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Non-Medical Prescribing in Prostate Cancer Care: A Case Study Reflection

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Introduction

Following the publication of the Crown report in 1999 (Department of Health, 1999) several legislative changes have taken place to implement the Government's policy (Department of Health, 2002, Department of Health, 2006, Department of Health, 2007, The Scottish Government, 2006) of extending prescribing responsibilities to non-medical professionals. Nurses can now prescribe in many countries including the United Kingdom (UK) , Australia, Ireland, Canada, Finland, New Zealand, Norway, South Africa, Sweden, the Netherlands, and the United States of America (Aarts and Koppel, 2009, Ball, 2009). There are over 54,000 nurse and midwife prescribers across the UK, with 19,000 nurse independent and supplementary prescribers (Royal College of Nursing, 2014).

The expected benefits of non-medical prescribing include the following, improved access to treatment and advice, more effective use of the skills and expertise of groups of nursing and allied healthcare professionals, with the overall drive of creating a flexible and dynamic workforce across the National Health Service (NHS) (Van Ruth et al., 2008). Inevitably, prescribing practice differs across international countries, but there are common aspects to prescribing practice that include supplementary and independent prescribing. Supplementary prescribing has been described as a voluntary partnership between an independent prescriber (such as a doctor) and a supplementary prescriber (other allied healthcare professionals) to implement an agreed patient-specific clinical management plan with the patient's consent (Watterson et al., 2009). Whereas, independent prescribing is defined as a healthcare professional who is responsible and accountable for the assessment of patients with undiagnosed conditions and for the evidence-based decisions about the clinical management and prescribing (The Scottish Government, 2006).

A recent systematic review aimed to evaluate the effectiveness of nurse prescribing in comparison to physician prescribing (Gielen et al., 2014). The conclusions drawn from their review suggested that patients were either, generally more or equally satisfied with the care provided by nurses when compared to the traditional care provided by clinicians. It was acknowledged that nurses prescribed for a wide range of patients in different clinical contexts, yet still in comparable ways to clinicians. However, there are a number of limitations in their systematic review

worthy of comment. Some of the included studies had small sample sizes, and there were few Randomised Control Trials (RCTs), as such the conclusions drawn from this review are considered tentative because further high quality rigorous RCT's are needed to evaluate the effectiveness of nurse prescribing, in a range of clinical contexts. Undoubtedly, other factors can influence patient reports of satisfaction of nurse prescribing, and a further limitation was that of variation in the 'satisfaction instruments' used across the included studies. Very rarely nurse prescribing is performed in isolation from other nursing tasks. Prescribing practice is fully embedded in other activities that might include taking a clinical history, formulating a diagnosis and communication skills. Thus, bias is possible in the satisfaction ratings across the studies in their review, for example, it might be patients' satisfaction rating of the consultation skills and not solely prescribing activities per se. Moreover, little is known in the reported literature about the cost efficiency of non-medical prescribing in a variety of specialist nursing contexts compared to clinicians (Hollinghurst et al., 2006).

Despite these limitations, it is an emerging evidence-base to support non-medical prescribing in nursing and with the increasing pressure on NHS resources, nurses are in a unique position to develop advanced roles to help meet increasing demands (Department of Health, 2010, Department of Health, 2008), in particular for cancer services (Department of Health, 2013). Specialist nurses are already providing follow-up clinics for patients with prostate cancer as part of the multidisciplinary approach recommended in national clinical guidelines (NICE, 2014) and patient feedback has illustrated acceptance and positive attitudes towards nurse-led prostate cancer clinics (Wade et al., 2015). We argue, that prostate cancer specialist nurses are ideally suited to implement advanced levels of practice in non-medical prescribing, but recognise little has been detailed in the literature about the prescribing practice, specifically, for prostate cancer specialist nurses, and further service evaluation and research is needed (Paterson et al., 2015a). Therefore, the aim of this paper set out to critically review the evidence based recommendations for prostate cancer nurses using a case study reflection to contextualise the role of non-medical prescribing, see Table 1.

