Nurses’ role in the acute management of patients with non-ST-segment elevation acute coronary syndromes: an integrative review

Stephanie Tierney,1 Gary Cook,2 Mamas Mamas,1,3 Farzin Fath-Ordoubadi,3 Heather Iles-Smith3 and Christi Deaton1,3

Abstract
Background: People with non-ST-segment acute coronary syndrome (NSTACS) need to receive appropriate evidence-based therapies to optimise outcomes. Nurses could play an integral part in ensuring appropriate care.
Aims: An integrative literature review was prepared to evaluate the role nurses undertake during the acute phase in identifying, risk stratifying and managing patients with NSTACS. It also aimed to assess what role they might play in guideline adherence for this patient group.
Methods: Papers published between January 1990 and November 2011 were considered for inclusion. They were identified through four electronic databases. Articles were evaluated and data extracted by two reviewers.
Results: From 38 papers read in full, 10 were eligible for inclusion. One reported on a randomised controlled trial, four on qualitative projects and the rest on postal questionnaires or case-note data. Reviewed literature suggested that nurses in the acute setting perform five different roles in the care of people with NSTACS: educator, comforter, risk rater, data conduit and decision maker. Little research was found that addressed nurses’ role in guideline adherence.
Conclusion: Just as nurse-led or nurse-initiated thrombolysis improved care for ST-segment elevation, there is the potential for nurses to improve acute, evidence-based treatment for patients with NSTACS, especially those at higher risk. Nurses’ roles in acute coronary syndrome (ACS) should include objective global risk assessment to guide early treatment decisions and incorporate the varied and rich activities identified in studies presented in the review.

Keywords
Acute coronary syndromes, non-ST-segment elevation myocardial infarction, nursing, professional roles

Introduction
Chest pain is a common symptom prompting people to present at an emergency department (ED), estimated to constitute 700,000 cases annually in England and Wales.1 A study conducted in the UK found that of those visiting an ED with chest pain, 11% had electrocardiogram (ECG) markers of acute coronary syndrome (ACS) and 34.5% had diagnosed ACS.2 Patients with symptoms indicative of ACS pose a challenge to practitioners. Immediate assessment of their clinical condition and ECG findings is essential.3 Those with persistent symptoms and ST-segment elevation (STEMI) on the ECG have a well-defined pathway for achieving rapid opening and reperfusion of the infarct-related artery by primary percutaneous coronary intervention (PCI) or thrombolytic therapy. Patients without ST-elevation on the ECG are more difficult. Their ECG may have no ischaemic changes or they may have persistent or transient ST-segment depression, T-wave inversion or flat or pseudo-normalised T-waves.3 These individuals should be further assessed in terms of history, physical examination and biomarkers (chiefly troponin).
Given that those defined as having non-ST-segment ACS (NSTACS) are a heterogeneous group, early identification of a need to initiate evidence-based therapies is warranted. Research has shown that clinical assessment of risk is often suboptimal and lacks concordance with established objective risk scores. Hence, people diagnosed with NSTACS should be stratified according to risk of adverse events using established scoring systems, such as the Global Registry of Acute Coronary Events (GRACE) or Thrombolysis in Myocardial Infarction (TIMI). Risk stratification directs treatment decisions and helps clinicians determine whether patients require urgent or early invasive therapy in the form of cardiac catheterisation and PCI or whether they should be managed medically. Clinical guidelines recommend invasive therapy within 24 hours for those who are unstable or classified as high risk, and within 72–96 hours for individuals at intermediate risk by clinical features and risk score. However, in those with NSTACS it is unclear how closely the guidelines developed to establish equitable care are followed in practice. Unpublished observations have suggested that over one-third of patients potentially eligible for early invasive intervention were not referred for coronary angiography and that this had a deleterious effect on morbidity and mortality. Early invasive treatment rates in NSTACS can vary across regions by 30% despite comparable resources for revascularisation and can have an inverse relationship with patient risk.

To improve time to treatment for people with STEMI, thrombolysis nurses in the UK were employed to identify those who would benefit from reperfusion therapy and to guide subsequent initial management. As primary PCI has replaced thrombolysis as the treatment of choice for STEMI, the nurse’s role has evolved to one focused on individuals presenting with chest pain or potential ACS in some centres. They may be engaged in assessing ACS patients, especially regarding identification and risk stratification of those eligible for early invasive therapy. However, a summary of what the current literature shows on the subject has not been published previously, as far as the authors are aware.

