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Preprint · September 2025

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How are incidental findings identified and managed in urgent and emergency care? A rapid scoping review

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Word count

3,979

Keywords (MeSH)

Incidental findings
Emergency Service, Hospital
Urgent Care
Health Personnel Attitudes
Preventive Health Services

Abstract

Introduction

Incidental findings are unexpected abnormal findings during routine care. Urgent and Emergency Care (UEC) professionals in emergency departments, ambulance services, and urgent treatment centres, are presented with opportunities for early intervention and could reduce long-term disease burden. However, limited evidence exists regarding their identification and management, particularly in prehospital settings. This scoping review aimed to investigate existing primary research on incidental findings across UEC settings.

Methods

Two databases were searched (MEDLINE Complete and CINAHL Complete) in June 2024. Two researchers screened results, performed reference and citation searching, and reviewed full texts. Included studies underwent data extraction and critical appraisal before being synthesised narratively.

Results

Initial searches yielded 245 records; 10 were included for full-text screening. An additional 418 articles were identified through reference and citation searching, of which 38 were included for full-text screening. 18 articles were included after screening, with an additional 2 added from another source. Articles explored incidental findings such as elevated blood pressure, atrial fibrillation, late returning laboratory results, and abnormal findings on sonography. Reported prevalence varied, with only 17.4% of patients with elevated blood pressure referred for follow-up – though 40.6% were later diagnosed with hypertension. New-onset atrial fibrillation was found in 2.7% of patients not transported by ambulance service. Between 47-68% of patients with abnormal sonographic findings were referred for further care.

Discussion

Incidental findings are moderately prevalent across UEC settings, but referrals for follow-up are inconsistent. Factors influencing referrals include patient demographics, ownership of findings, time constraints and clinician education.

Recommendations

Further research is required to understand sociodemographic characteristics and how they influence the decision to act on incidental findings. Streamlined low-effort referral mechanisms and clear delineation of responsibility may improve outcomes. Further research is needed, particularly in ambulance service practice, where findings differ from other settings and remain underexplored.

How are incidental findings identified and managed in urgent and emergency care? A rapid scoping review

Introduction

When patients call for an emergency ambulance or attend the emergency department (ED), this is usually due to a particular complaint, such as an injury, illness or a combination of new or worsening symptoms. However, during their assessment, Urgent and Emergency Care (UEC) healthcare professionals may discover abnormal findings that are unrelated to the reason the patient has presented. These are termed incidental findings. Identifying incidental findings early provides the opportunity to intervene, sometimes prior to the development of symptoms or significant complications. This early intervention may reduce the burden of disease on the patient, local healthcare organisation, and national health system.

Guidance from the Royal College of Emergency Medicine (RCEM) recommends specific actions to be taken for incidental findings of suspected cancers and lung nodules (Smith & France, 2023). Such findings are referred to as incidentalomas and are a well-recognised phenomenon, with a wealth of supporting peer-reviewed literature summarised in a recent umbrella review (O'Sullivan et al., 2018). However, the RCEM guidance does not refer to incidental findings identified by other means than radiological investigations. An example of this would be detection of mild hyperglycaemia, which the Association of Ambulance Chief Executives (AACE) and Joint Royal Colleges Ambulance Liaison Committee (JRCALC) (2022) specifically identifies. Neither RCEM nor JRCALC refer to other incidental findings, such as an isolated finding of elevated blood pressure.

The NHS Core20PLUS5 strategy is a national NHS England approach to inform action to reduce healthcare inequalities. It specifically identifies the need to focus on improving the identification and management of hypertension and associated hyperlipidaemia (NHS England & NHS Improvement, 2021). NHS England (2024) has set a target for 80% of hypertensive patients being treated in line with NICE guidelines in 2024/25. The NHS Long Term Plan outlines objectives to "use [patient encounters] as positive opportunities to help people improve their health", including early detection and prevention of disease (NHS England, 2019, p. 34). A recent government whitepaper (Department of Health & Social Care, 2024) suggests that personalised preventative care would lead to an estimated 33% reduction in ill health, increasing gross domestic product by £320 billion over twenty years, and boosting the sustainability of the NHS.