(Please insert table 1 here)

To address the overall aim the following objectives will be addressed:

- Apply a model of consultation and relevant assessment tools in relation to the case study.
- Critically evaluate the contemporary pharmacological knowledge base underpinning prescribing within legislative frameworks
- Critically appraise current issues and non-medical factors impacting upon and influencing prescribing practice in the context of this case study.
- Reflect and critically evaluate prostate cancer specialist nurse's contribution to the multidisciplinary team within a framework of professional accountability and responsibility in relation to prescribing

Consultation and assessment tools in relation to prescribing

The Department of Health has define a non-medical prescriber as a practitioner (e.g. nurse, doctor, pharmacist, dentist) responsible and accountable for the assessment of patients with undiagnosed/diagnosed conditions and for decisions about the clinical management required (Scottish Government, 2006). Therefore, central to safe and effective prescribing practice, non-medical prescribers may need to formulate a differential diagnosis and develop robust evidence-based clinical management plans during clinical consultations. A clinical consultation is a two-way process of information exchange between a healthcare professional and a patient. As such, a consultation may be initiated by the healthcare professional to provide health promotional intervention, or by the patient when they are unwell (Denness, 2015). There are various approaches to consultation, and over recent decades there has been an evolution of various consultation models in the reported literature, but for the most part consultation models have been developed for General Practitioners up until now (Denness, 2015), and not specifically for specialist nursing roles in cancer care. This poses the question about the suitability of existing models in the clinical context of prostate cancer care. A recent systematic review critically appraised existing models of consultation to date (Paterson and Nabi, 2016), and concluded that none of the reviewed models in the available literature are suitable for

use in prostate cancer for the following reasons: 1) no recognition of the cancer care continuum and its influence on consultations, 2) lack of supported self-management recognising cancer as a long term condition, 3) no appreciation of the complex factors that influence consultation for each individual man affected by prostate cancer (demographic, self-efficacy, cultural, etc.) and 4) very little acknowledgement of the evidence base to inform management plans within the consultation itself. Therefore, a new model of consultation was informed from the existing literature, expert guidance from men affected by prostate cancer and clinicians in prostate cancer care, see Figure 1.

(Please insert Figure 1 here)

Reflections on the case study

Mr Stephen Jones presented to the Prostate Assessment Clinic and the Senior Prostate Cancer Specialist Nurse introduced herself, checked his date of birth against his case notes. The consultation was guided using the Prostate Cancer Model of Consultation. To start to develop 'partnership' the specialist nurse asked what he would like to be called, and he stated "Stephen". At this stage, best practice acknowledges that specialist nurses should introduce themselves in a friendly and warm manner, maintain good eye contact, listen attentively (verbal and non-verbal cues), appropriate use of touch and discussion about the patients concerns (Stenner et al., 2011, Tay et al., 2011). At the 'Information' gathering stage of the consultation the nurse sought clarification from Stephen using open questioning to establish his understanding of why he has come for further prostate assessment (Tay et al., 2011). This ensured Stephen had time to elicit his 'ideas, concerns and expectations' from his perspective to promote partnership and person-centred care (Matthys et al., 2009, Scottish Government, 2007, Scottish Government, 2014). His understanding was that his PSA was a bit high, he had some back pain and needed to have some further investigations.

The Specialist Nurse explained her role within the prostate assessment clinic and gained informed consent to take a detailed systematic history and physical examination (Douglas et al., 2009). The medical history was a structured

assessment using open and closed questions to enable a comprehensive picture of Stephen's health and health problems (Gask and Usherwood, 2002). It included an in-depth medical history, psycho-social and medical (including any over the counter medications, complementary medications, recreational drugs and prescribed medications), current and previous medical treatments, Stephen's health in general/performance status, risk and lifestyle factors and family history of prostate cancer (Bickley, 2013).