**Aims**

The aim of this review was to evaluate nurses’ roles in the acute management of patients with NSTACS and to determine the effectiveness of nurses in ensuring that appropriate therapy is provided within the ED. We were particularly interested in nurses’ role in risk stratification and ensuring that intermediate- to high-risk patients were appropriately referred for urgent angiography. It was anticipated this work would also identify areas for further development and gaps in the current knowledge base. Specific questions we aimed to address were:

- What role do nurses play in the acute identification, risk stratification and management of people with NSTACS?
- What role do nurses play in ensuring that early treatment adheres to guidelines for people with NSTACS?

**Methods**

An integrative review was conducted to address the topics listed above, which allows for the synthesis of findings from a range of methodologies and a comprehensive portrayal of complex concepts or healthcare problems. When conducting the review, the following procedures were employed, which are similar to those used for a traditional systematic review.

**Inclusion criteria**

Papers were accepted if they reported on research related to patients with NSTACS, referred to the role of nurses in management or guideline adherence and were published in English between January 1990 and November 2011. The time frame was chosen to reflect contemporary management of NSTACS patients, as clinical trials comparing early invasive and non-invasive treatment date from the 1990s.

**Exclusion criteria**

Non-research articles were not considered (e.g. editorials or those describing a setting). Likewise, papers centred on STEMI patients were excluded, as were those focused on rehabilitation or moderating cardiovascular risk factors. In addition, studies based in outpatient units were not included, since the review was interested in the acute phase. Conference abstracts were excluded because they provide limited information about an investigation and its execution.

**Search strategy**

To identify relevant papers, databases searched included BNI, CINAHL, EMBASE and Medline. A broad set of terms was used to ensure the search was as comprehensive as possible, including: acute coronary syndrome, unstable angina, non-ST elevation myocardial infarction, non-STEMI, NSTEMI, nurse, nursing. References from papers retrieved in full for reading were examined for additional studies. Results from the search are presented in Figure 1.

**Initial filtering**

Two authors (ST and CD) met to sift titles and abstracts located via the databases for their potential relevancy. References appearing eligible or lacking sufficient information to make this decision were retrieved in full for reading.

**Selection from reading full texts**

Following the initial filtering of abstracts, two authors (ST and CD) read retrieved papers independently to decide whether or not to include them in the review. Agreement at this point was good (kappa=0.733). Any disagreements were discussed and resolved between ST and CD.
Data extraction, management and synthesis

A proforma was developed for the project. After being piloted on two papers, the first author used it to extract data from each accepted article. This information was then checked and added to by another reviewer (CD). Extracted data from included papers were put into tables. Due to the diverse nature of included studies, a descriptive, thematic synthesis was conducted.11

Results

As shown in Figure 1, 38 papers were read in full, 10 of which were accepted for inclusion. Only one was a randomised controlled trial (RCT).13 Other investigations used postal questionnaires to collect data or took a case-note approach. In addition, four qualitative projects were located that employed focus group, interview or observational methods (see Table 1). Participants were healthcare professionals (including nurses) and patients. Most papers (n = 7) reported on studies conducted in the UK. Additional background information on included research can be found in Table 1 and results from these papers are summarised in Table 2.

**What role do nurses play in the acute management of people with NSTACS?**

The prevalence of specialist or advanced practice nurses with roles in the acute management of patients with NSTACS is unknown. In a survey of EDs in the UK in 2006, 192 (76%) of 253 responded.14 Specialist, chest pain or thrombolysis nurses were employed in 18 of 25 EDs (72%) with chest pain units (CPU) and in 79 of 164 hospitals (48%). Considering all results, studies included in the review suggested nurses undertook five broad roles when managing people with NSTACS:

**Educator** The teaching role of ACS nurses was rated highly by healthcare professionals completing the survey distributed by Dunckley and colleagues (2006).15 In hospitals without a CPU, nurses may be more likely to engage in this activity compared to peers in an organisation with one.14

From the patient perspective, specialist nurses were valued because they spent time explaining what was happening.16,17 Greater satisfaction was associated with these practitioners18 than doctors, the latter being criticised for providing conflicting16 or confusing19 information. In general, the timing of patient instruction needs to be considered, given that individuals did not necessarily retain what they were told when being assessed and treated for suspected ACS.19

