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Project: Retrospective study of 50 patients with cellulitis treated under Acute Demand Management Service looking at duration on intravenous and oral antibiotics (prior to and/or subsequent to intravenous treatment) and time of switch between oral and intravenous

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Introduction:
The Canterbury Acute Demand Management Service (ADMS) was set up by Pegasus health and has operated continuously since 2000. Their aim is to keep people from being admitted to hospital or facilitating early discharge by treating them at home or at the ADMS clinic at the Bealey 24 hour surgery. This aids relieving pressure on the hospital system.

Cellulitis, a skin and soft tissue infection, has been one of the primary conditions treated by the ADMS. It is important that our cellulitis treatment protocols and practice reflect current best practice. However severity assessment is still relatively subjective and there is little evidence-based literature to guide the timing of when oral antibiotic treatment should be switched to intravenous (IV) Abs and vice versa. The natural history of cellulitis is for the patient to experience increased erythema and swelling within the first 48 hours after starting treatment.

Aim:
The primary objective of the study   was to determine the duration of oral and intravenous antibiotic treatment for all patients with cellulitis treated under the ADMS.

The secondary objective of the study was to determine which parameters were used to determine appropriate time to switch between oral and intravenous treatment.

Method:
This retrospective descriptive study involved selecting 50 consecutive patients who were referred to the ADMS by their general practitioner (GP) or by the Bealey 24 hour surgery. Patients referred by the emergency department or treated only by their own GP were excluded along with patients who did not have their treatment finished in Canterbury.

Data was extracted from the patient notes and analysed with the antibiotic regimen the patient received and clinical features on referral noted. These were then compared to current guidelines in the literature.

Results:
Out of the 50 patients, 20 were put straight onto IV antibiotics without being trialled on oral antibiotics first. Of those put on oral antibiotics the median amount of time before being referred for IV antibiotics was two days. The median duration on IV antibiotics was three days, which is within the recommended time period.   Most patients should show significant

improvement after 2-3 days of IV antibiotics at which point they may be switched back to oral antibiotics. The evidence for longer IV courses beyond 3-4 days is not strong. The median time on oral antibiotics post IV antibiotics was seven days, which is in line with best practice (Best Practice Advisory Centre New Zealand 2016). Of the 50 patients, 38 had their temperature taken and recorded, there were no patients with a temperature of over 38 degrees Celsius. Respiratory rate was taken for 21 of the patients, with one being abnormal, 27 patients had their blood pressure recorded and 34 had their heart rate recorded.

At time of referral to the ADMS two patients met the criteria of possible sepsis and 9 patients had blisters. A complete set of vital signs were taken for 18 out of the 50 patients. For cellulitis, clinical judgement often is the deciding factor on whether a patient requires IV antibiotics. In Canterbury doctors can use Health Pathways (an online clinical guideline tool), to help guide treatment for patients. Intravenous antibiotics or acute admission are recommended if there is significant extension of the cellulitis, blistering or necrosis occurs, or if systemic symptoms develop (Canterbury Community Health Pathways, 2016). Abnormal vital signs signal systemic involvement.

Conclusion:
From our study we found that 20 out of 50 patients were put straight onto IV antibiotics. Current best practice suggests a trial of oral antibiotics in most cases (Best Practice Advisory Centre New Zealand 2016). Further analysis of data is required to determine which other factors influenced treatment. The median time on oral antibiotics prior to starting IV antibiotics in the remaining 30 patients was two days. Temperature was normal in almost all patients on referral and other vital signs were variably recorded. A non- inferiority study has shown high dose oral antibiotics to be non-inferior to IV antibiotics for the treatment of moderate cellulitis. We therefore recommend a trial of high dose oral antibiotics for at least 48 hours for non-complicated, moderately severe cellulitis (if clinically appropriate and close monitoring is available). Vital signs (including heartrate, respiratory rate, temperature and blood pressure) should be used to guide clinical practice. It was clear from the study that more objective guidelines are required to determine the appropriate time to switch from oral to intravenous antibiotics.