In keeping with evidence-based recommendations the physical examination was explained and verbal consent provided which included a full assessment of lower urinary tract symptoms and the following tests: uroflometry, postvoid bladder scan and urinalysis (Heidenreich et al., 2014b). The results of investigations revealed a maximum flow rate of 20ml per second, voided volume 237 ml., 17mls post-void residual and urinalysis was negative. Stephen was asked to complete a standardised patient reported outcome measure, the International Prostate Symptom Score (IPSS) which is currently the standard questionnaire for the systematic assessment of lower urinary tract symptoms from the patient's perspective (Barry et al., 1992). The IPSS has demonstrated reliability and validity (Lujan Galan et al., 1997). The IPSS assessed the following symptoms, incomplete emptying, frequency, intermittency, urgency, weak stream, straining, nocturia and quality of life. Each question is rated on a scale of 0-5, with the total score range 0 to 35 (asymptomatic to very symptomatic). The IPSS score interpretation are symptom score less than equal to 7 (mild), symptom score range 8-19 (moderate) and symptom score range of 20-35 (severe) (Barry et al., 1992, Barry et al., 1995). Stephen's IPSS score was 7, with little impact on his overall quality of life. On further history taking using open ended questions and review of his 7 day urinary frequency and volume chart; he denied any bothersome lower urinary tract symptoms.

The main diagnostic tools in prostate cancer include a DRE, serum concentration of PSA, and transrectal ultrasound guided biopsies, CT/MRI Pelvis scan and Bone scan (British Association of Urological Surgeons, 2013, Heidenreich et al., 2014b). PSA is organ specific but it is not cancer specific because serum concentration of PSA can be elevated in the presence of prostatitis, benign prostatic hyperplasia (BPH), and other non-malignant conditions. Several modifications of serum PSA

values have been described that may improve the specificity of PSA in the early detection of prostate cancer. They include PSA density, PSA density of the transition zone, age-specific reference ranges and PSA molecular forms (Heidenreich et al., 2014b).

In keeping with local clinical guidelines PSA interpretation was based on regional population age stratified ranges for PSA levels (40-49 years <2.8 ug/L, 50-59 years <4.0 ug/L, 60-69 years <5.3 ug/L and 70-79 years <6.5 ug/L) (North of Scotland Cancer Network, 2010). Stephen's PSA blood test was 456.9 ug/L significantly high for his 75 years. The specialist nurse took time and care to discuss his PSA result, along with GP' findings on DRE, with his lower back pain, to explain that these findings might indicate a possible prostate cancer, but further investigations are needed to ensure a clear clinical picture, taking care to share "bad news" (Baile et al., 2000) . The specialist nurse opted to repeat his bloods to include (U&E's, LFT's, bone group, FBC and PSA) (North of Scotland Cancer Network, 2010) with Stephen's agreement, as the GP only checked his PSA with no other biochemistry, and only one PSA reading to date.

The DRE is a fundamental component of the assessment of the prostate gland (Heidenreich et al., 2014b). A PSA level does not preclude a diagnosis of prostate cancer. Therefore, with verbal consent the DRE was repeated as discrepancies have been found between General Practitioner's DRE findings and Urology Specialist Teams (Miñana López et al., 2014). The DRE examination performed by the specialist nurse revealed a bilaterally firm, nodular at the apex, T3 examination. Together with the abnormal DRE and high PSA there was enough evidence to 'suspect' a clinical diagnosis of prostate cancer.

Given his history of back pain, the physical examination included consideration of spinal cord compression. Spinal cord compression occurs when metastases in the epidural space or when the vertebral bodies cause compression of the spinal cord and its blood supply resulting in ischemia. The prevalence of spinal cord compression is around 5-9% of men affected by metastatic prostate cancer (Osborn et al., 1995). Metastatic spinal cord compression is a clinical emergency, and its clinical presentation must be recognised early. Stephen experienced lower back

pain, but did not experience any of the following signs or symptoms: narrow band of pain around the abdomen or chest, his pain did not move down his legs or arms, no lower limb weakness or unsteadiness on his feet, no paraesthesia, pins or needles, or numbness, and he had full control of his bladder and bowels (Levack et al., 2002). Using a validated pain rating scale of 0 to 10 (no pain to worst imaginable pain) (McCormack et al., 1988) Stephen rated his pain as a 3/4 (mild/moderate pain). The visual analogue scale has been shown to have good test-re-test reliability (Williamson and Hoggart, 2005). Stephen articulated that his pain was well controlled on his current analgesia plan of co-codamol as already prescribed by his GP, and completely resolved his pain.

