

EXECUTIVE SUMMARY:

Evaluation of C-reactive protein (CRP) in primary care settings to support reduction of antibiotic prescribing for self-limiting respiratory infections

BACKGROUND

The Scottish Antimicrobial Prescribing Group (SAPG) has developed and implemented several interventions aimed at reducing unnecessary antibiotic prescribing for self-limiting respiratory tract infections (RTI) as a key aspect of antimicrobial stewardship in primary care.

Another strategy aiming to reduce antibiotic use in primary care is the guidance of antibiotic treatment by use of a point-of-care biomarker. Evidence to support the clinical and cost-effectiveness of C-reactive protein (CRP) testing for the management of lower respiratory tract infections in Primary care has been established and in some European countries it is a standard of care. In the UK the role and use of CRP has yet to be established but the recent NICE Clinical Guideline on Pneumonia recommended that a CRP test should be considered if after clinical assessment it is not clear whether antibiotics should be prescribed. Furthermore, in the updated Public Health England (PHE) primary care guidance (May 2016) for acute cough and bronchitis CRP testing is recommended.

SAPG developed a proposal to evaluate the feasibility of using CRP testing in GP Practices and unscheduled care settings (e.g. out-of-hours service). The objective was primarily to evaluate the qualitative aspect of the implementation, but within the methodological limitations of a pragmatic feasibility study to also assess the perceived impact on antibiotic prescribing behaviour. The work was carried out by SAPG in partnership with Alere, the manufacturer of the test equipment.

METHODOLOGY

A project steering group was established and a project plan was developed including method for recruitment of practices, requirements of participants, patient selection, and data collection and analysis. The group met with representatives from Alere for a demonstration of the test equipment and discussion of quality assurance, logistics for supply of instruments and disposables and provision of training of study participants.

Ten GP Practices were recruited from four health board areas through direct invitation by SAPG members. Training sessions were organised by Alere to visit each GP Practice during October and November 2015 to demonstrate how the test should be carried out and necessary QA procedures. Participants started using the test in November 2015 and tests were available until February 2016 with each participant aiming to use the CRP test in at least 20 patients presenting with symptoms of lower respiratory tract infection (LRTI). The test methodology uses the following test result ranges (recommended by NICE) to inform treatment options:

- Low CRP (<20mg/L) rules out need for antibiotics
- Intermediate (CRP 20 – 100mg/L) use clinical judgement to decide need for antibiotics
- High CRP (>100mg/L) rules in need for antibiotics

Details of each consultation were collected to provide information on patient demographics, test results and prescribing decisions.

A Survey Monkey® questionnaire was sent to all participants at the end of February with a request to complete it within 4 weeks. This detailed practicalities of using the test equipment, integration with current working practice and influence on clinical decision making. Information from consultation data and the feedback survey were collated and analysed.

RESULTS

All ten Practices completed the study. Nine Practices completed and submitted the consultation documentation and nine Practices completed the feedback survey. All Practices completed at least one of element of the assessment.

CONSULTATION DATA:

- Practices used the tests in 246 patients with varying numbers of patients included from each Practice (range 7 – 61, mean 27) and overall 18% of patients included had a history of COPD.
- The majority of patients (70%) were under 65 years of age.
- CRP test results were documented for 231 patients (94%) with the remaining tests having problems with instrument error messages. For the majority of patients (72%) the CRP test result was <20mg/L and in 74% of cases GPs perceived that the CRP test results did have an influence on prescribing decisions.
- The outcome of using the test was that no prescription for antibiotics was issued in 64% of cases and a delayed prescription was issued in 14%. In one case the CRP test resulted in the GP having the patient admitted to hospital.

FEEDBACK SURVEY:

The survey was completed by 15 GPs across nine GP Practices with six responses from one practice and two from another; in the remainder of Practices only one GP used the CRP testing.

Feedback on using the Alere Afinion instrument

- Most respondents (13/15) felt they had received sufficient training.
- Three respondents reported having problems due to user technique e.g. not using adequate blood sample, getting an air bubble in the cartridge. This is covered in the training session provided and further support can be provided to rectify these issues.
- Twelve respondents found it easy to use, one found the time taken for the test too long and one reported the physical size, noise, need to switch on and 3+ minute wait for result were barriers although this became easier as they remembered to use it earlier in consultations.
- In terms of the testing model a variety of approaches were used; four GPs carried out tests themselves, eight had tests carried out by a practice nurse and three Practices used a combination of both approaches.

Feedback on impact of CRP testing on clinical practice

- All respondents found it easy to identify patients and one commented that it was useful to determine how serious the LRTI was to guide management options.
- 60% of GPs thought the CRP test influenced their decision in over half of the patients that consulted with an LRTI with resultant reduction in use of antibiotics. Several respondents commented that the test improved patient engagement and supported them in not prescribing

to back up their assessment of clinical symptoms. One commented that a Practice Nurse who prescribed used it in a larger proportion of consultations to support their decision making.

- Most (14/15) respondents thought it did provide reassurance when not prescribing an antibiotic. Comments included the test's value for non-medical prescribers as patients may not feel they are as qualified as a doctor to decide no antibiotics are required and one respondent felt the test could be useful adjunct for COPD patients with anticipatory care plans that included home supplies of antibiotics.
- 60% of GPs felt it a useful additional tool to support clinical practice.
- One third of GPs thought it increased use of delayed prescriptions. Some respondents did not usually use delayed prescriptions and one commented that the tests resulted in a change in approach from delayed to no prescription.
- 40% of GPs subjectively thought the CRP test reduced the number of patients seeking a second appointment with the same symptoms.

The following comments were received on respondents' overall impression of using CRP testing:

- Overall respondents were positive about the benefits of using CRP testing.
- The main practical concern was the additional time that the test adds to a consultation, 3.5 minutes for the test plus time to explain test to patient is significant within a 10 minute consultation. However, most GPs did find a system that worked to accommodate this and experience of use also improved the time taken.
- The size and lack of portability of the instrument was an issue for some as users. If it is switched off and moved the user is require to wait for 15minutes for it to warm up. A portable instrument would be of interest for home visits and in care homes.
- Patient experience of the test was positive as it provided reassurance when no antibiotic was required especially for 'worried well' patients.
- The majority of respondents would like to see CRP testing used routinely. There were some queries about cost effectiveness and a UK costing model has been described in a study used by NICE.

CONCLUSIONS

- The CRP test was used in over 200 patients presenting with LRTI across a variety of community settings in Scotland. The test was used mainly in patients under 65 years, including a proportion of patients with COPD.
- GPs were generally happy with the training provided and the performance of the Alere Afinion equipment and the time taken for the test result was acceptable once a suitable model for inclusion within consultations was developed.
- In the majority of cases the test result was low (CRP <20mg/L) which supported a 'no antibiotic' management strategy and in some cases increased use of a 'delayed prescription' approach.
- Prescribers indicated the test did influence their prescribing behaviour to support avoiding unnecessary antibiotic use so was a useful addition to the clinical decision making process in LRTI.