Healthcare Improvement Scotland | SHTG Advice on health technologies

Advice Statement 011-18
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Advice Statement

What is the clinical and cost effectiveness of rapid antigen detection tests (RADTs) for group A Streptococcal (GAS) infection in patients with acute sore throat in primary care?

Advice for NHSScotland

A systematic review of three non-UK cluster randomised controlled trials (RCTs) reported that the use of rapid antigen detection tests (RADTs) reduces rates of antibiotic prescribing. The delayed prescribing strategy recommended as UK standard care may limit the applicability of these findings.

Based on one UK study in the context of delayed antibiotic prescribing, the use of a RADT for presence of Group A *Streptococcal* bacteria (GAS) in patients with acute sore throat in the general practice setting did not provide additional benefit in terms of symptom resolution or rates of antibiotic use when compared with use of a formal clinical scoring system. In this study, use of RADTs was not cost effective.

NHSScotland is required to consider the Scottish Health Technologies Group (SHTG) advice.

Why is SHTG looking at this topic?

Microbial resistance to antibiotics is a major public health issue. Improving the targeting of antibiotics to those patients who are most likely to benefit is one strategy for addressing this issue.

The topic was prioritised for inclusion on the SHTG programme following topic referrals from NHS Borders and from the Medicines Management Partnership.

Evidence Note 83 as produced by Healthcare Improvement Scotland in response to this request.

Background

- Acute sore throat (pharyngitis and tonsillitis) is a common reason for a person to consult with their general practitioner (GP) or community pharmacist, and is an indication for which antibiotic therapy is commonly prescribed.
- In most cases, sore throat is self-limiting and antibiotics provide only modest benefits in limiting symptom duration or risk of complications, although the effectiveness of antibiotics in reducing symptoms is greatest in people with *Streptococci* bacteria growing in the throat.
- Group A *Streptococcal* (GAS) throat infection is highly transmissible by droplet spread. Eradication of bacteria occurs after 24-48 hours of antibiotic treatment in the majority of patients.
- GAS infection is associated with several rare but severe complications such as scarlet fever and toxic shock syndrome.
- Assessment of likelihood of GAS pharyngitis in UK general practice is typically performed by clinical examination with or without the use of clinical scoring systems such as Centor or FeverPAIN. Where antibiotics are deemed to be appropriate they may be offered for immediate use or as a delayed prescription where the patient is advised to access the medication if their symptoms do not resolve within a particular time frame or if symptoms become more severe.
- Rapid antigen detection tests (RADTs) for GAS infection are marketed for ruling in or ruling out this infection in patients who present to ambulatory care settings with sore throat.
- RADTs are carried out on throat swabs and results are generally available in approximately 5 minutes.

Clinical effectiveness

- Three systematic reviews with meta-analyses were identified examining the diagnostic accuracy of RADTs for presence of GAS compared with gold standard of laboratory culture. Summary estimates of sensitivity and specificity were comparable across reviews, at around 85% and 95%, respectively.
- A systematic review of three cluster randomised controlled trials (RCTs) from non-UK settings reported that the use of RADTs reduced rates of antibiotic prescribing for acute pharyngitis when compared with usual care.
- A UK-conducted pragmatic RCT compared empirical delayed prescribing with use of a clinical score (FeverPAIN) or use of clinical score plus RADT, to guide antibiotic prescribing. Targeting antibiotics using FeverPAIN score modestly improved symptoms as recorded in patient diaries and reduced patient-reported use of antibiotics. Incorporating the RADT provided no additional benefit.
- A service evaluation from the UK concluded that it was feasible to offer a test and treat service in the community pharmacy setting. In this study, the cost of the test and the antibiotic was paid by the patient.

Safety

- No safety issues around the use of RADT devices were identified within the literature examined.

Cost effectiveness

- One economic evaluation was identified that assessed the cost-effectiveness and cost-utility of RADT use guided by a high score on the clinical scoring algorithm (FeverPAIN), compared with both a delayed prescribing (control) group and a group receiving FeverPAIN without RADT, in an NHS setting.
- Results indicate that the FeverPAIN clinical scoring algorithm is the most cost-effective strategy, primarily due to its lower costs compared to both the RADT and delayed prescribing strategies.
- Cost utility results concurred that delayed prescribing was more expensive and less effective than the other two strategies, but the incremental cost-effectiveness of RADT ranged from £24,528 to £74,286 per quality-adjusted life year (QALY) gained, depending on the time point (14 or 28 days) and subsequent method used to derive QALYs.
- Estimates for the incremental cost-effectiveness found that, of the three groups and across willingness-to-pay thresholds of between zero and £50,000 per QALY, the clinical scoring algorithm consistently had the highest probability of being cost-effective, although the difference compared with RADT reported at £30,000 per QALY (the upper limit of society's willingness-to-pay for a QALY gain) was between 3% and 5% at 28 days and at 14 days respectively.
- Three non-NHS studies were identified that had undertaken cost-effectiveness modelling with an RADT and a clinical algorithm, but results were neither consistent nor transferrable to a Scottish NHS perspective.

Patient and social aspects

- A qualitative interview study from the UK found that patients were reassured about their diagnosis and treatment as a result of undertaking the RADT, and would prefer not to take unnecessary antibiotics.
- Healthcare practitioners found the tests useful and easy to operate especially as they gained experience within the trial. Although there were concerns about the cost and time implications of using an RADT it was felt that RADTs and clinical scores could be helpful for inexperienced practitioners.

Context

- Although serious GAS complications are rare in the UK, there is recent evidence of increasing incidence of scarlet fever and invasive GAS infections. Health protection agencies in both England and Scotland recommend ongoing vigilance.
- The Scottish Antimicrobial Prescribing Group (SAPG) have developed a range of interventions to support reduction of unnecessary use of antibiotics for self-

limiting respiratory tract infections. https://www.sapg.scot/quality-improvement/primary-care/optimising-antibiotic-use/

- Current NICE guidelines for antimicrobial prescribing for acute sore throat recommend the use of the FeverPAIN or Centor clinical scoring systems to identify patients who may benefit from delayed or immediate antibiotic prescription, based on symptoms.
- Public Health England provide guidance on management and treatment of common infections. https://www.gov.uk/government/publications/managing-common-infections-guidance-for-primary-care
- NHS England is supporting a Sore Throat Test and Treat walk-in community pharmacy service as part of the NHS Innovation Accelerator scheme. https://www.england.nhs.uk/2016/11/nia-innovations/

Further research

- Long term studies are needed that investigate potential medicalisation effects of rapid tests for assisting prescribing decisions in community settings, exploring staff and patient preferences and beliefs around the need to consult a medical practitioner for self-limiting conditions such as sore throat.

Advice context:

No part of this advice may be used without the whole of the advice being quoted in full. This advice represents the view of the SHTG at the date noted.

It is provided to inform NHS boards in Scotland when determining the place of health technologies for local use. The content of this Advice Statement was based upon the evidence and factors available at the time of publication. An international evidence base is reviewed and thus its generalisability to NHSScotland should be considered by those using this advice to plan services. It is acknowledged that the evidence constitutes only one of the sources needed for decision making and planning in NHSScotland. Readers are asked to consider that new trials and technologies may have emerged since first publication and the evidence presented may no longer be current. This advice does not override the individual responsibility of health professionals to make decisions in the exercise of their clinical judgment in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

SHTG Advice Statements will be considered for review if new evidence becomes available which is likely to materially change the advice. Stakeholders may submit a request, highlighting new evidence to shtg.hcis@nhs.net

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Chair
Scottish Health Technologies Group

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