As part of the 'problem solving' component of the consultation an agreed clinical management plan was formulated in partnership with Stephen and the specialist nurse, and overall responsible Consultant. The management plan was 'documented' on the MDT form, and GP informed by letter, which included the following next steps in care: Bone scan, await review of full bloods and MDT as illustrated in Figure 2. The underlying principles of record keeping for nurses are detailed in national guidelines for records and record keeping (Nursing and Midwifery Council, 2004). Specifically, in relation to good record keeping for prescribing practice nurses should refer to the standards and proficiency of nurse prescribers (Nursing and Midwifery Council, 2006b).

As part of "safety netting" and "clarification" a further appointment was given to discuss his results following MDT and any recommendations for treatment, or further investigations. The specialist nurse's contact details were provided to ensure a point of contact for any further information, advice or support in the interim period to his next appointment.

(Please insert figure 2 here please)

The MDT was held following the completion of the agreed management plan. The results confirmed cT3, Nx, M1b prostate cancer, see Table 2 for clinical summary.

(Please insert Table 2 here)

During the MDT discussions there was some debate around whether Stephen should be prescribed a Luteinising-hormone-releasing hormone agonists (LHRH) Agonists (Pituitary Down-Regulators), or Luteinising-hormone-releasing hormone antagonists, versus bilateral subcapsular orchidectomy (NICE, 2014).

Critically evaluate the contemporary pharmacological knowledge base underpinning prescribing within the legislation within prostate cancer care

To date, there are a number of statutory instruments that have facilitated the implementation of nurse prescribing that are included the following: (The Medicine Act, 1968, Health and Personal Social Services (Northern Ireland) Order, 1972, Medicinal Products: Prescription by Nurses etc. Act, 1992, The Pharmaceutical Services (Northern Ireland) Order, 1992, Pharmaceutical Services (Amendment) Regulations (Northern Ireland), 1998, Pharmaceutical Services Regulations (Northern Ireland), 1997). As part of legislative frameworks all drugs are given a licence by the Medicines and Healthcare products Regulatory Agency (MHRA). Importantly, the Nursing and Midwifery Council (2006a, 2007) clearly distinguishes that prescribing should be evidence-based to safeguard patient safety at all times. As a consequence, prescribers should practice evidence guidelines and frameworks to optimise and minimise harm to patients, (NICE, 2014, British Association of Urological Surgeons, 2013, Heidenreich et al., 2014b) and in keeping with local Specialist Formulary, where appropriate (NHS Scotland, 2009). Based within the prescribing legislation, all non-medical prescribers are professionally accountable for their own prescribing practice decisions and actions. Such action and decisions include practicing within their own corporate governance policies in terms of financial and budgetary, health and safety, and management of risk (National Patient Safety Agency, 2007). For a novice prescriber, not only are legislative frameworks a prerequisite to the foundations of safe practice but also contemporary pharmacological knowledge of medicinal products.

Treatment

Testosterone is the male sex hormone and is essential for prostate cancer cell growth. In the context of metastatic prostate cancer, the aim of treatment is to reduce systemic testosterone levels or prevent testosterone binding to the androgen receptor. Castration slows the progression of prostate cancer, and can prolong life and palliate symptoms (NICE, 2014). Castration can be achieved by surgical intervention with a bilateral subcapsular orchidectomy or by pharmacology interventions namely using luteinising-hormone-releasing hormone (LHRH) agonists, LHRH antagonists or anti-androgens (NICE, 2014, Heidenreich et al., 2014a).

