary and tertiary care. This study aimed to advance understanding of the role, impact and potential of the GPwSI in Australia.

### Methods

A systematic literature search was conducted. Studies that described the work of the GPwSI or examined how GPwSIs provide services to patients, including context, roles and outcomes, were included. Studies of all designs were analysed thematically using meta-synthesis.

### Results

Fifty-nine articles were included. Studies showed significant diversity in settings, conditions and roles of GPwSIs; superior patient satisfaction and comparable outcomes to specialists, but a need for greater workforce regulation.

### Discussion

This review shows the significant potential of both the role and impact of GPwSIs. It provides a warning regarding appropriate training, mentoring and ongoing professional development for GPs and employers adopting this role.

**THE TERM** 'general practitioner with special interest (GPwSI)' refers to a GP who functions as a clinical intermediary between primary, secondary and tertiary care.<sup>1,2</sup> The role originated in the UK as part of a workforce strategy that aimed to decrease the burden on specialist services and improve patients' access to specialist care.<sup>2-6</sup> Since 2000, a number of countries, including the UK, Netherlands, Canada, Australia and New Zealand, have introduced GPwSIs into their health services, with significant heterogeneity of the role, competency framework, performance management and formal assessment.<sup>7-9</sup> To properly understand the role, impact and potential of the GPwSI, the authors undertook an integrative review, particularly appropriate for the topic as the emerging body of literature includes a diverse range of empirical studies.

### Methods

#### Overview

In contrast to a systematic review, which addresses a specific clinical question, an integrative review synthesises a diverse range of literature (both qualitative and quantitative) to provide a comprehensive understanding of the phenomenon of interest.<sup>10</sup> To maintain a rigorous review process, this integrative review was conducted using the five steps outlined by

review guidelines:<sup>10</sup> problem identification, literature search, data evaluation, data analysis and presentation. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used for all applicable items.

#### Sample and inclusion criteria

A lack of understanding of the definitions, roles, locations and outcomes of the GPwSI was the problem this integrative review addressed. From it, the review question, 'What is currently known about GPwSI?' was developed using the SPIDER tool (Sample, Phenomenon of Interest, Design, Evaluation and Research type).<sup>11</sup> Studies were included if: 1) an aspect of the study described the work of the GPwSI (ie described GPs with additional training or extended scope of practice); 2) the study examined how GPwSIs provide services to patients, including context, roles and outcomes; and 3) the study was empirical, full-text and in English.

Although the term 'GPwSI' was first coined in 2000, studies were not excluded on the basis of their year of publication because of the presence of GPwSI-type roles prior to the official terminology. Additionally, studies conducted prior to 2000 aid in understanding the history and evolution of GPwSIs. Studies prior to 2000 were included if they discussed a specialised GP role that was outside the scope of usual practice. Studies were

excluded if they focused on hospital clinicians, settings or subspecialties.

### Literature search

A systematic literature search was conducted between May 2017 and July 2018. A health librarian aided the literature search. Databases searched included MEDLINE, PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL) and SCOPUS. Boolean connectors AND, OR and NOT were used to combine search terms. Medical subject headings (MeSH), were used in the execution of PubMed and MEDLINE database searches. Search terms relating to GPwSIs included: 'General Practitioner', 'GP', 'Primary Care Physician', 'Primary Care Doctor', 'Generalist', 'Family Physician', 'Physicians, Family', 'GPwSI', 'Family Medicine', 'Special Interest', 'Specific Interest' and 'Subspecialty'. All database search results were imported into EndNote for screening.

A systematic grey literature search was conducted during December 2017 and January 2018. Databases searched included WorldCat, BASE and Google. Additionally, government websites, such as the National Health Service of England, were searched for relevant information. For large databases, results from the first five pages of the search were imported into EndNote for screening. Reviewing the first five pages was done because of the large number of results and the decline in relevance after the initial pages.

### Screening and data extraction

The title and abstracts of all papers identified by the search were screened in duplicate by three researchers using the inclusion and exclusion criteria. Studies that appeared to meet the inclusion criteria on the basis of their titles and abstracts were retrieved for further review and screened in duplicate by the three researchers. Any disagreements in screening were resolved by discussions between the researchers. Data extracted included: title, author, year published, aim, methods, results and key findings that related to GPwSI. To support accuracy, one author extracted all data and two other

researchers who were familiar with the included studies carefully reviewed the data extraction table.

### Data analysis

This integrative review included both qualitative and quantitative studies, which were analysed thematically using meta-synthesis. Meta-synthesis is an integrative interpretation of results to offer a novel finding.<sup>12</sup> Data analysis involved iterative comparison of studies to cluster recurrent themes and sub-themes.<sup>10</sup> All authors participated in data analysis. Findings of all studies were independently read and re-read, coded and organised into categories, which were then compared across studies to identify relationships and themes.<sup>10</sup> This process continued until data saturation was achieved, and no new themes emerged.

