Podcast transcript

Hello and welcome to this podcast on the NICE clinical guideline on pneumonia. I'm with Michael Moore, Professor of Primary Care Research, National Clinical Champion for Antimicrobial Stewardship at the RCGP, and member of the guideline's development group.

Q1: "So, Professor Moore, the pneumonia guideline recommends that GPs should carry out a C-reactive protein test for people presenting with symptoms of lower respiratory tract infection in primary care. Can you tell me what the C-reactive protein test is?"

PM: "I think most GPs will be pretty familiar with the test already. It's known as the CRP. It's an acute phase protein which is released in response to inflammation. And it has been used as a marker of infection, in particular bacterial infection, but it's not a specific to bacterial infection, it will increase in other inflammatory conditions and viral infections. In this instance, it's being used as a marker for pneumonia."

Q2: "And why is NICE recommending that this test should be carried out?"

PM: "Well, NICE are recommending use of the test in a particular situation, which is when a patient presents to the GP in the practice with symptoms of a lower respiratory tract infection, and really where the GP hasn't made a firm diagnosis of pneumonia. If you examine the patient and you think here's someone and they've got pneumonia then you don't really need to go and do a CRP test. But most of the time, most of the people that we see, there is much more uncertainty than that. And at the moment the usual response is to prescribe antibiotics. So more than half of the time at the moment when people present to their GP without a diagnosis of pneumonia but with a chesty cough and a diagnosis of lower respiratory tract infection, in around about 60 per cent of the time, they will get an antibiotic prescription. The evidence is quite clear that this doesn't help most people. There's a systemic review, a Cochrane review, which shows that the symptomatic effect or relief of symptoms is really very modest. In an illness that last around about three weeks you probably get about half a day reduction in symptom reduction. So there's not much effect from those antibiotics.

“And looking at the bigger picture, the wider picture, there’s a huge concern about antibiotic resistance. And one of the major sources of antibiotics is in primary care, around about 80 per cent of antibiotics prescribed in the UK originate in practice, and one of the drivers of that is respiratory tract infection. So it’s really coming back to say, well, if those antibiotics which are prescribed in 50 or 60 per cent of the cases aren’t helping the patient what can we do to intervene and reduce antibiotic prescribing without having any harmful effects? The evidence shows that if you use a CRP test in that situation of uncertainty, if GPs use that test, it can help reduce antibiotic prescribing. It improves the confidence of the GP and the patient in the consultation that there isn’t a significant infection going on. And trials have shown that you reduce antibiotic prescribing from over 50 per cent to nearer 30 per cent. There’s around about a 40 per cent reduction in prescribing rates and there is no effect on symptoms so patients are just as well off with that reduced prescribing rate. So there’s no harmful or adverse effects from that change in strategy.

“So the guidelines are suggesting that where there is clinical uncertainty, where you might be thinking about an antibiotic prescription, that it would be useful to include a CRP test in the clinical assessment of the patient. And for those people who have a low result you can be really pretty confident that they don’t have pneumonia.”

Q4: “So you mentioned the issue of antibiotic resistance. Why is this such a serious public health issue at the moment?”

PM: “Well, this is a national and international problem. It’s been established that antibiotic resistance is steadily increasing and the recent WHO report showed that in all areas of the world there is increasing levels of antibiotic resistance. The pipeline for new antibiotics has largely dried up. There may be new developments in the future but at the moment there have been no new antibiotics for around about 30 years. So we have to make the most of the antibiotics that we have available now. We need to preserve them for future generations. If you do have pneumonia you want to be able to have an antibiotic that works for you and if antibiotic resistance rates are so high that antibiotics won’t work then this would be a serious situation to find yourself in. Other infections would be just as risky. Simple skin infections might lead to cellulitis and that can progress without antibiotic treatment. And things like joint replacement surgery where the infection risks are vastly

reduced by preventative treatment with antibiotics where if they don't work, again, the infection risk would make joint replacement surgery much more risky than it is now.