Luteinising-hormone-releasing hormone agonists (LHRH) Agonists (Pituitary Down-Regulators)

The use of LHRH agonists is known as chemical or medical castration. An agonist is a chemical that mimics a naturally-occurring substance in the body and produces the same physiological effect. The agonist, therefore, will occupy cell receptors of the chemical it is mimicking. An agonist has a longer biological half-life, meaning the body takes longer to metabolize and eliminate the agonist. The agonist therefore will bind to a receptor for a longer period of time and mimics normal LHRH, and binds to the receptors of the pituitary gland that receive normal LHRH.

LHRH analogs, such as leuprorelin, goserelin and triptorelin are potent LHRH agonists. For a period of 7 to 10 days, the pituitary gland perceives the LHRH agonist as normal LHRH and triggers the testicles to produce large amounts of testosterone. A sudden rise of testosterone is known as “tumour-flare” in which the tumour can grow and cause clinical complications such as bone pain, spinal cord compression and ureteric obstruction (British Association of Urological Surgeons, 2013, NICE, 2014). After 7 to 21 days, the LHRH agonist still binds to the pituitary gland’s receptors, whereas normal LHRH would have been metabolized. The pituitary gland stops triggering the testicles to produce testosterone.

Therefore, to prevent tumour-flare, an anti-androgen is given to the man for one to two weeks before initiating the LHRH agonist, after which a further two weeks of anti-androgen treatment is required. The three main LHRH agonists in use are Leuprorelin, Goserelin and Triptorelin. Leuprorelin and Goserelin are administered

subcutaneously, whereas Triptorelin is administered intramuscularly. Another LHRH agonist drug is called Vantas® (histrelin acetate). It's given once a year as an implant under the skin and approved for use in the NHS in Scotland by the Scottish Medicines Consortium (NHS Scotland, 2009). However, it is not widely available on the NHS in England, Wales and Northern Ireland.

Luteinising-hormone-releasing hormone antagonists

LHRH antagonists such as Degarelix (brand name Firmagon) cause rapid androgen depletion by immediate inhibition of LHRH receptors in the anterior pituitary gland. These peptides inhibit LHRH release without causing the initial stimulation by blocking the pituitary receptors and therefore, not associated with a surge in testosterone flare (Rick et al., 2013). With the use of this drug, the administration of anti-androgens is not required. The use of LHRH antagonists can be beneficial in patients with bony metastases or bladder neck obstruction where tumour control without testosterone surge is clinically important (Rick et al., 2013). Degarelix is administered monthly as a subcutaneous injection in the abdominal region.

Anti-androgens

Androgens are hormones. Anti-androgens are taken as tablet form daily and do not alter the levels of circulating androgens. Anti-androgens are drugs that block the action of these hormones made by the testicles and/or adrenal glands. Prostate cancer cells rely on androgens for growth and to avoid apoptosis. There are two classifications of these drugs, steroidal anti-androgens and "pure" anti-androgens (Joint Formulary Committee, 2016). The steroidal anti-androgens include megestrol (Megace). The "pure" or non-steroidal anti-androgens include Bicalutamide (Casodex), Flutamide (Chimas, Dronenil), and Cyproterone Acetate (Cyprostat). Anti-androgens can be added to LHRH agonist or antagonist therapy when men begin to relapse, this combination therapy is known as complete, total or maximum androgen blockade, this classification of drugs can be used as monotherapy (steroidal anti-androgens).

Bilateral subcapsular orchidectomy

The surgical option, bilateral subcapsular orchidectomy is not widely performed in modern healthcare, yet clinical guidelines recommend that all men with metastatic prostate cancer are offered this procedure as an alternative to continuous luteinising hormone-releasing hormone agonist therapy (NICE, 2014). Castration is achieved within 12 hours, but bilateral subcapsular orchidectomy is irreversible and patients should be counselled. This is a relatively uncomplicated surgery, cost-effective intervention in the long-term, and can be performed under local anaesthetic. It is thought that the main limitation of this intervention is the psychological impact on men. Evidence suggests that psychological effects included changes in body image, emotional effects, including moodiness and short temper, crying with minimal provocation as well as feeling depressed and anxious (Kumar et al., 2005), but noteworthy these side-effects are prevalent in men treated by medical castration.