## Results

### Descriptive findings

A total of 59 articles were included in the review from a total of 1501 screened

articles, as described in Appendix 1 (available online only) and shown in Figure 1. All studies were published between 1992 and 2017. Of the published literature, studies were conducted in the UK (n = 36), Australia (n = 8), the Netherlands (n = 2), Canada (n = 1) and New Zealand (n = 1). The studies had a wide range of methodological designs. Qualitative studies (n = 3) included interviews and/or focus groups.<sup>4,6,13</sup> Quantitative studies (n = 22) included surveys,<sup>14-17</sup> cohort studies,<sup>18</sup> retrospective and prospective observational studies,<sup>19-32</sup> randomised controlled trials<sup>33,34</sup> and experimental design.<sup>35</sup> Two studies had a mixed methods design.<sup>36,37</sup> Two studies were systematic literature reviews.<sup>1,38</sup> Nineteen publications were professional opinion articles or essays.<sup>2,3,5,9,39-53</sup> The grey literature results (n = 11) included journal articles not listed in a journal database,<sup>54,55</sup> guidelines,<sup>8,56-58</sup> reports,<sup>59-61</sup> a medical appraisal<sup>62</sup> and an example portfolio.<sup>7</sup>

Five studies examined the history and evolution of GPwSIs.<sup>1,13,15,45,48</sup>

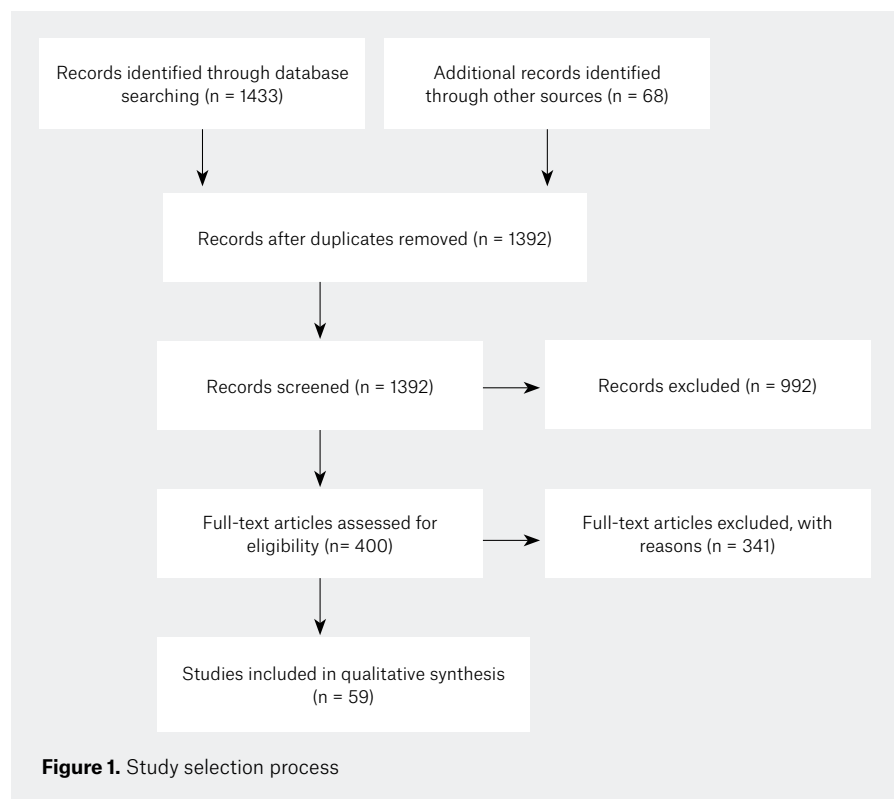


Figure 1. Study selection process

Eight studies measured clinical outcomes.<sup>20,23,27,30,31,33,35,36,40</sup> Five of these studies examined measurable clinical outcomes and surveyed patient satisfaction.<sup>20,23,33,35,36</sup> One study exclusively studied clinical outcomes in terms of the efficacy of a procedure.<sup>30</sup> One study compared clinical outcomes of patients of GPwSIs to specialists.<sup>27,31</sup> One paper discussed clinical outcomes in terms of a potential model of care.<sup>40</sup> Five studies examined the efficacy of GPwSIs. One of these studies examined referrals that could be appropriate for GPwSIs in certain specialist fields.<sup>32</sup> Four of these studies compared GPwSI treatment decisions in comparison to non-GP specialists.<sup>14,16,19,24</sup>

One study directly measured the cost-effectiveness of GPwSIs.<sup>21</sup> One study did not have GPwSIs as the subject of the paper, but the participants.<sup>29</sup> This study focused on new tools and methods for improving care provision. Seven studies examined the advantages and disadvantages of GPwSIs.<sup>4,5,9,39,41,43,46,52</sup> Ten studies examined potential models of integration for implementing GPwSIs. Three of these studies examined potential policies for implementing GPwSIs,<sup>17,50,60</sup> and seven studies examined potential future roles of GPwSIs.<sup>6,25,26,28,36,42,53</sup>

### Meta-synthesis

Three themes were discovered inductively from the literature: 1) diversity in settings, conditions and roles; 2) superior patient satisfaction and comparable outcomes to non-GP specialists; and 3) need for greater workforce clarity or regulation.

