



Non-medical Prescribing in the Acute Setting: A Case Report

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Citation: Worth JR. Non-medical Prescribing in the Acute Setting: A Case Report (2018) Nursing and Health Care 3: 42-44

Received: Aug 08, 2018

Accepted: Aug 18, 2018

Published: Aug 24, 2018

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Abstract

Within NHS Lothian an advanced nurse practitioner is required to have completed Masters level education in patient history taking, clinical examination and non-medical prescribing (NMP) before they can prescribe independently. A definition for advanced nursing practice is followed by an overview of the roles and responsibilities of the Hospital at Night Team (HAN) at the Royal Infirmary of Edinburgh. A case study based on a commonly encountered request for patient review illustrates the application of NMP in advanced nursing practice and provides the clinical context for the discussion that follows. The focus of the discussion is the complexities of prescribing for an elderly patient including immunosenescence, polypharmacy and adverse drug reactions. Standards for education and continuing professional development (CPD) are required to support the safe practice of NMP. This is especially relevant to HAN non-medical prescribers due to the wide range of medications they prescribe. For the purposes of confidentiality all identifying patient details have been removed.

Keywords: Advanced nursing practice, Non-medical prescribing, Elderly, Sepsis

Introduction

Within NHS Lothian, all nurse practitioners who wish to prescribe must first complete two Masters level modules in patient history taking and clinical examination. Only then may they progress to the third and final module on NMP and be classed as advanced nurse practitioners [1]. This is not true of all health boards but, in terms of professional accountability and liability, if you are to prescribe safely and appropriately, it is logical that you must first be able to establish a working diagnosis.

The Royal College of Nursing [2] defines advanced nurse practitioners as:

“... Educated at Masters Level in clinical practice and have been assessed as competent in practice using their expert clinical knowledge and skills. They have the freedom and authority to act, making autonomous decisions in the assessment, diagnosis and treatment of patients.”

The complexity of NMP is reflected by the Nursing and Midwifery Council’s Standards for NMP [3] which are summarized in **Table 1**.

Hospital at Night

Within NHS Lothian the HAN team consists of senior and advanced nurse practitioners (ANPs), medical registrars, clinical development fellows, foundation year one and two doctors and, more recently, clinical support workers. Working in the acute hospital setting, HAN is a medical emergency team whose primary remit is to provide out of hours care via planned reviews of unstable patients and by responding

to referrals for the review of newly deteriorating patients. The team is also responsible for clerking new admissions across various specialities. As the service runs on a system of telephone triage, a key role within HAN is that of the coordinator who is responsible for the allocation of patient reviews to the appropriate team member within a timeframe that reflects the acuity of the situation.

Consultation, decision making and therapy
Influences of the psychology of prescribing
Prescribing in a team context
Clinical pharmacology, including the effects of co-morbidities
Evidence-based practice and clinical governance in relation to nurse prescribing
Legal policy and ethical aspects
Professional accountability and responsibility
Prescribing in the public health context.
Adapted from NMC (2015)

Table 1: Nursing and Midwifery Standards for non-medical prescribing.

One non-medically prescribing ANP per night is responsible for providing a remote service to three community hospitals and one rehabilitation hospital in and around Edinburgh. This remote service ranges from telephone advice and the generation of remote prescriptions to travel to these hospitals to assess and treat deteriorating patients either on site or by moving them to an acute site.



Case Study

Presentation

A referral was made to the HAN team requesting review of a patient with chest pain and a national Early Warning Score (NEWS) of 14. NEWS is an evidence-based score reflecting the level of acuity of a patient's condition and is an essential requirement for the speedy triage of an acutely unwell patient [4]. The history given by the nurse included the information that the patient was on oral antibiotics for a chest infection but also had a cardiac history. The nurse had administered Glycerol Trinitrate (GTN) spray. When the patient's pain did not settle she administered a second dose, rechecked his vital signs and noted he was now pyrexial and acutely short of breath. She commenced the patient on oxygen (O₂) therapy, recorded a 12 lead electrocardiograph (ECG) and sent bloods for serum biochemistry and hematology.

Examination and Investigation

The patient was hot, flushed, diaphoretic and tachypnoeic with an increased work of breathing and use of the accessory muscles of respiration. He looked frightened and was only able to reply with one word answers. The pain was in the left side of his chest and worse on inspiration. It had been present earlier in the day but had been mild so he did not inform nursing staff until it recurred, waking him from sleep.

On physical examination the patient had a rapid irregular heart rate, no added heart sounds, a capillary refill time of 4 seconds with cool peripheries, no peripheral oedema and his calves were soft and non-tender. Chest auscultation showed decreased breath sounds at his left base with coarse crepitations to the left mid-zone, a few fine crepitations in the right base and scattered wheeze throughout. Deep breathing caused him to cough and to experience pain in his chest. On percussion, his lungs sounded dull at the left base and his lung expansion was equal. Due to his level of dyspnoea it was not possible to lie him flat to perform a full abdominal examination but he had no obvious signs of an acute abdomen on palpation or auscultation. His fluid balance was not recorded. He was not diabetic but a random capillary blood glucose check was slightly high at 11.2 mmols. His vital signs showed a temperature of 38.8 degrees Celsius, a heart rate of 143, blood pressure of 92/46, respiratory rate of 32 and oxygen saturations of 68% on 4 liters of oxygen.

A twelve lead ECG showed sinus tachycardia with atrial ectopic and T wave inversion in the infero-lateral leads. In this context, these changes can indicate a non-ST elevation myocardial infarction (NSTEMI) [5] secondary to organ dysfunction [6]. An arterial blood gas (ABG) was taken on high flow oxygen. Inflammatory markers, a lactate, coagulation screen, troponin and blood cultures were sent to the laboratories. An urgent portable chest x-ray was ordered.