Critically appraise current issues and non-medical factors impacting upon and influencing prescribing practice.

Independent non-medical prescribers need to be aware of a range of contemporary clinical and non-clinical factors that might influence prescribing practice within the scope of prostate cancer care. Specific within the context of prescribing hormone therapy for this case study, the specialist urology team prescribe within the “Urology Specialist Formulary List” informed by the Board Area Drug & Therapeutic Committee (ADTC) (NHS Inform, 2016). The included medications available on the Urology Specialist Formulary include the following drugs: Cyproterone Acetate, Triptoreline, Goserelin, and Degarelix. There are no known pharmacodynamic or pharmacokinetic drug reactions with Stephen’s existing medication of Co-codamol (Joint Formulary Committee, 2016). Moreover, from his most recent bloods he did not have any renal or liver impairment, as a further special considerations when prescribing hormone therapy (Joint Formulary Committee, 2016). Within, the case study’s specialist formulary patients are only prescribed Degarelix if they present with significant risk of ureteric obstruction and other signs of locally advanced and metastatic disease that need urgent treatment, such as risk of spinal cord compression (National Institute for Health and Care Excellence, 2014). Stephen did

not present with any of these risk factors, and therefore, Degarelix would not be considered appropriate to prescribe.

Based upon the cost analysis of prescribing hormone therapy (see Table 3), the specialist nurse would consider to discuss with him the consideration of a bilateral orchiectomy in keeping with evidence-based guidelines (NICE, 2014). This modality could demonstrate cost efficiency (Krahn et al., 2014) compared to prescribing LHRH injections indefinitely (that would avoid patients being administered injections every 3 or 6 months), but this treatment modality may require additional appropriate psychological care (Kumar et al., 2005). Interestingly, a recent study identified that some men articulated that they would have preferred surgery, but this option was never discussed with them, and that they experienced changes in their anatomy with their testicles shrinking and almost disappearing on LHRH injections (Paterson et al., 2015b). As an alternative, the non-medical prescriber would opt to prescribe Cyproterone Acetate tablets 100mg twice daily for 28 days and Triptorelin 11.25mg injection (Decapeptyl® SR) (3 monthly preparation) to be given at the start of week 2 of taking anti-androgen tablets (Joint Formulary Committee, 2016). Any adverse drug reaction (ADR) to these medications would be reported in the Yellow Card commission on human medicines published in the BNF (Joint Formulary Committee, 2016). Stephen was advised of the potential side-effects and risks, and a supported self-management plan was developed in partnership to monitor response to medication and lifestyle advice to optimise quality of life (Nursing and Midwifery Council, 2006a, Paterson et al., 2014).

(Please insert Table 3 here)

Other contextual factors that can influence our prescribing practice are clinical governing bodies such as, NICE. Recently, NICE have recommended that Degarelix should no longer be approved for use in patients presenting acute with metastatic prostate cancer (a group within its current licensed indication). This recommendation raises concerns for a number of clinicians, as this is the only drug of its class available. It is clear that NHS costs are an issue but when we consider Degarelix costs around £1500 a year, when many other approved cancer drugs cost

far more per month such as, Abiaterone £2930 per month (Joint Formulary Committee, 2016), arguably Degarelix doesn't seem that expensive for the benefit this drug can provide (immediate testosterone suppression; avoidance of testosterone flare; no need for anti-androgen).

Moreover, evidence identifies that men with prostate cancer on androgen deprivation therapy (ADT) carry a significant risk of cardiovascular disease (Keating et al., 2006), undoubtedly increasing the risk of death. Importantly, emerging evidence suggests that for patients who had a significant history of cardiovascular disease at baseline and treated with Degarelix, demonstrated a significantly lower probability of a cardiovascular event or death compared to those treated with a LHRH agonist (Smith et al., Albertsen et al., 2014). Thus, within the larger context of prescribing, it could be argued that GNRH antagonists could be viewed as an alternative to GNRH agonists for men with pre-existing cardiovascular disease. Noteworthy, some caution is taken as this was a post-hoc analysis of pooled data, and a longer follow-up is needed to rigorously assess the long-term efficacy of GNRH antagonists versus GNRH agonists.