Despite what appears to be a shift in government policy, there is a notable lack of literature pertaining to incidental findings within prehospital care. Given this gap and recognising that ambulance services are an integral part of the wider UEC system, this scoping review aimed to explore the broader UEC literature to investigate how incidental findings are identified and managed across the sector.

Methods

Protocol and registration

The study protocol was not registered.

Search and information sources

Given the scoping nature of this review, a broad search strategy was employed. A population, concept, context (PCC) approach (Peters et al., 2020) was used to model search terms documented in Supplementary 1 without the need for an explicit outcome or measure to be identified. Using this material, the query string in Supplementary 2 was formulated.

Only two databases (MEDLINE Complete and CINAHL Complete) were searched using the EBSCOhost search platform due to time and resource constraints of this rapid review. Databases and the search platform were selected based on institutional access and reputation for high volumes of medical peer-reviewed articles. Reference and citation searching (via Google Scholar) was performed recursively against all studies included based on title and abstract. No journal or hand search was performed due to the rapid nature of this review.

Eligibility criteria

All results identified in the search were screened against criteria in Table 1.

For the purpose of the review, we defined incidental findings as 'unrelated abnormal clinical findings detected by-chance during the course of routine clinical care'. We defined opportunistic screening, as the practice of 'intentionally performing additional clinical investigations not related to the reason for patient contact; either on an ad-hoc basis, or as part of an organised initiative'.

Point-of-care ultrasound (POCUS) studies performed by non-radiologists were included in this review to capture the management of clinical decision makers who have a range of other diagnostic factors to consider, rather than experts in the medium of radiographic detection and documentation.

Opportunistic screening schemes, when not discussed alongside incidental findings, were excluded, as they indicate efforts to intentionally seek abnormal findings, rather than responding to unexpected abnormal findings. "Opportunistic screening" was included as a search term to ensure the search captured a broad range of evidence.

Table 1: Inclusion and Exclusion Criteria

Inclusion		**Exclusion**	
I1	Incidental findings discovered during clinical examination, including the use of non-radiological imaging.	**E1**	Incidental findings detected through the use of radiological imaging.

I2	Investigating incidental findings with or without ad-hoc opportunistic screening schemes.	**E2**	Only investigating opportunistic or organised screening schemes.
I3	Investigating the phenomena of incidental findings during clinical care.	**E3**	Investigating the phenomena of incidental findings during clinical research rather than clinical practice.
I4	Incidental findings detected in the UEC setting, including out-of-hospital emergency, urgent care treatment centre(s), and ED settings.	**E4**	Incidental findings detected in wider healthcare environments, including primary, community, residential, or non-emergency secondary and tertiary settings.
I5	Reporting on how incidental findings are, or should be, identified, managed, referred, or followed up.	**E5**	Not reporting on the identification, management, referral or follow-up of incidental findings.
I6	Studies examining the phenomenon of incidental findings in wider populations.	**E6**	Case reports or series identifying isolated, rare, or unique incidental findings.
I7	English language articles.	**E7**	Non-English language articles.
I8	Complete, peer-reviewed, primary research articles.	**E8**	Grey literature, conference presentations or abstracts, secondary research, and clearly non-research or non-peer-reviewed articles.

Selection of evidence

All stages of screening were performed by two researchers (WM, BG) who were blinded to each other's decision to reduce risk of bias. Reviewers were not blinded to the focus of the review. Cases of disagreement, where reviewers did not agree on whether to include or exclude during blinded screening, were resolved through discussion to reach consensus. Screening agreement was calculated as the proportion of articles where there was no case of disagreement.

Results were initially screened based on title and abstract. Full-text review was then performed against the criteria in Table 2 to determine final inclusion.

Data charting process and data items

Final articles underwent data extraction by WM with a simple bespoke tool that included items such as author, setting, country, design, participants and results.

