

## Community Acquired Infections in a Pharmacy Setting

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Antibiotics are among the most commonly prescribed drugs used in human medicine<sup>1</sup>. It is estimated that 50% of those prescriptions are not needed or not optimally prescribed and treating viral infections with antibiotics has become routine affair<sup>2,3</sup>. Antimicrobial resistance has become a global threat. It is estimated that by the year 2050, infectious diseases will become the leading cause of mortality worldwide surpassing deaths from cancers and cardiovascular diseases<sup>4-6</sup>. Community acquired infections are infections that are contracted outside of a hospital or are diagnosed within 48 hours of admission without any previous health care encounter<sup>7</sup>. A lot of those infections are seen in a pharmacy setting in Lebanon and antibiotics are often wrongfully prescribed leading to a huge misuse of antimicrobials and subsequent side effects and increased resistance in the Lebanese community<sup>8,9</sup>. We highlight here the most commonly seen infections in a community setting and how to approach their treatment.

### Urinary Tract Infections (UTIs)

UTIs are one of the most common infections encountered in a medical setting and it is important to highlight some key points<sup>10</sup>. First, the presence of fever in the setting of a UTI, whether in a male or a female, should prompt the pharmacist to immediately send the patient to the nearest emergency room because of the possibility of a rapid worsening of the patient's condition particularly if the patient is bacteremic and the possibility of septic shock and death that might occur<sup>10-13</sup>. If the patient is not febrile, and in case the patient is a woman, then the diagnosis of cystitis is the most likely<sup>14</sup>. Please note that although quinolones are one of the agents used for cystitis worldwide, it would not be a good choice in the Lebanese population given the fact that the resistance of E.coli to quinolones in our community is close to 50% and quinolones are also associated with a broad spectrum of side effects (C. difficile colitis, tendinitis and tendon rupture, QT prolongation...) as well as a major increase in resistance<sup>15-18</sup>. Also, using a cephalosporin for a cystitis is not indicated and is also associated with adverse reactions and increased resistance<sup>19,20</sup>. So, a wiser choice would be to choose nitrofurantoin or fosfomycin as first line agents which are both associated with less side effects and a better outcome<sup>20-22</sup>. Also, the patient should be advised to drink a lot of water which is the only effective way to decrease the recurrence of UTIs. If the patient is a man, the presence of urinary symptoms should raise the possibility of a prostatitis and referring him to his primary physician is imperative<sup>23</sup>. A urine culture should be done in order to guide the treatment because a mistreated or partially treated acute prostatitis could lead to a chronic prostatitis and

the need for a longer duration of treatment<sup>24,25</sup>. Also, refer the patient to the Infectious Disease specialist in case of suspicion of a sexually transmitted disease

### Gastroenteritis

Nausea, vomiting and diarrhea are very common symptoms that patients seek medical attention for. Since most of gastroenteritis episodes are VIRAL in etiology and are self-limiting within 5 days of the onset of symptoms, antibiotics are rarely indicated for the treatment of gastroenteritis unless there are signs of invasive diarrhea (blood in the stools) that should prompt the healthcare worker to think of a bacterial cause for the diarrhea<sup>26,27</sup>. In this case, the pharmacist should direct the patient to see his doctor as soon as possible. In all other cases, SYMPTOMATIC treatment is usually enough for gastroenteritis episodes with a major emphasis on maintaining a good hydration status<sup>28</sup>. The inability to have an adequate water intake should also prompt a visit to the emergency room for IV hydration in order to avoid dehydration, renal failure as well as other electrolyte abnormalities that can occur<sup>29</sup>. Anti-motility agents should be absolutely avoided and are usually contra-indicated in these scenarios<sup>30,31</sup>. There is a tendency to use metronidazole in addition to quinolones or third generation cephalosporins to treat any diarrheal illness. This practice should be avoided and only reserved for patients where antibiotics are actually indicated<sup>32,33</sup>. The excessive use of these combinations can lead to side effects (including *C. difficile* infections), as well as increased resistance<sup>34</sup>. Rifaximin prescriptions are also commonly seen in the Lebanese community. It is to note that rifaximin is only FDA approved for traveler's diarrhea, hepatic encephalopathy and irritable bowel syndrome - diarrhea predominant. So, there is no indication to use it for every diarrheal illness.<sup>35-37</sup>

### Respiratory tract infections

Another commonly seen infections, particularly in winter time, are upper and lower respiratory infections. We will focus here on sinusitis and pharyngitis in upper respiratory infections and on bronchitis and pneumonia in lower respiratory infections.

Sinusitis is another infection that is often treated with antibiotics during the very first few days of symptoms. The international guidelines clearly recommend to start symptomatic treatment including nasal steroids and nasal saline as first line agents for the treatment of sinusitis since most of these infections are usually viral in origin<sup>38,39</sup>. The addition of an antimicrobial agent is not recommended initially and should not be done before TEN days after the onset of symptoms since this is the time where bacterial superinfection occurs. In this case, amoxicillin-clavulanic acid remain the antibiotic of choice for the treatment of these infections. Respiratory fluoroquinolones can be used in case of intolerance or true allergy to penicillin.<sup>40</sup>

Pharyngitis is an infection where the etiology is usually viral (most commonly) but also bacterial (streptococcus). The latest guidelines recommend a rapid streptococcal test to all patients with pharyngitis in order to guide antibiotic treatment<sup>41</sup>. In case of a positive streptococcal test, Amoxicillin 1g BID for 10 days is enough since all group A streptococci (GAS) are still sensitive to penicillin. Respiratory fluoroquinolones are NOT to be used for the treatment of GAS because of their broad spectrum of activity and their ability to induce resistance. Also, the addition of clavulanic acid to amoxicillin for the treatment of GAS is not indicated since GAS does not secrete a Beta-Lactamase and the clavulanic acid could lead to more side effects such as diarrhea<sup>42,43</sup>.

Bronchitis is one the most common lower respiratory infections encountered in clinical practice. Viral infections account for the majority of bronchitis and usually do not require antibiotics use. Symptomatic treatment is usually enough to treat these infections (mucolytic agents, bronchodilators, anti-tussive syrups...)<sup>44</sup>. Macrolides and respiratory fluoroquinolones are not indicated in the setting of acute bronchitis but are unfortunately widely prescribed for this condition, contributing to adverse events and increased resistance<sup>45</sup>. Community Acquired Pneumonia (CAP) on the opposite is usually bacterial in origin and warrants the initiation of antimicrobial therapy given the increased risk and the worse outcome associated with untreated bacterial pneumonia. If the patient is hemodynamically stable, outpatient therapy with a respiratory fluoroquinolone or a beta-lactam in combination with a macrolide are possible regimens.<sup>46</sup> If the patient is ill looking and showing signs of respiratory distress, decreased oxygen saturation, have multiple comorbidities, is more than 65 years-old or has signs of confusion and altered mental status, this patient needs to be immediately admitted to the hospital for intravenous antibiotics, oxygen supplementation and continuous monitoring of his respiratory status. In all cases, patients with pneumonia should be advised to contact their physician for a close follow-up.<sup>47</sup>

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