

Assessment and management of respiratory tract infections in primary care

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i sal 2119, Hälsovetarbacken hus 2, Arvid Wallgrens Backe, Göteborg, torsdagen den 16 maj 2024 klockan 9:00.

av Stefan Malmberg

Fakultetsopponent: Anders Johansson, Professor och överläkare vid Institutionen för klinisk mikrobiologi, Umeå universitet, Sverige

Avhandlingen baseras på följande delarbeten

- I. **Malmberg S**, Petrén S, Gunnarsson R, Hedin K, Sundvall PD.
Acute sore throat and Fusobacterium necrophorum in primary healthcare: a systematic review and meta-analysis. BMJ Open. 2021 Jun 4;11(6):e042816.
- II. **Malmberg S**, Björk D, Hess-Wargbaner M, Åhrén C, Jacobsson G, Ulleryd P, Gunnarsson R, Sundvall PD.
Acute sore throat in primary care - long term effect of a multifaceted antimicrobial stewardship program including audit and feedback.
Submitted, under review for publication.
- III. Gunnarsson R, Ebell MH, Wächter H, Manchal N, Reid L, **Malmberg S**, Hawkey S, Hay AD, Hedin, K, Sundvall, PD.
Association between guidelines and medical practitioners' perception of best management for patients attending with an apparently uncomplicated acute sore throat: a cross-sectional survey in five countries. BMJ Open. 2020 Sep 17;10(9):e037884.
- IV. **Malmberg S**, Khan T, Gunnarsson R, Jacobsson G, Sundvall PD.
Remote investigation and assessment of vital signs (RIA-VS) — proof of concept for contactless estimation of blood pressure, pulse, respiratory rate, and oxygen saturation in patients with suspicion of COVID-19.
Infectious Diseases (Lond). 2022, Sep; 54(9): 677-686.

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Assessment and management of respiratory tract infections in primary care

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Abstract

Background: Respiratory tract infections (RTIs) are common causes of primary care visits and range from benign to life-threatening. Avoiding the overuse of antibiotics, which can lead to antimicrobial resistance, necessitates accurate severity assessment and evidence-based treatment decisions. The correlation between national RTI guidelines and physicians' treatment choices across different countries is not fully understood. Despite efforts to align clinical practice with guidelines, including antimicrobial stewardship programs (ASPs), guideline compliance remains unsatisfactory.

Aim: To study the management of common respiratory tract infections in primary care, focusing on severity assessment, guideline compliance, and the impact of antibiotic stewardship programs.

Methods: A systematic review and meta-analysis evaluated the role of *Fusobacterium necrophorum* (FN) in patients with a sore throat, while a randomized controlled trial (RCT) examined the effectiveness of a new ASP in primary care adherence to pharyngotonsillitis guidelines. A cross-sectional survey across five countries assessed the alignment of clinical guidelines with physicians' perceptions of best care. A clinical evaluation measured vital signs in patients with suspected COVID-19 using a camera-based system.

Results and Conclusions: The meta-analysis indicates FN is associated with acute sore throat, albeit less than GAS. The RCT found that the ASP did not alter guideline compliance. The survey revealed national variations in guidelines and physician adherence to them. The clinical investigation demonstrated the camera-based system's potential, while accuracy and reliability requirements necessitate further refinement and validation for clinical use.

Keywords: Respiratory Tract Infections, Vital Signs, Patient Acuity, Biomedical Technology, Artificial Intelligence, Practice Guidelines as Topic, Guideline Adherence, Antimicrobial Stewardship, *Fusobacterium* Infections, Streptococcal Infections, Tonsillitis, COVID-19