Despite the Review of Prescribing, Supply and Administration of Medicines and the introduction of non-medical prescribing (Department of Health, 1999), several studies have identified that nurses are still not prescribing following successful attainment of their non-medical prescribing qualifications (While and Biggs, 2004, Larsen, 2004). A recent mixed methods study identified a range of factors that can influence non-medical prescribing such as: lack of peer clinical supervision, inadequate knowledge of pharmacology, lack of diagnostic reasoning, limited formulary and variations in prescribing practices among individual clinicians, reticence to challenge treatments already initiated by another team member, fear of prescribing for patients with multiple co-morbidities, polypharmacy, and information from pharmaceutical companies (Latter et al., 2010, While and Biggs, 2004). Further research is needed to evaluate the nature and effects of these influences on prescribing decisions and practice within a variety of clinical contexts across both primary and secondary care. Moreover, little is known about the prescribing

influences specifically in prostate cancer care, but it is suggested nurses in this field should keep in mind such factors and seeks further support and professional development to optimise prescribing practice, if required. Other factors that can influence prescribing include patients' desires and expectations of medications (While and Biggs, 2004), important influences to optimise person-centred care, but can also be challenging. Non-medical prescribers need to be aware of the potential influences on prescribing practice but they also need to think critically about their role within the wider MDT.

Reflect and critically evaluate the prostate cancer specialist nurse's contribution to the multidisciplinary team within a framework of professional accountability and responsibility in relation to prescribing

It is recognised that the success of non-medical prescribing is dependent upon the contributions from a number of practitioners, including specialist nurses, pharmacists and doctors, and the wider prostate cancer MDT team, and the ability of these professionals to work together as a robust and collective team. Within the clinical context of nurse-led prostate cancer clinics, services include prostate assessment and performing prostate biopsies clinics, insertion of fiducial gold seed markers in preparation of Intensity Modulated Radiotherapy Treatment, and Advanced Prostate Cancer Clinics for men with metastatic disease that prescribing practice is embedded (Prostate Cancer UK, 2014). Evidence acknowledges that men affected by prostate cancer can experience a host of unmet supportive care needs (Paterson et al., 2015c), reduced quality of life (Paterson et al., 2013, Cockle-Hearne et al., 2013, Ream et al., 2008), and evidence-based recommendations enforce the need for MDT working (Paterson et al., 2015a).

Each MDT member should have the pre-requisite knowledge of the basic sciences and clinical practice, and awareness of the expertise of other members. Together, MDT members should be capable of assessing and managing the medical, physical, psychosocial, vocational and social aspects of prostate cancer as a long-term condition (NICE, 2014). Within the MDT team, a coordinated approach is crucial to

facilitate ongoing and effective regular communication between all team members and consistent practice (British Association of Urological Surgeons, 2013). This is vitally important as there have been concerns following the legislative changes that have enabled nurses to prescribe from the whole BNF (Latter et al., 2010, Stenner et al., 2010, Stenner et al., 2011), and some medical colleagues have articulated their concerns:

'The worry is that they (nurses) have the whole BNF (British National Formulary) to prescribe from. Our practice nurses wouldn't prescribe controlled drugs for terminal care because they haven't got the experience to do that, although on paper they could. I think that it is this sort of worry that the general masses [medical profession as a whole] might feel. You are going to get 'loose canons', people prescribing too much' (25.p (Stenner et al., 2009).

Ultimately, all team members should work together to meet the needs of the individual patient. Not only is an effective MDT essential to safe prescribing practice, but collaborative working ensures prescribing is not performed in isolation. Moreover, within the prescribing context of prostate cancer specialist nurses, we work within set agreed Specialist Urology Formulary, that helps to protect professional accountability and promotes safe and responsible prescribing (NHS Inform, 2016).