**Comforter** In a qualitative investigation by Nakano et al.,19 people recently diagnosed with ACS welcomed practitioners they felt were compassionate. But they also wanted them to be technically skilled and in the early stage of admission to a cardiac unit this seemed more important than interaction style. Another finding from Nakano and colleagues19 was that attempts by nurses to manage pain were not necessarily perceived as effective by patients. These authors also reported that although nurses might think the amount of technology they used could engender fear among those with suspected ACS, patients found such equipment reassuring.

**Risk rater** Two papers referred to the use of risk-stratification scoring systems by nurses. In the paper by Hamilton et al.,20 TIMI scores were reported, with a significant difference found between those who were admitted (mean 1.75, SD 1.19) and those who were not (mean 0.8, SD 1.01). Risk stratification, using results from GRACE, was likewise employed effectively in the work by McLean et al.21 Findings from these studies highlight that such instruments can be used by nurses to distinguish individuals classified as high and low risk, speeding up patients’ transfer within the hospital system in a safe manner.
Table 1. Background details of reviewed papers

<table>
<thead>
<tr>
<th>Study and location</th>
<th>Year of publication</th>
<th>Aim</th>
<th>Design</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross et al.14 UK</td>
<td>2007</td>
<td>To evaluate management of acute undifferentiated chest pain in UK EDs in 2006 and to see whether this had changed since an earlier survey in 2001 (data were also compared between hospitals with a CPU and those without)</td>
<td>All UK EDs were invited to take part – a postal questionnaire was sent to a lead clinician or first-named consultant</td>
<td>Responses from 76% of EDs (n=192), of which 25 (13%) had a CPU and 167 (87%) did not</td>
</tr>
<tr>
<td>Dunckley et al.15 UK</td>
<td>2006</td>
<td>To evaluate the British Heart Foundation’s pilot project to place an ‘ACS nurse’ in hospitals – in particular to explore the perceptions of related health professionals to the role of these nurses</td>
<td>Postal questionnaire – random sample of 100 staff in pilot hospitals involved (n=5)</td>
<td>Responses from 36 physicians and 127 nurses = 33% response rate</td>
</tr>
<tr>
<td>Dunckley et al.16 UK</td>
<td>2007</td>
<td>To explore ACS patients’ views of ACS nurses’ role</td>
<td>Focus group in one hospital was recorded and transcribed verbatim – data were analysed using constant comparison principles</td>
<td>10 patients taking part in a one-off focus group</td>
</tr>
<tr>
<td>Hamilton et al.20 UK</td>
<td>2008</td>
<td>To verify the efficacy and safety of risk stratification of patients with ischaemic type chest pain assessed in an ED by a chest pain nurse using a point-of-care protocol</td>
<td>Patient medical records were reviewed</td>
<td>Records of all patients with ischaemic type chest pain seen by the chest pain nurse between February 2004 and October 2005 (n=546)</td>
</tr>
<tr>
<td>Johnson et al.18 UK</td>
<td>2009</td>
<td>To explore patients’ experiences of care received for chest pain in CPU and routine ED</td>
<td>Qualitative interviews were recorded and transcribed verbatim and analysed using a framework approach</td>
<td>Patients were recruited from seven sites (n=26)</td>
</tr>
<tr>
<td>Kucia et al.13 Australia</td>
<td>2001</td>
<td>To determine the effect of a coronary care-trained nurse on transfer times of patients presenting with ACS from ED to the CCU for definitive cardiac treatment</td>
<td>RCT</td>
<td>893 patients assessed as having possible ACS during the study period – 205 were assessed by the coronary-care trained nurse, 688 were not</td>
</tr>
<tr>
<td>McLean et al.21 UK</td>
<td>2010</td>
<td>To determine if systematic application of the GRACE risk score by cardiology nurse specialists predicts long-term outcome among patients with chest pain in an ED</td>
<td>Retrospective case-note study</td>
<td>A random sample of 504 of the first 7000 patients assessed by the chest pain nurses between September 2005 and April 2008</td>
</tr>
<tr>
<td>Mehta et al.22 USA</td>
<td>2006</td>
<td>To explore the impact of ED structure and care processes on adherence to guidelines in treating those with non-STEMI ACS</td>
<td>Questionnaire administered to ED nurses and doctors in hospitals that were part of a Quality Improvement Initiative – it was distributed by email and followed up with a mailed reminder</td>
<td>One nurse and one doctor from each site were requested to complete the questionnaire – responses came from 316 out of 443 hospitals, from 185 doctors and 266 nurse coordinators</td>
</tr>
</tbody>
</table>