Critical appraisal

Studies were appraised by WM by applying the most appropriate Critical Appraisal Skills Programme (CASP) (2018) checklist. No formal quality or bias assessment is required for scoping reviews; therefore, studies were included in the review regardless of their quality.

Synthesis of results

The results were synthesised descriptively, with key findings summarised in narrative form supplemented by tables. Quantitative data, such as frequencies and proportions, were reported as percentages, and central tendencies described using means and ranges. Studies were categorised based on key characteristics, such as type of incidental finding and clinical setting, to facilitate comparison across different contexts. Thematic patterns in the data were identified to highlight commonalities and differences across studies. No meta-analysis was conducted, as the primary objective was to provide an overview of existing evidence rather than to evaluate effect sizes or draw causal inferences.

Results

Sources of evidence

Database searches were performed on 26th June 2024, returning 245 results. Duplicates (n = 30) and irretrievable articles (n = 2) were removed, and 213 articles screened based on title and abstract. Of these, 10 articles were included for full-text review. Reference and citation searches returned 418 sources, 21 of which were duplicates and 9 were irretrievable. Screening these articles by title and abstract resulted in an additional 38 articles included for full-text review.

A total of 48 articles underwent full-text review. One article was not retrievable and eight were duplicates or using duplicate data. Of the remaining 39 articles, 21 were excluded on the bases of E9 (n = 12), E5 (n = 3), E1 (n = 3), E2 (n = 1), E4 (n = 1), E6 (n = 1). Reviewers had an 95% rate of agreement during the entire screening and review process, leaving 34 decisions that were resolved through discussion. One additional study (Heppenstall et al., 2022) and its follow-on (Wilkinson et al., 2024), which was published shortly after the searches, were already known to reviewers during conceptualisation and were felt to be pertinent to the nature of the review. These two articles met criteria and were included for analysis on the basis of consensus, which raised the final number of included articles to 20.

