Appendix

Table A1 Summary of non-empirical papers reporting on the quality and safety of locum practise

	Title, publisher, author, date published	Country	Document type	What does the source tell us about locum quality and safety?
1	Errors by locums, BMJ, Jones & Ramsay, 1996[30]	UK	Letter	The governance relating to the employment of locum doctors in NHS hospitals was poorly regulated and lacked oversight. Locum practice was thought to present a risk to patients as there was a lack of effective systems for communicating poor performance to potential employers, which increased risk. It was recommended that locums should carry a logbook and a central locum register should be introduced to improve oversight.
2	Doing the rounds: The use of locum doctors in Scotland's hospitals, Accounts Commission for Scotland, 1998[31]	UK	Report	Few trusts had in place formal policies or protocols for the appointment and management of locums. Key concerns included reliance on agency background checks, poor quality induction, and minimal locum supervision, lack of oversight and reporting of poor performance.
3	The practice of locum tenens: view from a senior surgeon, American College of Surgeons, Tolls, 2008[44]	USA	Opinion piece	Locums experienced professional isolation were treated as high risk and therefore given routine low risk caseloads, which could have negatively impacted on skills and knowledge in the long term. Locums were regarded as not have the necessary breadth of skills to practice in rural areas. Locums were vulnerable as they were not afforded the same protections as permanent members of staff so if mistakes were made, they may not have been invited to return.
4	How I tried to hire a locum, BMJ, Isles, 2010[13]	UK	Opinion piece	Locum sector was poorly regulated meaning that employing organisations had limited information about the quality and abilities of the locum doctors they employed. A lack of formalised pre-employment checks meant that hospitals were often sent locum doctors who were inappropriate in terms of experience, qualifications, immigration status, and fatigue.
5	Using locum doctors in hospitals, Audit Scotland, 2010[32]	UK	Report	Systems around the employment of locum doctors presented a number of potential risks to patient safety, including inadequate pre-employment checks, inadequate induction and supervision, unclear line management structures and poor reporting of performance.

				Inadequate record keeping and reporting meaning that poorly performing locums were able to move between trusts and avoid sanctions. Absence of induction and supervision meant that patients were at risk of inappropriate treatment and received poor continuity of care.
6	Continuity of care and the patient experience, The Kings Fund, Freeman and Hughes, 2010[45]	UK	Report	GPs reported anecdotally that patients returned to their usual doctor for a second opinion about the same problem after being seen by a locum GP, causing duplication and waste of resources.
7	Locum surgeons: principles and standards, The Royal College of Surgeons of England, 2011[8]	UK	Professional standards and regulation	Locum consultant positions were being filled by surgeons who were not sufficiently qualified or experienced to practice as consultants. Hospitals were found to be using inadequately experienced or qualified locum surgeons to provide long term cover. Recommendation that only locums who were on the specialist register should be employed as consultant surgeons to ensure standards are met.
8	Patient safety: addressing temporary worker clinical standards, governance and compliance, NHS Professionals, 2011[33]	UK	White Paper	Productive partnerships between the locum, locum agencies and employing organisations could improve quality and patient safety. For example, by providing end of placement reports and better sharing of information.
9	Medical locum expenditure: treating the disease, not the symptoms, NHS Professionals, 2012[7]	UK	White Paper	The risks to patient safety due to the mismanagement of the locum medical workforce and unscrupulous locum agencies were key concerns. Other risk factors included poor inductions, particularly in the evenings and weekends. Some agencies took advantage of trusts seeking last minute locums by encouraging the trust to pay a higher premium or accept reduced safeguarding and employment checks.
10	Report on the use of locum doctors by Northern Ireland hospitals, Public Accounts Committee, 2012[34]	UK	Report	Trusts need to improve potential risks to patient safety of using locum doctors. Poor compliance with protocols meant that guidance around screening, induction, and sharing of information was not always followed. Sharing of information between trusts about