Results

His CXR showed consolidation suggestive of a left sided pneumonia. His blood results showed raised inflammatory markers and a high lactate, an acute-on-chronic kidney injury with a safe potassium level and a positive troponin result. His arterial blood gas showed type 2 respiratory failure so his high flow oxygen was titrated down, aiming for target oxygen saturations 88-92%. His normal oxygen saturations trended at 87-89%.

Working Diagnoses

Sepsis secondary to pneumonia

Positive troponin: potential causes - sepsis, acute kidney injury or Type 2 MI secondary to sepsis.

Initial Management

Following a review of his drug kardex for allergies, current medication and potential interactions, prescriptions were written for intravenous morphine, an anti-emetic, high flow oxygen and a salbutamol nebulizer as well as an initial fluid bolus of 250 milliliters of plasmalyte. His oral antibiotics were escalated to intravenous for a community-acquired pneumonia as per local guidelines. Due to the acuity of the situation, an explanation of the plan was given to the patient but not discussed in any detail.

How does NMP contribute to patient care?

Education and experience as an ANP provides the necessary knowledge and skill to assess a patient and generate a working diagnosis. Further education and registration as a non-medical prescriber contributes to timely initiation of treatment, meeting sepsis standards of initiating treatment within an hour of diagnosis [7]. If an ANP could not prescribe independently, a doctor would have to review the patient a second time before prescribing the appropriate antibiotics, resulting in a delay to treatment. Given the high morbidity and mortality of sepsis, delay can lead to a poorer outcome. Evidence underpinning current sepsis management guidelines clearly demonstrates the need for early recognition and treatment of patients presenting with sepsis [8].

Factors to be considered when prescribing for an elderly patient

Due to the presence of pre-morbid and co-morbid factors, the elderly are predisposed to sepsis, often presenting atypically [9] with a compromised immune response leading to an increased risk of developing systemic infections and an impaired vascular response [10]. Immunosenescence is the term used to describe immune compromise secondary to aging. Defined as a combination of oxidative stress, altered apoptosis and cytokine mediated inflammatory response and with a profound effect upon survival [11] it can be seen that senescence adds a further layer of complexity to the issue of sepsis in the elderly. In terms of deciding whether to treat a pneumonia as hospital or community-acquired, the length of stay of the patient is relevant (in this case two days) as the causative organisms are different and therefore require different antibiotics [12]. Antimicrobial stewardship is a major and very current factor in terms of trying to avoid antimicrobial resistance [13]. In this instance, the clinical status of the patient dictated the prescription of antimicrobials. The presence of multiple co-morbidities and polypharmacy mean the risk of adverse drug reactions (ADRs) are two to three times more likely in the elderly [14] and the benefit versus risk of treatment should be considered before any prescription is written [15].

As a non-medical prescriber it is your responsibility to ascertain and guide a patient's expectations about their treatment by forming a partnership with them that takes into account their beliefs about health and medication [16]. Involving the patient in the planning of their care is the guiding principle without which all other aspects of the prescribing process become less effective [17]. These patient centered discussions should also include longer term management considerations such as the wishes of the patient and their family should further deterioration occur [18]. However, as this case study shows, there are situations where clinical need takes precedence and discussions have to wait until the situation has stabilized.

Safety of NMP

At this point it is worth emphasizing the individual nature of each HAN ANP's prescribing formulary. Starting with a core formulary developed during the NMP Master's module, this formulary is expanded post registration as a non-medical prescriber to include NHS Lothian's Drug Formulary. Consequently, ANPs within HAN work with a broad formulary comprising multiple types of medication across



many adult specialties rather than the limited formularies used by specialist ANPs who may only be able to prescribe a set group of drugs within their area of expertise.

The following list of drugs prescribed over the course of one HAN night shift illustrates the diversity of our prescribing practice:

Anti-epileptic
Opiates
Antibiotics
Insulin
Saline nebulizer
Decision not to prescribe
Anti-arrhythmic drug
Resuscitation fluids
Laxatives

As can be seen, this is representative of a wide range of drugs. It is not wise to rely on memory alone when prescribing and decision support tools such as formularies and guidelines are an invaluable resource [19, 20]. There is a large element of self-regulation in practice concomitant with the autonomy of an ANP therefore clinical supervision by a designated medical prescriber is an essential component of CPD. The description of the role of the designated medical practitioner [21] during the learning period could be extrapolated to include the ongoing CPD needs of non-medical prescribers as they apply theory to practice and develop their skills in non-medical prescribing. Supported by codes of conduct [22], ANPs have access to many different pieces of legislation, professional guidelines and benchmarking standards all of which are currently applicable to their own health board but are not necessarily transferable to other boards. This situation is beginning to change in Scotland with the development of national definitions of advanced practice and educational standards of competence [23].

As the legislative barriers to nurses prescribing independently have been removed [24], NMP has become an asset that can be utilized by ANPs working across a broadening spectrum of specialties and healthcare institutions. An evaluation of the safety of NMP found that it compared favorably with medical prescribing with an improved patient experience, antimicrobial stewardship and safe prescribing practice [25]. Prescribing is a complex skill affected by many factors and further research is required on the impact of NMP and rate of prescribing errors [26]. A systematic review [27] found that the level of experience of a non-medical prescriber had a direct effect on confidence to prescribe both in the learning phase and on implementation of NMP in their role.

Conclusion

NMP in the acute setting has become an integral part of the care given by ANPs. By providing fast and effective treatment to deteriorating patients it is both safe and well received by patients. A robust and structured system of guidelines and standards of practice supports the autonomy of the role and clinical supervision by a designated medical practitioner provides ongoing support and guidance.

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