### Diversity in settings, conditions and roles

The first theme captured the diversity of the GPwSI role within healthcare systems. The literature included examples of GPwSIs operating in independent clinics,<sup>20,37,40,50</sup> hospital outpatient departments,<sup>27</sup> as a part of specialist teams, or as a part of primary care teams.<sup>1,15,23,48,53</sup> Remuneration was also diverse, including fee-for-service,<sup>43</sup> salary or uncontracted.<sup>15,48,49,52,60</sup> GPwSIs provided care to patients with a variety of health conditions. The most commonly

reported were in respiratory, dermatology, palliative and neurology care.

The duties described of GPwSIs were also diverse, ranging from clinical roles, giving opinions (including educating other healthcare professionals),<sup>1,3</sup> performing specific procedures,<sup>1,3,49</sup> and leading and developing services.<sup>3,50,52,55,60</sup> In hospital settings, GPwSIs were found to take on roles that were previously fulfilled by registrars or junior doctors.<sup>32,34,47</sup> Several examples were found of GPwSIs focusing only on their specialist duties, while other studies described cases of GPwSI integrating their extended role into their ongoing general practice duties.<sup>47</sup>

### Superior patient satisfaction and comparable outcomes to non-GP specialists

The second theme related to the clinical and economic impacts of the GPwSI. Studies found that patients tended to be more satisfied with GPwSI services when compared with traditional hospital or specialist clinics.<sup>23,27,33</sup> This was attributed to increased convenience and shorter waiting times.<sup>1,5,15,23,28,33,52</sup> Additionally, GPwSIs were found to achieve comparable clinical outcomes to specialists.<sup>20,27,33,34,38</sup> They also reduced the burden on specialists.<sup>5,9,23,33</sup> In cases where GPwSI care resulted in poorer outcomes than specialist care, the role of the GPwSI was either not well defined or not regulated.<sup>14,16,31</sup>

Three studies examined the cost-effectiveness of GPwSIs.<sup>21,34,52</sup> One study published in 2009 estimated that a nine-month intervention using a single GPwSI to support allergy care saved the local health economy £13,580.<sup>21</sup> A second study in 2005 assessed the GPwSI model as slightly more costly than hospital outpatient care, but enabled improved access for patients and resulted in similar health outcomes.<sup>34</sup> A third article from 2003 was not original research, rather an opinion piece on the economic perspectives of the GPwSI, cautioning that these services could decrease efficiency of care, counterproductive to the aim.<sup>52</sup>

### Need for greater workforce clarity or regulation

The third theme identified that the role of GPwSI is poorly defined in most countries. This may be attributed to the ad-hoc nature in which the role has developed. Early definitions were vague and did not refer to any particular training or specific role.<sup>1</sup> While the UK's 2000 National Health Service (NHS) plan was the first government initiative to formally implement GPwSIs into the healthcare system,<sup>1,3,15,36</sup> it did not contain a clear definition of the GPwSI.<sup>9</sup> GPwSIs could be trained by a specialist physician in the field of interest,<sup>39,48,50</sup> or receive additional education during their medical education, or after completion of a degree.<sup>15,39,42</sup> Regulation of training included routine, ongoing review to assure national quality standards were met.<sup>23,50</sup> Online models of training were also proposed.<sup>5</sup>

The UK has expanded nationally accredited training requirements and audit practices for special interest fields beyond the traditional obstetrics, anaesthetics and emergency settings. Between 2007 and 2013, the Royal College of General Practitioners (RCGP) produced a number of frameworks that set out the competencies, educational attainment and service provision considered important for the commissioning of a GPwSI. From 2015, the RCGP has renamed the GPwSI as a 'GP with extended role (GPwER)'.<sup>56,58</sup> This reflects the need for greater clarity of the role, and commitment to ongoing training, support, mentorship and review.<sup>58</sup>

### Discussion

The past 15 years have witnessed an escalating interest in the role of the GPwSI in Australia and other countries. The Royal Australian College of General Practitioners' (RACGP's) Faculty of Specific Interests numbers >17,000 Fellows across 29 Specific Interests Networks;<sup>63</sup> universities offer advanced special interest diplomas;<sup>64</sup> and Queensland Health currently employs 48 GPwSIs in areas as diverse as general surgery, dermatology, neurology, gastroenterology, orthopaedics and gynaecology.

This review was undertaken to learn from international evidence regarding the role and its impact, allowing Australian practitioners and employers to maximise optimal employment of and support for the GPwSI within our healthcare setting. Our review shows significant heterogeneity of both role and impact. It also provides a warning regarding appropriate training, mentoring and ongoing professional development for GPs and employers adopting this role. Based on our findings, such ongoing professional support is essential to maximise both quality and impact.