Figure 1. PRISMA Diagram

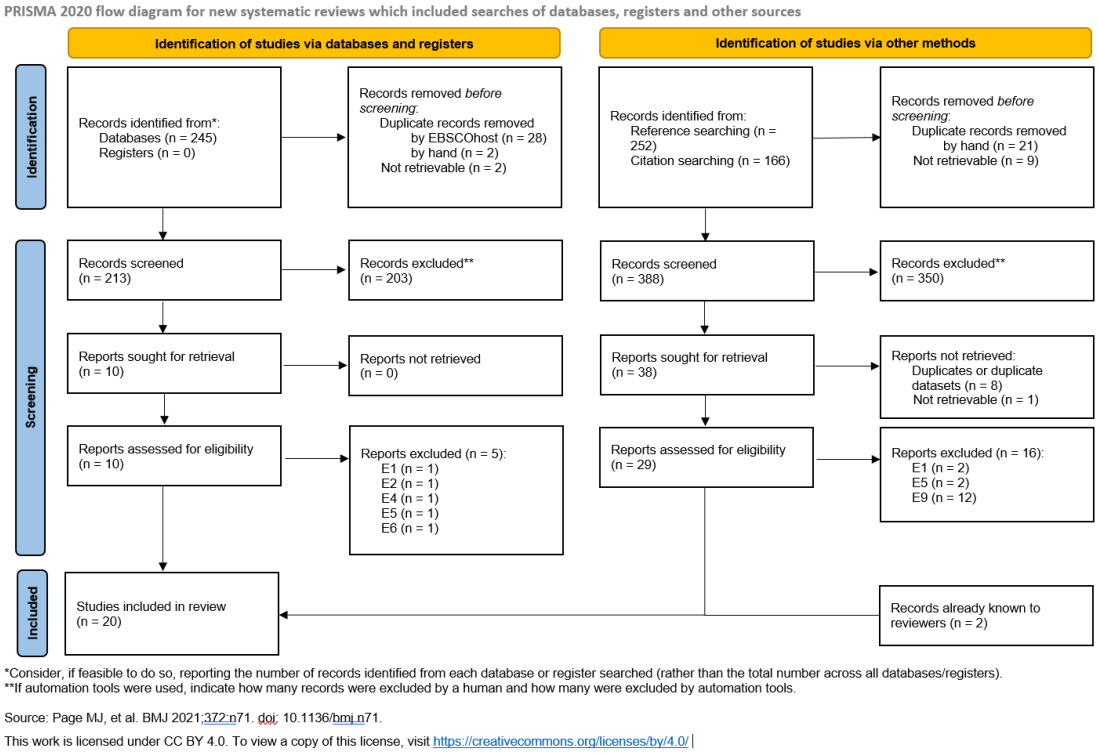

Figure 1 shows a PRISMA diagram (Page et al., 2021) that has been modified to reflect the scoping methodology of this study. A PRISMA for scoping review checklist (Tricco et al. 2018) is available as Supplementary 3.

Characteristics of sources of evidence

An abridged version of Supplementary 4 is shown in Table 2, which lists the articles included for analysis. Overall, there were two English, one Canadian, one Iranian, one Greek, and one Polish study. All other studies were set in the United States of America. There was a mixture of ED settings, including academic, university, teaching, community, and tertiary centres. There was one study examining a "Fast Track" department, similar to Same Day Emergency Care units in the United Kingdom (UK). Two studies were set in the same UK emergency ambulance service. There were no other settings of care identified in studies.

Most articles were cohort and case-control studies, with some also including a staff-based survey. One study examining elevated blood pressure included prospective recruitment of patients to undergo ambulatory blood pressure monitoring to confirm diagnosis. One sonography study involved review of captured sonograph footage by expert sonologists. Two emergency ambulance studies investigated atrial fibrillation as an incidental finding, one of which featured focus group and semi-structured interview methodology.

One study investigated the broader concept of incidental finding management in late-returning results, rather than a specific condition.

Synthesis of results

Elevated blood pressure

Fourteen studies investigated the phenomenon of elevated blood pressure readings in the ED. Given the ubiquity of blood pressure measurement in the UEC sector, typically to triage acuity of patients, the discovering of primary-care appropriate elevated blood pressure readings was considered a hallmark type of incidental finding.

Table 2: Studies Included for Analysis

Setting	Scope	Country	Study	Design	Participants
ED & Urgent Care Centre	Late Returning Results	United States of America	Blodgett et al. (2023)	Service evaluation	6,530 cases with incidental findings
Fast Track	Elevated Blood Pressure		Bohan et al. (2011)	Pre and post intervention (health professional education)	7 health professionals
ED			Baumann et al. (2009)	Retrospective audit and health professional questionnaire	1,250 records, 379 surveys
			Chernow et al. (1987)	Prospective cross-sectional	107 followed up
			Julliard et al. (2011)	Retrospective cross-sectional	662 included
			Shah et al. (2009)	Pre and post intervention (health professional education)	500 before, 602 after
			Shah et al. (2011)		
			Souffront et al. (2015)	Health professional survey	230

			Souffront et al. (2016)	Retrospective cross-sectional study	2,367 records
			Tanabe et al. (2004)	Retrospective cross-sectional	83 records
			Tilman et al. (2007)	Retrospective audit	9,805 charts
			Umscheid et al. (2008)	Retrospective case-control	2,098 cases
		Iran	Dolatabadi et al. (2014)	Prospective cross-sectional	2,070 screened
		Hong Kong	Tsoi et al. (2012)	Service evaluation	245 cases
		Poland	Szypenbejl et al. (2024)	Prospective cross-sectional	129 consented
	Emergency Sonography	Canada	Tewari et al. (2015)	Retrospective audit	200 cases
		Greece	Lanitis et al. (2012)	Retrospective audit	6,041 cases
		United States of America	Valenzuela et al. (2019)	Retrospective audit	1,452 cases
Emergency Ambulance	Atrial fibrillation	United Kingdom	Heppenstall et al. (2022)	Retrospective audit/evaluation	859 screened
			Wilkinson et al. (2024)	Focus group and semi-structured interview	18 members of the public, 11 healthcare providers

Key statistical findings from studies investigating elevated blood pressure are shown in Table 3. Tsoi et al. (2012) was excluded from inclusion in estimating referral rate for follow-

up as they reported a 100% referral rate with no control or retrospective audit comparison.