"Another example of when antibiotic resistance could be a problem is in joint replacement surgery. At the moment antibiotics are used to reduce the risk of infection as a complication of surgery and if they don't work then the risks involved in having joint replacement surgery would be very much higher."

Q3: "And how effective is the CRP test bring in terms of limiting antibiotic prescribing?"

PM: "Well, the test enables GPs to be more confident that they can rule out pneumonia. In one large trial where it looked at the diagnostic effectiveness, if you like, of adding the CRP test it was shown that compared to just using symptoms and signs alone there was an improved accuracy of diagnosis. And at the low point of the test, less than 20, the risk of having pneumonia in that group is less than one per cent. So you're really pretty confident that people won't have pneumonia if their test result is low.

"In the group who have a very high test result, that is a result of over a 100, nearly a third of them will have pneumonia on their chest X-ray. So in those instances there's a very high probability and really antibiotics would usually be prescribed in that circumstance. You do end up with an intermediate result somewhere between 20 and 100 in around about 40 per cent of those who have the test so there still will be uncertainty. In those circumstances then you really need to use your clinical skills. There isn't a single cut point where it's safe and one where it's unsafe so the higher the test in that range the greater your degree of suspicion. And you need to weigh up the other things in the consultation that you would do as a clinician so, how old is the patient, do they have any other illnesses, how sick do they appear to you and make a decision about antibiotics based on your clinical assessment. Doing the CRP test is definitely not a substitute for clinical skills.

"So one of the options which is available to you is to use a delayed prescription where you share the uncertainty with the patient and decide that they might be able to wait before starting an antibiotic and discuss with them how long then they are going to wait and the kind of

things to look out for which might make them want to take the antibiotic. You have to remember that most coughing illnesses last around about three weeks so certainly a persistent cough wouldn't be a reason to take the antibiotics. So you need to spell out what are you looking for: persistent fever, becoming more breathless, developing chest pain, getting more unwell and discuss those and share those with the patient and therefore share the decision making process about when to take the antibiotics."

Q5: "So why are GPs continuing to prescribe antibiotics given the fact that review evidence suggests that they don't work?"

PM: "That's a good question and it is a puzzle. Because for around about 15 to 20 years we've had good review evidence suggesting that the benefits of antibiotics in most respiratory infections are pretty marginal.

"One of the things that GPs worry about is missed diagnoses and in particular, in the instance of lower respiratory tract infection, the risk of missing a case of pneumonia. So we know from a big study which was published recently with over 3,000 participants who concluded in the study that the risk of pneumonia in this group is around about 5 per cent. The study I'm referring to recruited patients for a trial but where the GP was worried about pneumonia they still collected information about the patients but didn't randomise them to the antibiotic or no antibiotic arm. So this gives us a really good handle on what the background risks of pneumonia might be in this population since everybody then went off to have a chest X-ray.

"The GPs were actually pretty good at diagnosing pneumonia. In this cohort of around about 3,000 patients there were 140 cases of radiographic pneumonia and the GPs were actually pretty good at spotting that. They spotted 41 of those cases so that's just nearly 30 per cent, nearly a third of the people they got the diagnosis right. But of course that means that they missed the diagnosis in around about 70 per cent.

"Of the people where the GP thought they had pneumonia they were also correct most of the time. Nearly 60 per cent of the time they got the diagnosis right. And when they said that the patient didn't have pneumonia they were right 96 per cent of the time, because pneumonia is relatively uncommon. GPs are right then that they worry about missed

pneumonia because although they're good at diagnosing it they will miss some cases.

"We talked earlier about the use of the CRP in addition to signs and symptoms and that this adds a little bit of diagnostic accuracy. So if you look at the cut points in the NICE guidance, those who are considered at low risk with a value of less than 20, the background risk of pneumonia in that group is only 0.7 per cent. Those in the high risk category, the risk is 18 per cent. Those in the intermediate risk still have a chance of having pneumonia. Nearly 4 per cent of those will have pneumonia. So even using the CRP test still leaves some diagnostic uncertainty. And it's this diagnostic uncertainty, even in the hands of an experienced clinician, which leads people to mitigate risk by prescribing antibiotics. What we're suggesting is that they share those risks with the patient, that they add a test which helps them increase their accuracy a little bit and that they consider alternative strategies such as a delayed prescribing strategy in those where they can't for sure rule out pneumonia but where the risks are relatively low."