				poorly performing locums was lacking meaning that it was difficult to make an informed decision about appropriate employment of locums.
11	Maximising the locum experience, Canadian Family Physician, Pariser et al., 2012[35]	Canada	Commentary	Uncertainty around locum demographics and a lack of supporting policies and regulations meant that there was lack of oversight with regards to locum working in Canada.
12	'How do hospitals feel about locum tenens?', KevinMD, Jones, 2013[47]	USA	Interview	Locums described as a 'necessary evil' with locum agencies taking advantage of a hospitals need to have a doctor in place and as a consequence, did not prioritise placing doctors with the right skills and attitudes in the most appropriate hospitals - meaning that around 50% of locum doctors were found to be mismatched or 'sub-par'. Some locums were described as having 'problem personalities' meaning that low level issues were not dealt with and organisation moved locums on to other organisations.
13	Locum doctors: Patient safety is more important than the cost, International Journal of Surgery, Jennison, 2013[11]	UK	Opinion piece	Challenges for locum doctors that could compromise patient care included having to adapt to new surrounds, receiving insufficient induction, covering specialities that were not within their scope of practice. Improvements should be made to the support and information provided to locum doctors to ensure they can complete their role effectively and assure patient safety is not compromised.
14	Rogue Dutch doctor prompts calls for EU early warning system, healthcare-in-europe.com, Kölking, 2013[36]	Netherlands	News	A lack of supervision and administration infrastructures on a national and European level meant that locum doctors were able to cross country boundaries and work in other countries while facing investigations in their home country. The European Community should exchange information on doctors faster and more reliably.
15	How can dermatology services meet current and future patient needs while ensuring that quality of care is not compromised and that access is equitable across the UK?, The King's Fund, 2014[37]	UK	Report	Locum dermatologists, who were not accredited in dermatology and would not have been appointed to substantive posts, had remained in post, sometimes for longer than the one year maximum stipulated by the Department of Health guidance. There was concern that some locum consultants may not have completed the appropriate qualifications and were also not on the GMC register.

16	Workforce planning in the NHS, , The King's Fund, Addicott et al., 2015[48]	UK	Report	Hospital trusts were addressing serious continuing problems with staffing levels by using temporary staff in the absence of sufficient permanent workers. This was regarded as potentially problematic for the safety and quality of patient care.
17	Locum cap will lead to staff shortages and patient safety risks, official assessment warns, BMJ, Rimmer, 2015[43]	UK	News article	Locums experienced isolation and a lack of support. Recommended that doctors should receive training on how to work as a locum to enable them to practice efficiently and safely. Locum working was regarded as an alternative to highly pressured GP partnership roles.
18	5 misconceptions about locum doctors, Best Practice Medical, 2015[49]	Australia	Blog	Locums experienced stigmatisation - negative attributes associated with locum working included locums being perceived as less safe, less experienced, incompetent, and unable to secure permanent jobs or build rapport with others.
19	Workforce strategies focus too much on recruitment, rather than maximising the contributions of locums to general practice, BMJ, Wright, 2016[50]	UK	News article	Locums were on the fringes of organisations, which exposed them and the organisation to different types of risk, e.g. professional isolation, risk, indemnity costs and educational exclusion.
20	How the popularity of life as a locum is changing the health service, BMJ, Oxtoby, 2016[51]	UK	News article	Locums may have been able to improve patient care by providing a fresh perspective to that of overworked GPs.
21	Locums withdrawing work in wake of tax change must consider impact on patients, GMC says, BMJ, Rimmer, 2017[52]	UK	News article	Locums were withdrawing from work because of changes in tax which was perceived to impact on patient safety. Locums were not seen to be adhering to moral and ethical obligations of doctors - locums were regarded as more interested in pay than patient safety.
21	Locums earn more but have extra charges and fewer opportunities, BMJ, Jumper, 2017[38]	UK	Letter	Changing environments, without standardisation, information systems or policies hindered locum efficiency. Locums were not always afforded the same provisions as other members of staff, meaning that quality of care and patient safety may have been at risk. Locums did not always receive the necessary departmental access, IT passwords, or