Table 3: Summary of Statistics Related to Elevated Blood Pressure in the Emergency Department

Statistic	Study	Value	Mean (Range)
Persistently elevated blood pressure readings in the emergency department	Dolatabadi et al. (2014)	16.7%	34.3% (16.7-45.0)
	Julliard et al. (2011)	29.8%	
	Shah et al. (2009)	38%	
	Tanabe et al. (2004)	45% (low-acuity patients)	
	Umscheid et al. (2008)	42%	
Elevated blood pressure readings in the ED with no history of hypertension	Szypenbejl et al. (2024)	8.6%	9.1% (2.7-16.0)
	Tilman et al. (2007)	16%	
	Tsoi et al. (2012)	2.7%	
Referral rate to follow-up for patients with elevated blood pressure in the ED	Bohan et al. (2011)	5%	17.4% (2.0-53.0)
	Julliard et al. (2011)	34.5%	
	Shah et al. (2011)	53%	
	Souffront et al. (2016)	4.6%	
	Tanabe et al. (2004)	2%	
	Tilman et al. (2007)	5.2%	
Proportion of patients referred for elevated blood pressure in the ED who were found to be hypertensive at follow-up	Chernow et al. (1987)	68%	40.6% (22.0-68.0)
	Dolatabadi et al. (2014)	28.5%	
	Julliard et al. (2011)	29.4%	
	Szypenbejl et al. (2024)	55.2%	
	Tsoi et al. (2012)	22%	

Emergency sonography

Three studies investigated incidental findings in trauma sonography (Lanitis et al., 2012; Tewari et al., 2015; Valenzuela et al., 2019), two of these (Lanitis et al., 2012; Valenzuela et al., 2019) included the use of the Focused Assessment with Sonography for Trauma protocol (Rozycki et al., 1998). The studies reported that incidental findings were detected in 8-26% of cases, with the majority of these being worrisome (70-78%). Age was found to be a predicting factor, with older patients more likely to have an incidental finding detected than younger patients (Lanitis et al., 2012). Additional imaging was performed in 47-68% of cases. Valenzuela et al. (2019) reported that only 9% of patients identified with incidental findings were informed or referred for follow-up upon discharge from the ED, highlighting potential issues in patient communication.

Atrial fibrillation

Two studies (Heppenstall et al., 2022; Wilkinson et al., 2024) explored the identification and management of new atrial fibrillation (AF) in UK ambulance practice. 10.5% of adults not conveyed to hospital by ambulance crews had a recorded history or an electrocardiograph showing, AF. Approximately 1in 4 of these patients appear to have a new onset of AF (2.7% of all adults not conveyed to hospital), equating to two cases per day at the study site (Heppenstall et al., 2022). While authors acknowledged that new onset of AF may be related to the presenting complaint, and therefore not technically an incidental factor in the lens of this review, it may also be discovered by chance during the patient encounter.

Wilkinson et al. (2024), at the same site, completed qualitative investigation with public and health professional stakeholders. A key common theme was the perceived responsibility and to act on a finding of new AF. Paramedics and members of the public felt it was important there was a low time burden to complete necessary actions. Both paramedics and other health professionals (i.e. primary care professionals) felt it important for there to be a dedicated mechanism to make referral reason and requested actions clear. Paramedics felt great responsibility to ensure their patients were referred appropriately, and some included a 3-lead electrocardiograph as part of their routine discharge package.