Q6: "Given the benefits of using the CRP test as you've outlined, why does NICE use the word 'consider' for its recommendation?"

PM: "I think there are two things at play here. Firstly, the weight of evidence that you have to balance the numbers of trials testing CRP in this situation are relatively small so the weight of evidence isn't there to say that this absolutely should be done in every case. And secondly, at the moment this isn't part of current UK practice. CRP tests at the point of care are not widely available and so there's a major shift in infrastructure that needs to take place if we're going to be offering this test. Also we're not really suggesting that every single person presenting to the GP should have a test it's really those ones where you're thinking about an antibiotic. So not the people where you're very confident they don't have pneumonia nor the ones where you've made a clinical diagnosis but that group in between where the person in front of you is unwell but you're just not sure what the diagnosis is.

Q7: "So once a GP has diagnosed a case of pneumonia what's the next stage?"

PM: "I think the next decision that the GP has to make is about place of care. All of these people in whom you've made a diagnosis of

pneumonia will get a prescription for antibiotics but should they be cared for at home or should they go into hospital? And the guidelines help here as well because they address the use of a test called CRB65 and this helps you assess the risk of death at the time of the diagnosis of pneumonia. It's designed for use in the primary care setting. It's relatively quick and easy to use and it has just four parts of the score: presence of confusion, a respiratory rate of over 30, blood pressure which is lower than either 90 systolic or 60 diastolic and age over 65. And using that simple score enables you to risk stratify the person in front of you with a clinical diagnosis of pneumonia. So if somebody with a score of nought and one is at low risk of death, less than 1 per cent, and people who have a score of two, it's around eight per cent, and a score of three or above is 28 per cent, so a really high risk. The idea then is if the person in front of you has a score of nought they're probably going to be safe to manage at home. If they have a score of one or two then serious thought about should they be in hospital or should they be managed at home? And really higher scores, I think GPs would simply be arranging admission with the consent of the patient. So using that score helps in that decision making process but, again, this is not a substitute for clinical judgement. Everybody who is over the age of 65 will have a score of one and you wouldn't necessarily without thinking just arrange admission to hospital. There will be, you know, 66 year old chaps who are very fit and well with no other medical problems where it may be perfectly reasonable to have home management. And equally, it could be somebody who is aged 55 but has multiple other illnesses, heart failure, previous heart attacks, respiratory illness where it would be unsafe even with a score of zero to manage them at home. So you still need to use your clinical judgement. This is a decision tool to help with that process.

Q8: "So, Professor Moore, to conclude, how do you think this guideline might help with the treatment and care and diagnosis of patients who present with pneumonia in primary care?"

PM: "There are two major points in this guidance of direct relevance to GPs in primary care managing patients with lower respiratory tract infections. The first one is to consider the use of a CRP test to aid with the decision making for antibiotic prescribing.

"So the person who presents to you with a lower respiratory tract infection and you haven't established a diagnosis of pneumonia but

you're considering an antibiotic prescription then a CRP test can help with that decision making process. Identifying a group of people at very low risk of pneumonia in whom the prescription could be withheld and a group at intermediate risk where alternative strategies, such as a delayed strategy, might be helpful.

"The second major point of help is to recommend the use of the CRB65. This is a clinical decision tool to help the GP where they have made a diagnosis of pneumonia to think about the safest place of care for that person in front of them. Should they be looked after at home or should they be looked after in hospital? It's an easy to use tool with just four items and stratifies the patient into four. It can be used to stratify the patient into three risk groups: low, intermediate and high risk. You can use that stratification to guide where it would be safest to care for the person, taking into account your clinical assessment and the wishes of the patient."

Professor Moore, thank you very much.

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