(Continued)
Table 1. (Continued)

<table>
<thead>
<tr>
<th>Study and location</th>
<th>Year of publication</th>
<th>Aim</th>
<th>Design</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nakano et al.19</td>
<td>2008</td>
<td>To explore patients’ perceptions of being admitted to a cardiac care unit with ACS and to compare their responses to those made by nurses in an earlier study</td>
<td>Qualitative descriptive study – semi-structured interviews were recorded and transcribed verbatim</td>
<td>30 patients diagnosed with ACS were interviewed within one month of being discharged</td>
</tr>
<tr>
<td>Smallwood17</td>
<td>2009</td>
<td>To describe and explore the roles of cardiac assessment team members (composed of nurses) as they provide care for ACS patients across a range of settings</td>
<td>Ethnographic study (interviews, observation and field notes)</td>
<td>A single study site – seven members of the cardiac assessment team acted as informants and five observation periods were carried out over 2 weeks</td>
</tr>
</tbody>
</table>

ACS, Acute Coronary Syndrome; CCU, Coronary Care Unit; CPU, Chest Pain Unit; ED, Emergency Department; RCT, Randomised Controlled Trial.

Data conduit As well as assessing patients for risk, nurses passed clinical details from one group of practitioners (e.g. in the ED) to another (e.g. cardiologists).17 However, their role as an information channel needs to be supported by peers. The study by Smallwood17 showed this was not always the case. Nurses who were interviewed described being frustrated when working with colleagues in the ED because of a lack of flexibility, which could mean they carried out assessments in a covert manner. These nurses concluded that a negative response within the ED was due to physicians’ concerns about the de-skilling of their profession, a finding supported by responses to the survey conducted by Dunckley et al.15 (see Table 2). Conversely, other departments in the work by Smallwood17 were said to facilitate the role of nurses, seeing them as helping to improve the service and not as a threat. That said, interviewees lamented the fact that their efforts were not always acknowledged within the cardiac centre, as the following quotation implies: ‘A lot of our work is invisible to them [the Heart and Lung Centre staff] because...unless we take a patient over...or accept a patient for transfer to go into the Cath Lab...I don’t think what else we do people are aware of...’.17

Decision maker A study to explore the effectiveness of having a specialist nurse within an ED to assess those with chest pain showed promising results.20 By collecting data and ECG results, this practitioner was able to prevent 195 out of 546 individuals being admitted, none of whom went on to have myocardial infarction (MI) within the 6-month follow-up period. The presence of this practitioner fostered the swift movement of patients through the ED, with median time between arrival and assessment being 6 minutes.

However, despite the above finding, the role of nurses in shaping the patient’s journey was limited. For example, discharge tended to be directed by doctors.18 In the RCT by Kucia et al.,13 a non-significant trend transpired for an increase in speed of referral to a coronary care unit (CCU) of patients with suspected ACS by having a coronary care trained nurse (CCTN) in an ED. But decisions had to be verified by doctors. As authors of this paper noted: ‘Concern was expressed that direct CCTN triage of patients with potential ACS to the CCU could result in inappropriate admissions to the CCU. Patients with potential ACS were generally seen immediately by the ER medical officer, but then had to await review in the ER by the cardiac medical officer on duty. This engendered considerable delay in some cases, particularly if the cardiac medical officer was occupied with the emergency care of another patient’.13

The above paragraph reflects an obstacle detected in Dunckley et al.’s15 survey, which indicated that nurses’ initiation of treatment could cause anxiety among healthcare professionals because of accountability and governance issues. Work by Cross and colleagues14 suggested a difference in degree of decision-making may occur depending on whether a hospital had a CPU, in which case specialist nurses were more likely to assess patients and to assist with ECG interpretation. Likewise, playing a role in interpreting ECGs and in collaborative decision-making relating to a person’s need for immediate cardiac care was one of the tasks undertaken by nurses in Smallwood’s17 investigation.