Late-returning results

One study (Blodgett et al., 2023) reported a cost analysis of a quality improvement initiative. A small, dedicated, team of nurses was established to review laboratory and imaging results that returned after patients had been discharged from two EDs and an urgent care centre in the United States. Of the 1.35 million laboratory and 95,000 imaging results reviewed, 6,530 patient encounters had incidental findings detected. Most cases were referred to primary care (n = 5,783), but twenty-one were recalled to the ED. Authors calculated a cost per potentially life-saving intervention as $27,743 (USD).

Discussion

Incidental findings in UEC present a unique opportunity for acute professionals to identify early signs of chronic disease and make appropriate referrals. This scoping review revealed that most literature focused on elevated blood pressure (as a specific incidental finding) and sonography (as a general means of detecting incidental findings).

Non-invasive blood pressure measurement is near ubiquitously employed in UEC to identify critically unwell patients and score clinical risk (e.g. as a physiological parameter in NEWS2 (Royal College of Physicians (RCP), 2017)). While elevated blood pressure may indicate acute medical conditions, it can also be a sign of chronic hypertension. Despite National Institute for Health and Care Excellence (2019) guidelines recommending ambulatory monitoring for patients with blood pressure over 140/90 mmHg, no referral guidelines specific to UEC have been issued by RCEM or AACE.

Synthesised data (Table 3) shows that 34.3% of patients attending EDs had persistently elevated blood pressure, but only 17.4% were referred for follow-up. Among those referred, 40.6% were newly diagnosed as hypertensive in primary care. Assuming similar rates across the UK's 74,000 daily ED attendances (Kirk-Wade et al., 2024), nearly 21,000 people may be missed every day, with 8,500 potentially diagnosable, and treatable, as hypertensive. Since hypertension is a modifiable risk factor for many high-burden diseases, missed referral represents a significant lost opportunity. Public Health England (2014) estimate that improving hypertension management could save the UK £1.1 billion over ten years and prevent 60,000 hours of life being lost.

Referral practices in UEC appear to vary by patient demographic. Data suggests that patients with no history of hypertension and middle age are more likely to be referred (Souffront et al., 2016), potentially due to a perceived higher diagnostic yield in this group (Dolatabadi et al., 2014). However, patients with elevated blood pressure and no prior hypertension history tend to be younger and male (Umscheid et al., 2008). The Office for National Statistics (2023; Table 4) indicates that undiagnosed hypertension is particularly common among younger males, with 66% of hypertensive males aged 16-24 remaining undiagnosed. Since younger patients have a higher long-term risk of hypertension-mediated organ damage, under-referral in this group could contribute significantly to future disease burden (Hinton et al., 2019; Shin et al., 2023).

Patients with a known history of hypertension were less likely to be referred, possibly due to assumptions that they are already managed by primary care. However, poorly managed hypertension still warrants referral due to its ongoing inflammatory damage, regardless of prior diagnosis.

Similarly, cases of new onset AF present a significant opportunity to intervene (Heppenstall et al., 2022). AF is another, well recognised, risk factor in a range of high-burden disease processes, including heart failure, stroke, and thromboembolic event (Van Gelder et al., 2024, p. 3329). Paramedics who recognise these cases feel a strong sense of responsibility to act, often speaking directly with primary care professionals, rather than recommending patient self-refer (Wilkinson et al., 2024). While outcomes,

including referral rates, are yet to be explored in the literature, there may be something to learn from the ownership paramedics feel when dealing with incidental findings.