In the UK, the RCGP and NHS England have recently partnered to support and further formalise the GPwSI role as the GPwER.<sup>58</sup> This has been in response to the implementation of new models of care such as Multispecialty Community Providers, and Primary and Acute Care Systems, which require increased capacity-building within general practice. The GPwER is a GP who undertakes, in addition to their core general practice, a role that is beyond the scope of the Membership of the RCGP, requiring further formalised training. The RCGP has developed a consistent framework, accreditation and revalidation process to show ongoing competency and support, and is currently trialling a demonstration module to test the key principles. This may be of interest and importance for Australian clinicians.

The study has several potential limitations. The range of international terms and acronyms used to describe the GPwSI was broad. In order not to miss relevant information, we were inclusive of any role that placed a GP between primary and secondary care. Although we are confident we thus identified all relevant papers, most studies identified were at the lower end of the evidence hierarchy. Finally, the bulk of experience with the GPwSI role comes from one country – the UK – where GPwSIs are well integrated into the healthcare system.

## Conclusion

The GPwSI/GPwER workforce model will continue to attract ongoing interest as

healthcare reform internationally requires increased community management and complex chronic disease care close to home. This review summarised the current international evidence relevant to the role. It highlighted large diversity in the settings, conditions and roles of GPwSI, with superior patient satisfaction and comparable outcomes to non-GP specialists. In the current environment, there is a clear need to more closely examine the many settings in which the role can improve both patient care and more efficiently use scarce health resources. There should also be a focus on greater workforce clarity and ongoing monitoring and review to ensure optimal service provision. Further research to rigorously evaluate the impact of GPwSIs on service delivery outcomes, access and costs, compared with traditional care, should be a health service research priority.

## Authors

Victoria Yellamaty MBBS student, Centre for Health System Reform and Integration, UQ-Mater Research Institute, Brisbane, Qld

Lauren Ball PhD, MNutrDiet, GCertHigherEd, BAppSc, National Health and Medical Research Council (NHMRC) and Senior Research Fellow, Menzies Health Institute Queensland, Griffith University, Gold Coast, Qld; Visiting Senior Research Fellow, Centre for Health System Reform and Integration, UQ-Mater Research Institute, Brisbane, Qld

Lisa Crossland PhD, Project Manager, Health and Social Care Coordination, Planning, Integration, People and Performance (PIPP), Northland District Health Board, NZ

Claire Jackson MBBS, MD, MPH, CertHEcon, GradCert Management, FRACGP, FAICD Professor in General Practice and Primary Health Care Research, University of Qld, Primary Care Clinical Unit, Faculty of Medicine, Brisbane, Qld; Director, Centre for Health System Reform and Integration, University of Qld, Mater Hospital, Brisbane, Qld; Independent Director, Hospitals Contribution Fund of Australia; Chair, biennial International Health Care Reform Conference, Australia; Sessional GP, Camp Hill Health Centre, Brisbane, Qld. c.jackson@uq.edu.au  
Competing interests: None.

Funding: None.

Provenance and peer review: Not commissioned, externally peer reviewed.

## References

- Jones R, Rosen R, Tomlin Z, Cavanagh M-R, Oxley D. General practitioners with special interests: Evolution and evaluation. *J Health Serv Res Policy* 2006;11(2):106-9. doi: 10.1258/135581906776318929.
- Rosen R, Jones R, Tomlin Z, Cavanagh M-R. Evaluation of general practitioners with special interests: Access, cost evaluation and satisfaction with services. London: National Coordinating

Centre for the Service Delivery and Organisation, 2005. Available at [www.netccc.ac.uk/hsdr/files/project/SDO\\_ES\\_08-1210-035\\_V01.pdf](http://www.netccc.ac.uk/hsdr/files/project/SDO_ES_08-1210-035_V01.pdf) [Accessed 1 August 2019].