What role do nurses play in guideline adherence for people with NSTACS in the ED?

Literature exploring the role of nurses in guideline adherence for people with NSTACS was lacking. The study by Mehta et al.22 reported guidelines were likely to be followed if structures were in place (e.g. adequate nursing) that allowed staff sufficient time to evaluate patients but this investigation did not find that clinical observation units resulted in better guideline adoption. Smallwood17 wrote that nurses in a cardiac assessment team helped ensure that care (including medication) was in line with evidence-based guidelines by undertaking coronary care outreach to patients not admitted to a specialist cardiac unit. Yet, as noted above, their endeavours to improve patient care could be frustrated by the lack of recognition or acceptance of their work by colleagues in other departments and from different disciplines.
Table 2. Key findings from the reviewed papers

<table>
<thead>
<tr>
<th>Study</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross et al.¹⁴</td>
<td>Over time there had been an increase in specialist nurses from 25% in 2001 to 51% in 2006. Specialist nurses in hospitals with a CPU were more likely to assist with ECG interpretation and to assess patients with chest pain, while those in a hospital without a CPU were more likely to engage in educating colleagues. Use of departmental guidelines for managing chest pain increased from 42% of respondents in 2001 to 72% in 2006.</td>
</tr>
<tr>
<td>Dunckley et al.¹⁵</td>
<td>Cardiac staff were less likely to see specialist nurses’ role as educating colleagues compared to practitioners in other departments; cardiac staff saw their main role as patient assessment and direct care. However, across professions (nurses and medics) and departments, the teaching role of ACS nurses scored highly in terms of appropriateness. Twice as many A&amp;E staff stated ACS nurses should be allowed to start thrombolysis treatment before a patient was assessed by a doctor compared to those in general medicine, with nurses more likely to report that this was appropriate compared to doctors. More physicians (21%) compared to nurses (6%) felt that ACS nurses had de-skilled other professionals but respondents suggested that these practitioners had improved patient care.</td>
</tr>
<tr>
<td>Dunckley et al.¹⁶</td>
<td>Dissatisfaction was expressed with conflicting information received from medics, which made patient interviewees believe the doctor was not competent to take treatment decisions. They felt nurses played a role in protecting them from less competent staff. There was an expectation that nurses had more time to explain things compared to doctors and that they would be friendlier. There was an acceptance by patients of nurses having an extended role.</td>
</tr>
<tr>
<td>Hamilton et al.²⁰</td>
<td>546 patients were assessed by the chest pain nurse at the ED and 351 were admitted. No MIs occurred among those not admitted; three had unstable angina but there were no deaths. Time from arrival to assessment was an average of 6 minutes. Point-of-care biomarkers showed a high concordance with laboratory values.</td>
</tr>
<tr>
<td>Johnson et al.¹⁸</td>
<td>Individuals with chest pain valued the time and attention received from specialist nurses. It was clear that patients did not necessarily take note of the job title of professionals treating them. On reflection, some interviewees felt they would have benefited from more information (e.g. what blood tests were for and understanding results); satisfaction with information appeared to be related to the presence of a specialist nurse. Some participants expected more input from doctors, which the authors related to their lack of knowledge of the specialist nurse role. Discharge tended to be doctor led.</td>
</tr>
<tr>
<td>Kucia et al.¹³</td>
<td>30 patients were seen by the senior nurse and they waited a mean of 102 minutes (CI 70, 134) for CCU transfer; 61 patients not seen by the senior nurse waited a mean of 117 minutes (CI 95, 139) for CCU transfer. This represented a non-significant difference (but it may have been underpowered). The senior nurse was not given a key role in decision-making about sending patients home from the ED.</td>
</tr>
<tr>
<td>McLean et al.²¹</td>
<td>From nurses’ assessment using GRACE scores, 181 patients were classed as low risk, 166 as moderate risk and 157 as high risk. Analysis suggested a significant difference in survival between patients based on GRACE score ($p &lt; 0.0001$), with a significantly longer hospital stay also associated with higher risk score ($p &lt; 0.0001$).</td>
</tr>
<tr>
<td>Mehta et al.²²</td>
<td>Adequate nursing support was related to guideline adherence but there was no evidence to suggest that clinical observation units (e.g. chest pain units) resulted in better guideline adoption.</td>
</tr>
<tr>
<td>Nakano et al.¹⁹</td>
<td>The researchers identified five themes: efficiency, professionalism, pain management, compassionate nursing and information. Patients welcomed nurses who they felt were professional and technically skilled, while also being caring and observant, although in the early stages of an admission competency overrode the need for compassion. The busy environment of the unit was welcomed as a sign of readiness to provide treatment. Pain management appeared a particular problem. Information provided during this early stage of admission was not recalled. Episodes were described when a practitioner had neglected to keep the patient fully abreast; the authors wrote that one interviewee had been told to lie still but he was not told this was only whilst the ECG was being performed. Consequently, he kept still for a prolonged period, causing his body to ache. Some individuals recounted being confused by what they were told by doctors. The authors noted that patients felt reassured by technological devices, whereas nurses thought they may perceive such equipment as alienating and fear arousing. Patients found it hard to distinguish between different professional roles.</td>
</tr>
</tbody>
</table>