Table 4: Rates of Undiagnosed Hypertension by Age and Sex (Office for National Statistics, 2023)

Age Group (years)	Undiagnosed Hypertension (% male)	Undiagnosed Hypertension (% female)
16-24	66%	26%
25-34	55%	44%
35-44	44%	34%
45-54	35%	31%
55-64	29%	29%
65-74	23%	27%
≥ 75	17%	21%

Referral responsibility in wider UEC is not always clear. Baumann et al. (2009) found that UEC professionals underestimated referral thresholds, predicting a threshold to refer of 150mmHg systolic but having an actual, audited, threshold of 170mmHg. A similar referral threshold of 168mmHg was reported by more recent study in Poland (Szypenbejl et al., 2024), reflecting a similar threshold across two countries and nearly twenty years. Differences emerged across professional groups, with doctors more likely to refer than nurses or physician associates (Souffront et al., 2015). Nurses (30.8%) and physician associates (18.3%) cited apparent good health as a barrier to initiating referrals, while fewer doctors (9.3%) shared this perception (Souffront et al., 2015). Additionally, time constraints were reported as a key barrier by 13% of doctors (Souffront et al., 2015). A nurse-led referral process trialled in Hong Kong took only three minutes per patient but required twenty-eight minutes to identify one confirmed hypertensive case (Tsoi et al., 2012). Blodgett et al. (2023) described a similar dedicated nursing review team that cost $27,743 per potentially life-saving intervention. Given the scale of UK ED attendances, referral processes need to be efficient, scalable, and well-integrated into workflow to minimise time and cost burdens. Interventions that focus on improving the likelihood of health professionals making referrals at time of discovery may reduce the need for costly retrospective review interventions like Blodgett et al. (2023). Clarifying referral responsibility within UEC teams and protecting time for such actions may improve rates.

Educational interventions show potential to improve referral rates. While 87% of ED professionals reported that training was not a barrier, 65% of nurses could not correctly define hypertension (Souffront et al., 2015). Bohan et al. (2011) demonstrated a fivefold

increase in referrals following a one-hour educational session with personalised data feedback. Similarly, Shah et al. (2011) combined education with automated alerts, achieving a referral rate increase from 53.0% to 99.6%. However, neither study assessed long-term sustainability of improved practice. Changing clinical behaviour requires balancing evidence with real-world constraints (Gupta et al., 2017), and interventions should account for time pressures, professional attitudes, and resource limitations (Myall et al., 2020). Professional and public stakeholders in ambulance care share this view, reporting that any referral mechanism must have a low time burden to the attending clinician (Wilkinson et al., 2024). Future research should explore cost-effectiveness and practical implementation strategies for improving referral rates.

POCUS in the UEC setting presents a unique opportunity to detect incidental findings through a medium not routinely utilised for the purpose of health surveillance or opportunistic screening. Advanced age (Lanitis et al., 2012) and non-traumatic presentation (Tewari et al., 2015) predicted incidental findings through POCUS. Similarly to elevated blood pressure as an incidental finding, there appear to be key demographic factors which may be leveraged to alert the professional to a higher likelihood of an incidental finding.

Of the patients with incidental findings on POCUS, 47-68% are referred for further imaging (Tewari et al., 2015; Valenzuela et al., 2019), such as computed tomography, with consensus that approximately half with receive a confirmatory diagnosis. While challenging to compare directly to elevated blood pressure, rates of follow-up appear much greater. Given that most incidental findings (78%) are classified as not clearly benign (Tewari et al., 2015), this may place greater urgency upon the UEC professional to act, contrasting with the largely chronic finding of elevated blood pressure. UEC professionals may underestimate long-term disease burden from the perspective of the patient and the system.

Unlike referral practices for elevated blood pressure, interprofessional differences in sonographic referral were not observed. This may reflect the more autonomous nature of sonographic interpretation.

Despite seeing similar patient populations, ambulance clinicians have no national guidance on the management of incidental findings. Local guidance at the authors' trust provides procedures on referring three specific findings (elevated blood pressure, hyperglycaemia, and atrial fibrillation), most of which involves self-referral to primary care. Measuring compliance and efficacy of local procedures such as these proves challenging, as it relies on the documentation of verbal advice given during a care episode for another clinical problem. This may be one reason for the low rate of referral seen in this review, especially given that 10 of the included studies retrospectively analysed observational data. Underappreciation of the value of referring these patients onwards by clinicians on the ground may result in long-term patient harm and increased future workload in the acute care system.