- Gerada C, Limber C. General practitioners with special interests: Implications for clinical governance. *Qual Prim Care* 2003;11(1):47-52.
- Boggis AR, Cornford CS. General practitioners with special clinical interests: A qualitative study of the views of doctors, health managers and patients. *Health Policy* 2007;80(1):172-78. doi: 10.1016/j.healthpol.2006.02.003.
- Spurling G, Jackson C. GPs with special interests: Benefits to patients, GPs and the community. *Aust Fam Physician* 2009;38(5):337-39.
- Moffat MA, Sheikh A, Price D, et al. Can a GP be a generalist and a specialist? Stakeholders views on a respiratory general practitioner with a special interest service in the UK. *BMC Health Serv Res* 2006;6:62. doi: 10.1186/1472-6963-6-62.
- Royal College of General Practitioners. RCGP Example Portfolio: GP with a Special Interest (GPwSI) Role. London: RCGP. [date unknown].
- Jones S, Kownacki S, Kangford A, Gerada C. Revised guidance and competences for the provision of services using GPs with special interests (GPwSIs): Dermatology and skin surgery. *National Health Service*, 2011.
- Wilkinson D, Dick MB, Askew DAA. General practitioners with special interests: Risk of a good thing becoming bad? *Med J Aust* 2005;183(2):84-86. doi: 10.5694/j.1326-5377.2005.tb06929.x.
- Whittemore R, Knaf K. The integrative review: Updated methodology. *J Adv Nurs* 2005;52(5):546-53. doi: 10.1111/j.1365-2648.2005.03621.x.
- Cooke A, Smith D, Booth A. Beyond PICO: The SPIDER tool for qualitative evidence synthesis. *Qual Health Res* 2012;22(10):1435-43. doi: 10.1177/1049732312452938.
- Whittemore R. Combining evidence in nursing research: Methods and implications. *Nurs Res* 2005;54(1):56-62. doi: 10.1097/00006199-200501000-00008.
- Newman CE, Kidd MR, de Wit JBF, Reynolds RH, Canavan PG, Kippax S. What moves a family doctor to specialise in HIV? Interviews with Australian policy key informants. *Cult Health Sex* 2011;13(10):1151-64. doi: 10.1080/13691058.2011.607904.
- Buchbinder R, Staples M, Jolley D. Doctors with a special interest in back pain have poorer knowledge about how to treat back pain. *Spine* 2009;34(11):1218-26; discussion 1227. doi: 10.1097/BRS.0b013e318195d688.
- Jones R, Bartholomew J. General practitioners with special clinical interests: A cross-sectional survey. *Br J Gen Pract* 2002;52(483):833-34.
- Marks C, Mindel A, Tideman R. The management of sexually transmitted diseases comparing specialists and general practitioners in Australia. *Venerology* 1998;11(1):29-31.
- Pinnock H, Netuveli G, Price D, Sheikh A. General practitioners with a special interest in respiratory medicine: National survey of UK primary care organisations. *BMC Health Serv Res* 2005;5:40. doi: 10.1186/1472-6963-5-40.
- van Heest F, Finlay I, Otter R, Meyboom-de Jong B. The New Millennium Palliative Care Project (2000-2003): The impact of specialised GP advisors. *Br J Gen Pract* 2007;57(539):494-96.
- Elliot S, Kernick D. Why do GPs with a special interest in headache investigate headache presentations with neurology and what do they find? *J Headache Pain* 2011;12(6):625-28. doi: 10.1007/s10194-011-0375-8.

