

On Community Acquired Infections Requiring Intensive Care

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- I. Brink M, Hagberg L. Outcome of 8-hour dosing intervals with beta-lactam antibiotics in adult acute bacterial meningitis. *Scand J Infect Dis.* 2006; 38(9): 772-7.
- II. Brink M, Welinder-Olsson C, Hagberg L. Time window for positive cerebrospinal fluid broad-range bacterial PCR and *streptococcus pneumoniae* immunochromatographic test in acute bacterial meningitis. Submitted.
- III. Brink M, Hagberg L, Larsson A, Gedeberg R. Respiratory support during the influenza A (H1N1) pandemic flu in Sweden. *Acta Anaesthesiol Scand.* 2012 Sep; 56(8): 976-86.
- IV. Brink M, Arnell P, Lycke H, Rosemar A, Hagberg L. A series of severe necrotising soft-tissue infections in a regional centre in Sweden. *Acta Anaesthesiol Scand.* 2014 Aug; 58(7): 882-90.



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ABSTRACT

Acute bacterial meningitis (ABM), influenza A, and necrotizing soft-tissue infections (NSTIs) are diseases that in a short period of time can progress to become life threatening. Individuals with severe forms of these infections must be treated in an intensive care unit where monitoring and support of failing organs improve the chances of survival. The overall aims of this thesis were to elucidate some aspects of the clinical presentation, diagnosis and intensive care treatment of ABM, severe influenza, and NSTIs.

In **paper I**, we investigated the outcome of 79 episodes of adult ABM. All patients were given β -lactam antibiotics according to the Swedish tradition with 8-hour intervals between the doses. This is less frequent compared with recommendations in most international guidelines. We found a high survival rate (94%), which suggests that other factors than antibiotic dosing intervals are more important. *Streptococcus pneumoniae* was the most common pathogen (48%).

In **paper II**, we explored the over-time performance for ABM diagnosis with broad-range polymerase chain reaction and immunochromatographic test. Both tests were highly sensitive for detection of bacteria in cerebrospinal fluid sampled up to one week into antibiotic therapy.

In **paper III**, we investigated the clinical characteristics and outcomes among the 126 Swedish cases of pandemic H1N1 influenza that required intensive care treatment. Risk factors were obesity, chronic pulmonary disease, and diabetes. The mortality was similar to what has been reported from other comparable countries. The use of non-invasive ventilation was not associated with improved outcomes compared with immediate invasive ventilation.

In **paper IV**, we studied patients with NSTIs treated at Sahlgrenska University Hospital/East during the period 2008–2011. The 30-day mortality was 14% and the incidence of amputation 24%. Group A streptococcus was the most common pathogen followed by Enterobacteriaceae and colonic anaerobe bacteria. Inter-hospital transfer was not associated with a delay in key interventions and could not be identified as a risk factor for adverse outcome.

Keywords: intensive care, acute bacterial meningitis, β -lactam antibiotics, cerebrospinal fluid, polymerase chain reaction, immunochromatographic test, influenza A H1N1, pandemic, non-invasive ventilation, necrotizing soft-tissue infection, inter-hospital transfer

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