As the number of men living with and beyond prostate cancer continues to rise (Torre et al., 2015) existing models of nurse-led practice will continue to emerge. Therefore, medical and nursing leadership within local clinical directorates should acknowledge the unique contribution of nursing delivering an advanced level of practice, but support and facilitate robust audit, monitoring and evaluation of prescribing practice. It is also important that non-medical prescribing within the role of the specialist nurses have this role clearly identified in their job description/employment contracts to ensure appropriate indemnity cover, in addition to other professional representatives (Scottish Government, 2006). We recommend that all novice non-medical prescribers have quality assurance systems in place for

monitoring prescribing and individual practitioners regularly audit their practice, to promote continual professional development and critical reflection on their practice.

Conclusion

This paper set out to critically review evidence based recommendations for non-medical prescribing in prostate cancer care using a case study reflection. There are a number of complexities and potential difficulties faced when extending professional roles, accountability and responsibilities required in contemporary healthcare. Non-medical prescribers must be committed to continual professional development, and prescribe safely within individual competencies and scopes of professional practice. There is a pressing need for further research to assess and evaluate prescribing practices within the context of prostate cancer care, with a particular focus on the nature of influencing factors on prescribing decisions, cost-effectiveness and a more detailed understanding of how team working and inter-team referral affects prescribing decisions between the MDT members.

Table 1. Exemplar of Real Case Study

Case Study: Stephen

Mr Stephen Jones (a pseudonym) was 75 years and attended the Prostate Assessment Clinic for review. His General Practitioner referred him with an elevated Prostate Specific Antigen 456.9 ug/L, abnormal feeling prostate, Digital Rectal Examination (DRE) and back pain.

Table 2. Clinical and demographic summary (no further psycho-social/demographic information provided to ensure anonymity and confidentiality)

Clinical and demographic		Results
Age		75 years
BLOODS:	PSA	456.9 ug/L (1 st result)**, 471.0 ug/L (2 nd result)**
	FBC	131 g/L
	Urea	6.1 nmol/L
	Creatinine	97 umol/L
	Potassium	4.7 mmol/L
	Sodium	134 mmol/L
	Estimated GFR	>60 ml/min
	ALT	30 U/L
	ALT	345 U/L **
	Alk Phos	16 U/L
	Bilirubin	37 g/L
Performance status:		2
Co-morbidity:		Cataract (left)
Bone scan:		Multiple bony metastatic disease, no risk of pathological fracture
DRE:		T3
Uroflowmetry:		20ml per second, voided volume 237 ml
Postvoid residual:		17mls
IPSS:		Total score 7, not bothersome, concerning LUTS
Urinalysis:		No Abnormality Detected (NAD)
Back pain score rating:		4 rating (0 to 10 [no pain to worst imaginable pain])
Medications:		Co-codamol
Agreed clinical stage:		cT3 Nx M1b

Table 3. Cost analysis of hormone therapies

Drug	Drug regime	Cost £
Luteinising-hormone-releasing hormone antagonists		
Degarelix injection	240mg starting dose, followed by 80mg as a subcutaneous injection monthly	1,683 in first year, 1,552 thereafter
Luteinising-hormone-releasing hormone agonists (LHRH) Agonists (Pituitary Down-Regulators)		
Goserelin 10.8mg implant	One implant every 12 weeks	1018
Histrelin 50mg implant	One implant every 12 months	990
Leuprorelin acetate 11.25mg injection	One injection every three months.	903
Triptorelin 11.25mg injection (Decapeptyl® SR)	One injection every three months.	828
Anti-androgens		
Cyproterone acetate 100mg tablets	200 to 300mg daily in divided doses 150mg once daily	635 to 952
Bicalutamide 150mg tablets**		18
Surgery		
Bilateral orchiectomy		1413.1

Cost for short-term anti-androgen use (3-week course) during initial dosing of LHRH would be: cyproterone acetate 200mg daily in divided doses, £55, bicalutamide 50mg once daily, £6 (unlicensed use).

** bicalutamide is not licensed for metastatic prostate cancer

Figure 1. Prostate Cancer Care Model of Consultation

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