20. Ismail H, Wright J, Rhodes P, Scally A. Quality of care in diabetic patients attending routine primary care clinics compared with those attending GP specialist clinics. *Diabet Med* 2006;23(8):851–56. doi: 10.1111/j.1464-5491.2006.01900.x.
21. Levy ML, Walker S, Woods A, Sheikh A. Service evaluation of a UK primary care-based allergy clinic: Quality improvement report. *Prim Care Respir J* 2009;18(4):313–19. doi: 10.4104/pcrj.2009.00042.
22. van Heest FB, Finlay IG, Kramer JJE, Otter R, Meyboom-de Jong B. Telephone consultations on palliative sedation therapy and euthanasia in general practice in The Netherlands in 2003: A report from inside. *Fam Pract* 2009;26(6):481–87. doi: 10.1093/fampra/cmp069.
23. Botting J, Correa A, Duffy J, Jones S, de Lusignan S. Safety of community-based minor surgery performed by GPs: An audit in different settings. *Br J Gen Pract* 2016;66(646):e323–e28. doi: 10.3399/bjgp16X684397.
24. Boyd K, Mason B, Kendall M, et al. Advance care planning for cancer patients in primary care: A feasibility study. *Br J Gen Pract* 2010;60(581):e449–e58. doi: 10.3399/bjgp10X544032.
25. Gilbert R, Franks G, Watkin S. The proportion of general practitioner referrals to a hospital respiratory medicine clinic suitable to be seen in a GPwSI respiratory clinic. *Prim Care Respir J* 2005;14(6):314–19. doi: 10.1016/j.pcrj.2005.04.006.
26. Isinkaye T, Gilbert S, Seddon P, et al. How many paediatric referrals to an allergist could be managed by a general practitioner with special interest? *Pediatr Allergy Immunol* 2016;27(2):195–200. doi: 10.1111/pai.12506.
27. Salisbury C, Noble A, Horrocks S, et al. Evaluation of a general practitioner with special interest service for dermatology: Randomised controlled trial. *BMJ* 2005; 331(7530):i441–46. doi: 10.1136/bmj.38670.494734.7C.
28. Smith HE, Wade J, Frew AJ. What proportion of adult allergy referrals to secondary care could be dealt with in primary care by a GP with special interest? *Clin Transl Allergy* 2016;6:3. doi: 10.1186/s13601-016-0091-1.
29. Thind CK, Brooker I, Ormerod AD. Teledermatology: A tool for remote supervision of a general practitioner with special interest in dermatology. *Clin Exp Dermatol* 2011;36(5):489–94. doi: 10.1111/j.1365-2230.2011.04073.x.
30. Buckley D, Yoganathan S. Can oral isotretinoin be safely initiated and monitored in primary care? A case series. *Ir J Med Sci* 2017;186(2):315–19. doi: 10.1007/s11845-016-1540-5.
31. Salmon P, Mortimer N, Rademaker M, Adams L, Stanway A, Hill S. Surgical excision of skin cancer: The importance of training. *Br J Dermatol* 2010;162(1):117–22. doi: 10.1111/j.1365-2133.2009.09548.x.
32. Beecher SM, Donlan C, O'Leary DP, Kerin MJ, McLaughlin R. Clinical and economic benefit of general practitioner integration to a symptomatic breast service. *Ir J Med Sci* 2016;185(4):877–80. doi: 10.1007/s11845-015-1386-2.
33. Baker R, Sanderson-Mann J, Longworth S, Cox R, Gillies C. Randomised controlled trial to compare GP-run orthopaedic clinics based in hospital outpatient departments and general practices. *Br J Gen Pract* 2005;55(521):912–17.
34. Coast J, Noble S, Noble A, et al. Economic evaluation of a general practitioner with special interests led dermatology service in primary care. *BMJ* 2005;331(7530):i444–49. doi: 10.1136/bmj.38676.446910.7C.
35. Ridsdale L, Doherty J, McCrone P, Seed P. A new GP with special interest headache service: Observational study. *Br J Gen Pract* 2008;58(552):478–83. doi: 10.3399/bjgp08X319440.
36. Wilson E, Cox K. Community palliative care development: Evaluating the role and impact of a general practitioner with a special interest in palliative medicine. *Palliat Med* 2007;21(6):527–35. doi: 10.1177/0269216307082018.
37. Rhodes P, Nocon A, Wright J. Specialist diabetes clinics in primary care: The views of GPs about the impact on quality of care. *Qual Prim Care* 2003;11:265–70.
38. Taneja A, Singh PP, Tan JP, Hill DG, Connolly AB, Hill AG. Efficacy of general practitioners with specialty interests for surgical procedures. *ANZ J Surg* 2015;85(5):344–48. doi: 10.1111/ans.12721.
39. Brennan ME, Spillane AJ. The breast physician: An example of specialisation in general practice. *Med J Aust* 2007;187(2):111–14. doi: 10.5694/j1326-5377.2007.tb01154.x.
40. Jackson C, Tsai J, Brown C, Askew D, Russell A. GPs with special interests: Impacting on complex diabetes care. *Aust Fam Physician* 2010;39(12):972–74.
41. Jiwa M, Ee HC, Beilby JJ. Will promoting general practitioners with special interests threaten access to primary care? *Med J Aust* 2007;187(2):71–72. doi: 10.5694/j1326-5377.2007.tb01142.x.
42. el-Guebaly N, Crockford D, Cirone S, Kahan M. Addiction medicine in Canada: Challenges and prospects. *J Subst Abuse* 2011;32(2):93–100. doi: 10.1080/08897077.2011.555705.
43. Gervas J, Starfield B, Violán C, Minué S. GPs with special interests: Unanswered questions. *Br J Gen Pract* 2007;57(544):912–17. doi: 10.3399/096016407782317865.
44. Archard G. GPs with a special interest – Where are we now? Trends in Urology Gynaecology & Sexual Health 2008;13(3):4–5. doi: 10.1002/tre.6.4.