				sufficient handover. Reduced quality of care may have resulted from support and provisions made available to locums rather than their ability.
22	The trouble with locums, BMJ, Murray, 2017[39]	UK	Editorial	Locums were perceived to negatively affect quality of care due to difficulties in ensuring professional oversight and team integration. Locums regarded as potentially burdensome for permanent staff.
23	Don't talk about the money, Healthwatch, The King's Fund, Nutt, 2017[53]	UK	Guest blog	NHS pressures, such as staff shortages, lead to patient safety risks. For example, older vulnerable, people would rather not present to their local GP than see a locum doctor.
24	Taking revalidation forward: Improving the process of relicensing for doctors, The General Medical Council, Pearson, 2017[15]	UK	Report	Gaps in the oversight of locum doctors may be a patient safety risk. Revalidation processes must be equally robust for all doctors and need to be strengthened around locum doctors.
25	Use of agency workers in the public sector, National Institute of Economic and Social Research, Runge et al., 2017[54]	UK	Report	Key concerns included a lack of development opportunities for locums, including CPD. Locum working was regarded as having lower entry standards than substantive posts.
26	2017 survey of temporary physician staffing trends, Staffcare, 2017[2]	USA	Report	66% of locum employers rated the skill level of locums as excellent or good, 30% rated the skill level of locums as adequate, and 3.5% rated their skill level unsatisfactory. Issues relating to quality and safety included, unfamiliarity with the practice and procedures, liaising with locum providers and ensuring thorough background checks.
27	'Considering Locum Tenens? Freedom, Good Pay, and Some Risks' MedScape, Chesanow, 2017[55]	USA	Opinion piece	Locum working has pros and cons. Some cons can leave locums and patients at risk. Risks included negative impact on career progression and stigmatisation. Being treated as an outsider increased risk as difficult caseloads were sometimes assigned to locums. Some locum agencies prioritise filling posts, meaning that some locums assigned to posts outside of their scope of practice.

28	Investigation into quality incidents and peer review in radiology in British Coumbia, 2011-2017, BC Medical Quality Initiative, Wale, 2017[40]	Canada	Report	Findings from an investigation into the quality of diagnostic imaging in four health authorities in British Columbia suggested that locum working was associated with poor quality practice due to lack of oversight of locum working and lack of information relating to the quality of their work. Performance reviews at the end of locum placements were 'unheard of', meaning that patients were harmed because poor performance went undetected. Lack of information and feedback on practice created difficulties for organisations trying to fill gaps in services and was not helpful to the locums themselves.
29	Building a professional performance framework, Medical Board of Australia, 2017[41]	Australia	Report	Locum working was regarded as a 'hallmark' of professional isolation. Recommendation that patient safety risks should be mitigated through strengthening governance structures, particularly around professionally isolated doctors, such as locums.
30	Reflections of a psychiatric mercenary: on being a locum, Australasian Psychiatry, Perkins, 2017[56]	Australia	Opinion piece	Professional isolation and lack of continuity were cited as particular difficulties for locums working in rural settings.
31	What our data tells us about locum doctors, General Medical Council, 2018[4]	UK	Report	Locum doctors were more likely to receive complaints that reached the threshold for a full investigation. Among specialists, agency locums were investigated more than any other group. Locums employed through agencies formed the largest group of locums and had the highest rate of investigations.
32	The risks to care quality and staff wellbeing of an NHS system under pressure, Picker Institute Europe & The King's Fund, Sizmur and Raleigh, 2018[5]	UK	Report	Patient experience was negatively associated with several workforce factors including higher spend on agency staff. Feedback from staff and patients suggested that the use of agency staff provided less continuity of care, less stability for hospitals and patients, and negatively impacted on the quality of inpatient care. However, this report does not discriminate between types of agency staff (e.g. locum doctors or agency nurses).
33	Supporting organisations engaging with locums and doctors in short-term placements: A practical guide for healthcare providers, locum agencies and revalidation	UK	Guidance	The short-term nature of locum work meant that locums were less likely to be embedded within strong clinical governance systems to support their clinical practise and CPD. Other risks included poor or absent induction, not knowing how to escalate concerns, and being placed in challenging environments or untested models of care.

	management services, NHS England, Chapman and Cohen, 2018[42]			
34	Why GP locums should join a chambers, GPonline, Fieldhouse, 2018[57]	UK	Opinion piece	Recommendation that joining 'locum chambers' could help to mitigate some of the negative consequences of locum working, such as professional isolation.