(Continued)
Discussion

Reviewed papers provide an insight into the responsibilities of specialist nurses in managing NSTACS cases, but little was found about their role in decision-making in terms of referral for invasive cardiac catheterisation or non-invasive medical management. Nurses were generally seen positively by people with NSTACS in reviewed studies. Patients cited provision of information, compassion and protection from less experienced providers as important tasks undertaken by nurses and accepted an extended role for this professional discipline. Yet some papers suggested that patients did not distinguish between different practitioners’ titles. In the acute phase they required competent, efficient staff, who they could entrust their body to; they looked for skilled professionals, regardless of job title.

Specialist nurses’ activities seemed to be concentrated on assessment, triage, coordination of care and education. Smallwood identified involvement in immediate treatment decisions as part of the gatekeeper role and nurses helped to facilitate decisions to refer to CCUs and discharge from the ED. Nurses’ role in decision-making appeared to be greater in hospitals with CPUs. The activities of ACS nurses seem somewhat different from the previous role of these practitioners in nurse-led or nurse-initiated thrombolysis services. Although the evidence base is small, nurse-led or initiated thrombolysis has been shown to be safe, accurate and to improve care. The greater patient heterogeneity and diagnostic uncertainty associated with NSTACS may contribute to less of a decision-making role for ACS nurses in the ED.

Guidelines have been developed to standardise care of people presenting to ED with NSTACS. However, as noted above, evidence suggests they are not necessarily followed well in practice. An investigation of 3562 patients with NSTACS in Australia and New Zealand demonstrated a greater invasive referral rate for low-risk patients (67%) than those labelled intermediate (64%) and high risk (35%, \( p < 0.001 \)) stratified by GRACE score; although referral rates increased from 1999 to 2007, there was little temporal improvement in the pattern of referral by risk category. An analysis of 2136 patients in the Canadian ACS Registry II 2002–2003 found similar rates of referral for low- and high-risk patients by initial TIMI score, but stratification using GRACE showed that low-risk patients were more likely to be referred for cardiac catheterisation than those identified as intermediate and high risk (74% vs 70% vs 55%, \( p < 0.001 \)). A significant decrease in 1-year mortality was reported for higher risk patients by TIMI and GRACE scores who underwent in-hospital cardiac catheterisation compared to those who did not (6% vs 14%, \( p < 0.001 \)).

Low rates of referral to cardiac catheterisation for high-risk patients have been found to be related to physicians’ assessment of risk. In the Canadian study above, 68% of the patients not referred were assessed as not at high enough risk to warrant intervention. However, 59% of these were at intermediate or high risk by calculated TIMI score and 70% by GRACE score. Patients not referred were older, more