45. Levy ML, Stephenson P, Barritt P, et al. The UK General Practice Airways Group (GPIAG): Its formation, development, and influence on the management of asthma and other respiratory diseases over the last twenty years. *Prim Care Respir J* 2007;16(3):132–39. doi: 10.3132/pcrj.2007.00042.
46. Martin GP, Currie G, Finn R. Reconfiguring or reproducing intra-professional boundaries? Specialist expertise, generalist knowledge and the 'modernization' of the medical workforce. *Soc Sci Med* 2009;68(7):1191–98. doi: 10.1016/j.socscimed.2009.01.006.
47. Houghton M. Acute medicine: An alternative take. *Clin Med* 2011;11(1):26–27. doi: 10.7861/clinmedicine.11-1-26.
48. Nocon A, Leese B. The role of UK general practitioners with special clinical interests: Implications for policy and service delivery. *Br J Gen Pract* 2004;54(498):50–56.
49. Gokani VJ, Ferguson HJ, Fitzgerald JE, Beamish AJ. Surgical training in primary care: Consensus recommendations by the Association of Surgeons in Training. *Int J Surg* 2014;Suppl 3:S1–4. doi: 10.1016/j.ijsu.2014.08.403.
50. Williams S, Ryan D, Price D, Langley C, Fletcher M, Everden P. General practitioners with a special clinical interest: A model for improving respiratory disease management. *Br J Gen Pract* 2002;52(483):838–43.
51. Worth A, Pinnock H, Fletcher M, Hoskins G, Levy ML, Sheikh A. Systems for the management of respiratory disease in primary care – An international series: United Kingdom. *Prim Care Respir J* 2011;20(1):23–32. doi: 10.4104/pcrj.2010.00070.
52. Kernick DP. Developing intermediate care provided by general practitioners with a special interest: The economic perspective. *Br J Gen Pract* 2003;53(492):553–56.
53. Bradley S, David McKelvey S. General practitioners with a special interest in public health; at last a way to deliver public health in primary care. *J Epidemiol Community Health* 2005;59(11):920–23. doi: 10.1136/jech.2005.034405.
54. Pandey P, Sharma S. In the dark even after a decade! A 10-year analysis of India's National Rural Health Mission: Is family medicine the answer to the shortage of specialist doctor in India? *J Family Med Prim Care* 2017;6(2):204–07. doi: 10.4103/jfmpc.jfmpc\_254\_16.
55. Gruffydd-Jones K. The framework for general practitioners with a special interest in respiratory medicine. *Prim Care Respir J* 2003;12(2):35. doi: 10.1038/pcrj.2003.12.
56. NHS Castle Point and Rochford Clinical Commissioning Group. GP with Extended Role accreditation policy (previously known as GPwSI). London: NHS, 2017.
57. The Royal College of Ophthalmologists. Primary eye care, community ophthalmology and general ophthalmology. London: The Royal College of Ophthalmologists, 2019. Available at [www.rcophth.ac.uk/wp-content/uploads/2019/02/Primary-Eye-Care-Community-Ophthalmology-and-General-Ophthalmology-2019.pdf](http://www.rcophth.ac.uk/wp-content/uploads/2019/02/Primary-Eye-Care-Community-Ophthalmology-and-General-Ophthalmology-2019.pdf) [Accessed 13 August 2019].
58. The Royal College of General Practitioners. General practitioners with extended roles. London: RCGP, 2018. Available at [www.rcgp.org.uk/GPwER](http://www.rcgp.org.uk/GPwER) [Accessed 11 June 2019].
59. Association of British Clinical Diabetologists. General practitioners with a special interest in diabetes. A discussion paper. West Midlands, UK: ABCD, 2002. Available at [www.diabetologists.org.uk/Shared\\_Documents/position\\_papers/ABCD\\_GPSI.pdf](http://www.diabetologists.org.uk/Shared_Documents/position_papers/ABCD_GPSI.pdf) [Accessed 31 July 2019].
60. Gruffydd-Jones K, Stephenson P, Levy ML. What standards and terms of employment should respiratory practitioners with a special interest expect from an employing organisation? *Prim Care Respir J* 2007;16(3):182–87. doi: 10.3132/pcrj.2007.00032.
61. National Coordinating Centre for the Service Delivery and Organisation research programme. An assessment of the clinical effectiveness, cost and viability of NHS General Practitioners with Special Interest (GPSI) services. London: NCCSDO, 2006. Available at [www.netsccc.ac.uk/hsdr/files/adhoc/35-35-briefing-paper.pdf](http://www.netsccc.ac.uk/hsdr/files/adhoc/35-35-briefing-paper.pdf) [Accessed 31 July 2019].
62. NHS England. NHS England All England Appraisal Network Medical Appraisal Position Statement. Leeds, UK: NHS, 2016. Available at [www.england.nhs.uk/evaluation/wp-content/uploads/sites/10/2016/04/appraisal-conf-16-supp-info-med-app.pdf](http://www.england.nhs.uk/evaluation/wp-content/uploads/sites/10/2016/04/appraisal-conf-16-supp-info-med-app.pdf) [Accessed 13 August 2019].
63. Royal Australian College of General Practitioners. Specific Interests Network. East Melbourne, Vic: RACGP, 2019. Available at [www.racgp.org.au/the-racgp/faculties/specific-interests/interest-groups](http://www.racgp.org.au/the-racgp/faculties/specific-interests/interest-groups) [Accessed 11 June 2019].
64. The University of Queensland. Master of Medicine (MMed). Lucia, Qld: UQP, 2019. Available at [https://my.uq.edu.au/programs-courses/program.html?acad\\_prog=5398](https://my.uq.edu.au/programs-courses/program.html?acad_prog=5398) [Accessed 11 June 2019].