Limitations

This review was completed to scope further research in the field of incidental findings in the UK. There was a limited time budget and no funding. As a result, there were a number of resource-based limitations. Only two databases were searched based on preexisting institutional access via the NHS Learning and Knowledge Service. Only English language articles were reviewed as there was no budget for translation.

Studies were not assessed for quality, but did undergo critical appraisal, due to time costs and the scoping nature of the review. One study (Tsoi et al., 2012) was not included for a calculation in Table 3 as data reported was a significant outlier, indicating quality assessment may have been beneficial.

Search terms used did not identify two studies (one of which was a pre-publication abstract at time of search) known to the team. The studies, which had partially informed conceptualisation of the review, were screened against criteria and included after the main screening process had completed. The studies were not clearly coded as incidental findings, rather focussing on a specific condition as a potential incidental finding. This may indicate why a significant number of articles were included for review through reference and citation searching, rather than through search terms. A more sophisticated search strategy, targeting commonly recognised incidental findings, may yield more specific results, but would require more time than allocated to this review.

Although some themes were identified in emergency sonography, late returning results, and atrial fibrillation, care must be taken in interpreting them given the limited number of studies included in this review.

There were no studies exploring incidental findings in UK ED or urgent treatment centres, which would likely to yield data that reflects different logistical, cultural, and economic challenges than those faced by international colleagues.

This review set out to explore the current literature surrounding incidental findings in UEC, and has therefore amalgamated findings from a range of environments, settings, patient populations, and other challenges. Generalising findings directly into UK-based ambulance practice is inadvisable as confounding factors have not been fully explored, but results do highlight there is a gap in research in this space.

Recommendations for practice and research

Elevated blood pressure is sub-optimally managed in UEC. Although only a small proportion of patients are referred for follow-up, approximately 40% of those referred are diagnosed with hypertension – suggesting significant missed opportunities for early invention. Improving referral rates could reduce long-term health impacts and ease demand on services. This may also apply to other incidental findings, such as mild hyperglycaemia, although evidence is currently limited.

Clear assignment of ownership for acting on incidental findings is essential and should be reinforced through national guidance, which is currently lacking in the UEC sector. To support busy clinicians, referral pathways should be streamlined through automated or low-effort digital systems. Organisational emphasis on the importance of follow-up could promote further action. The radiology literature, where incidental findings are better understood and managed, may offer transferable insights for UEC settings.

Most included studies were retrospective and conducted in diverse international systems, limiting applicability to UK practice. Future research should explore the prevalence and management of incidental findings in UK-based UEC settings, particularly in under-researched areas like prehospital care, where evidence currently focuses mainly on clinicians' willingness to act rather than actual practice.

Conclusion

This scoping review highlights that incidental findings in UEC settings are common and often under-managed, despite clear opportunities for early intervention. Although follow-up can lead to significant diagnoses, such as hypertension, referral rates remain low, suggesting missed chances to reduce long-term patient harm and healthcare burden. Variability in referral practices appears influenced by patient demographics, clinician role, and ambiguity around responsibility. The lack of standardised national guidance and scalable referral mechanisms further compounds this issue. Learning from more established fields like radiology and implementing low-effort, integrated referral processes may improve practice. Importantly, ambulance care remains an under-researched area, despite clinicians' willingness to act and the unique position they hold in identifying early disease. Future research should focus on developing and evaluating practical, cost-effective interventions to embed incidental finding management into routine UEC workflows and clarify referral responsibilities across professional roles.

Conflicts of Interest

CW is an associate editor of the BPJ.

Ethics and Approvals

No formal ethics approval was required for this study, as it was a review of published literature and did not involve human participants.

Funding

No funding was sought for the completion of this review.

Author Contributions

CW conceived the study. WM designed the study and undertook the searches. WM and BG screened and reviewed the studies for inclusion. WM performed data extraction, synthesis and prepared the first draft of the manuscript. All authors contributed substantially to its revisions and approved the final manuscript. WM acts as the guarantor for this article.

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