Table 2. (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallwood</td>
<td>Four main roles for nurses in the assessment team were identified during analysis: Gatekeeper – they were involved in decisions on whether a patient needed immediate cardiac care or further investigations, in collaboration with colleagues. These nurses were reported to have advanced ECG interpretation skills. Specialist consultancy practice – they ensured care and medication received by patients was in line with evidence-based guidelines. They also provided information to patients about what would happen to them in hospital. Patient Group Directives allowed team members to supply and administer analgesic, anti-ischaemic and anti-platelet drugs without getting a prescription from a doctor. Catalyst – they relayed information between departments to ensure continuity of care. This could mean transporting clinical information to the cardiac centre and returning to the MAU or A&amp;E to action what was decided. Diplomat – they represented cardiac services within the hospital but could feel their role within the wider organisation was unknown. They experienced a different response depending on the department. Working with A&amp;E was frustrating because of a lack of flexibility there compared to MAU. The response from A&amp;E was thought to be due to concerns among physicians of de-skilling of their profession and differing philosophies within this part of the hospital. Team members felt they could be of real assistance if allowed to practise in A&amp;E as they did in MAU.</td>
</tr>
</tbody>
</table>

A&E, Accident and Emergency; ACS, Acute Coronary Syndrome; CCU, Cardiac Care Unit; CPU, Chest Pain Unit; ECG, electrocardiography; ED, Emergency Department; MAU, Medical Assessment Unit; MI, myocardial infarction.
likely to be female, have heart failure, stroke and worse Killip class, and less likely to have ST-segment depression and positive cardiac marker status. The authors speculated that physicians focused on ST-segment changes and troponin scores when calculating risk rather than using a global risk assessment that included factors such as increasing age. In the CRUSADE Quality Improvement Initiative, analysis of 17,926 individuals with NSTACS found that those referred for invasive therapy were younger, more likely to be white, male, under the care of a cardiologist and less likely to have heart failure and renal insufficiency. Guidelines specifically address patient characteristics such as increasing age, gender and co-morbid conditions such as diabetes and decreasing renal function and reiterate that these are not contraindications to early cardiac catheterisation. Recommendations for early invasive intervention in high-risk patients do call for consideration of co-morbid conditions when making decisions. Yet co-morbid conditions that may be contraindications to invasive therapy are not specifically defined except in the AHA/ACC guidelines, in which extensive co-morbidity is defined as liver or pulmonary failure or cancer where risks may outweigh benefits.

Given that an estimated 6% of ED visits and up to 40% of emergency admissions are for chest pain, swift and appropriate care is required to ensure that cases of ACS are treated so as to optimise outcomes. Nurses could play a greater role in this respect, easing demands on a service arising from the volume of such patients. Specialist nurses may also be more knowledgeable of this area than a doctor practising in an ED. Research has noted that objective global risk scores may be used in less than a third of EDs. Consistent with the findings of studies presented in this review, ACS nurses can use risk scores for accurate assessment to ensure patients are managed according to evidence-based guidelines. In addition to playing a more central role in stratifying patients based on risk, other vital activities identified in the review included educator and advocate. A further extension to the role of nurses could include decisions around discharge and facilitating transfer of appropriate patients to CCUs, as well as Patient Group Directions, a group protocol that allows a nurse to administer agreed prescription-only medications to specified patients based on this practitioner’s assessment of need. Nurses may be well placed to act as a catalyst to improve coordination of care between services. But this requires other practitioners to accept specialist nurses’ judgments and abilities and to see them as facilitating patient care, rather than regarding them as a threat to their professional identity.

Limitations

The studies reviewed had limitations. Qualitative papers, in general, lacked information about who carried out the analysis and how this was performed. In the paper by Nakano et al., a positive bias may have occurred because interviews appeared to have been conducted by a nurse who was part of the treatment team. Survey-based studies tended to focus on descriptive statistics only, while case-note projects did not make clear who extracted data and whether this was double-checked for errors. On the whole, quantitative projects did not justify sample size, including the RCT by Kucia et al., which failed to explain how randomisation of hours worked by the specialist nurse was performed.

Conclusions

An inadequate evidence base remains for the role of ACS nurses in EDs, especially in regard to often difficult diagnostic and treatment decision-making for patients with NSTACS. However, just as nurse-led or nurse-initiated thrombolysis improved treatment for STEMI, there is the potential for these healthcare professionals to improve evidence-based treatment for patients with NSTACS, especially those at higher risk. Nurses’ roles in ACS should include objective global risk assessment to guide early treatment decisions and incorporate the varied and rich activities identified in studies presented in the review.

Conflict of interest

The authors declare that there is no conflict of interest.

Funding

The authors acknowledge funding from the Greater Manchester CLAHRC and support from the Manchester Academic Health Sciences Centre and Central Manchester Biomedical Research Centre.

References