correspondence [ajgp@racgp.org.au](mailto:ajgp@racgp.org.au)

**Appendix 1. List of studies included in the review, grouped according to methodological design**

Author, year	Country	Methodological design	Area of focus	Reference
Boggis et al, 2007	UK	Interviews/focus groups	Advantages and disadvantages of GPwSIs	4
Moffat et al, 2006	UK	Interviews/focus groups	Potential future roles of GPwSIs	6
Newman et al, 2011	Australia	Interviews/focus groups	History and evolution of GPwSIs	13
Buchbinder et al, 2009	Australia	Survey	Comparison to non-GP specialists	14
Jones et al, 2002	UK	Survey	History and evolution of GPwSIs	15
Marks et al, 1998	Australia	Survey	Comparison to non-GP specialists	16
Pinnock et al, 2005	UK	Survey	Policies for implementing GPwSIs	17
van Heest et al, 2007	Netherlands	Cohort study	GPwSIs included in intervention	18
Elliot et al, 2011	UK	Observational study	Comparison to non-GP specialists	19
Ismail et al, 2006	UK	Observational study	Clinical outcomes of GPwSIs	20
Levy et al, 2009	UK	Observational study	Cost-effectiveness of GPwSIs	21
van Heest et al, 2009	Netherlands	Observational study	GPwSIs included in intervention	22
Botting et al, 2016	UK	Observational study	Clinical outcomes of GPwSIs	23
Boyd et al, 2010	UK	Observational study	Comparison to non-GP specialists	24
Gilbert et al, 2005	UK	Observational study	Potential future roles of GPwSIs	25
Isinkaye et al, 2016	UK	Observational study	Potential future roles of GPwSIs	26
Salisbury et al, 2005	UK	Observational study	Clinical outcomes of GPwSIs	27
Smith et al, 2016	UK	Observational study	Potential future roles of GPwSIs	28
Thind et al, 2011	UK	Observational study	Tools to improve care by GPwSIs	29
Buckley et al, 2017	UK	Observational study	Clinical outcomes of GPwSIs	30
Salmon et al, 2010	UK	Observational study	Clinical outcomes of GPwSIs	31
Beecher et al, 2016	UK	Observational study	Integration of GPwSIs	32
Baker et al, 2005	UK	Randomised controlled trial	Clinical outcomes of GPwSIs	33
Coast et al, 2005	UK	Randomised controlled trial	Cost-effectiveness of GPwSIs	34
Ridsdale et al, 2008	UK	Experimental design	Clinical outcomes of GPwSIs	35
Wilson et al, 2007	UK	Mixed methods	Clinical outcomes of GPwSIs	36
Rhodes et al, 2003	UK	Mixed methods	Efficacy of GPwSIs	37
Jones et al, 2006	UK	Systematic review	History and evolution of GPwSIs	1
Taneja et al, 2015	New Zealand	Systematic review	Efficacy of GPwSIs	38
Rosen et al, 2006	UK	Opinion or essay article	Advantages and disadvantages of GPwSIs	2
Gerada et al, 2003	UK	Opinion or essay article	Governance of GPwSIs	3
Boggis et al, 2007	UK	Opinion or essay article	Perspectives of GPwSIs	4
Wilkinson et al, 2005	Australia	Opinion or essay article	Advantages and disadvantages of GPwSIs	9

**Appendix 1. List of studies included in the review, grouped according to methodological design (cont'd)**

Author, year	Country	Methodological design	Area of focus	Reference
Brennan et al, 2007	Australia	Opinion or essay article	Advantages and disadvantages of GPwSIs	39
Jackson et al, 2010	Australia	Opinion or essay article	Clinical outcomes of GPwSIs	40
Jiwa et al, 2007	Australia	Opinion or essay article	Advantages and disadvantages of GPwSIs	41
El-Guebaly et al, 2011	Canada	Opinion or essay article	Potential future roles of GPwSIs	42
Gervas et al, 2007	UK	Opinion or essay article	Advantages and disadvantages of GPwSIs	43
Archard et al, 2008	UK	Opinion or essay article	Training of GPwSIs	44
Levy et al, 2007	UK	Opinion or essay article	History and evolution of GPwSIs	45
Martin et al, 2009	UK	Opinion or essay article	Advantages and disadvantages of GPwSIs	46
Houghton 2011	UK	Opinion or essay article	Training of GPwSIs	47
Nocon et al, 2004	UK	Opinion or essay article	History and evolution of GPwSIs	48
Gokani et al, 2014	UK	Opinion or essay article	Training of GPwSIs	49
Williams et al, 2002	UK	Opinion or essay article	Policies for implementing GPwSIs	50
Worth et al, 2011	UK	Opinion or essay article	Training of GPwSIs	51
Kernick 2003		Opinion or essay article	Advantages and disadvantages of GPwSIs	52
Bradley et al, 2005	UK	Opinion or essay article	Potential future roles of GPwSIs	53
Pandey et al, 2017	India	Non-database article	Provision of care by GPwSIs	54
Gruffydd-Jones 2003	UK	Non-database article	Provision of care by GPwSIs	55
NHS, n.d.	UK	Guidelines	Provision of care by GPwSIs	8
NHS 2017	UK	Guidelines	Provision of care by GPwSIs	56
Royal College of Ophthalmologists 2013	UK	Guidelines	Provision of care by GPwSIs	57
Royal College of General Practitioners 2015	UK	Guidelines	Provision of care by GPwSIs	58
Association of British Clinical Diabetologists, n.d.	UK	Report	Provision of care by GPwSIs	59
Gruffydd-Jones 2007	UK	Report	Policies for implementing GPwSIs	60
NHS 2006	UK	Report	Provision of care by GPwSIs	61
NHS, n.d.	UK	Medical appraisal	Provision of care by GPwSIs	62
Royal College of General Practitioners, n.d.	UK	Example portfolio	Training of GPwSIs	7

*GP, general practitioner; GPwSI, general practitioner with special interest*