

Antimicrobial resistance and stewardship in the management of respiratory diseases in the United States

Report from an insight board

2023



FIP Development Goals



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About this report

This report outlines the insights for the pharmacy profession regarding the antimicrobial resistance and stewardship with regard to respiratory infections and other issues. The issues were discussed at the FIP insight board organised at the FIP Congress 2023 in Brisbane, Australia, with a focus on the United States of America.

The insight board collected views from experts on the following topics:

- Respiratory infection management post COVID-19;
- Pharmacist-led AMS programmes;
- Diagnostic services;
- Patient education;
- Health care professionals' education; and
- One Health approach in the US context.

The insight board focused on the US, providing practices and regulations concerning antimicrobial resistance and stewardship, as well as respiratory infection management. It discussed unique challenges related to point-of-care testing, collaboration with other healthcare professionals and reimbursement of services. The report also includes suggestions on how to educate patients and healthcare professionals. Additionally, it offers ideas on increasing awareness of One Health, integrating One Health concepts into pharmacy curricula, and fostering collaboration with various sectors within One Health.

The literature was evaluated beforehand and the topics were determined. Then, discussions were focused on the areas above, recorded and reported in this document. Insights from the participants and any quotes published in this report remain anonymous and non-attributable.

It should be noted that the views expressed during the insight board are those of the individuals based on their expertise and experience. They do not represent FIP policy or positions, although they may build on existing positions and statements. Reports from FIP insight boards seek to provide qualitative viewpoints and descriptive observations, not generalisable or global or fully evidenced report. These findings can inform further policy development or confirm positions already held but they do not occupy the status of a full FIP report. FIP will use the insights in this report to consider what further support will be required by pharmacists to support evidence-based decision making and appropriate patient-centred care.

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1 Introduction

Antimicrobial resistance (AMR) poses a challenge in the management of respiratory diseases. AMR remains a global public health concern, emphasising the need for immediate action. This insight board explored the transformed landscape of respiratory disease management in the aftermath of the COVID-19 pandemic. Our aim was to delve deep into this transformation, emphasising the context in the United States.

Treating respiratory infections becomes increasingly challenging when distinguishing between bacterial and viral infections is problematic. Community pharmacies frequently serve as the initial point of contact for individuals with suspected infections. Pharmacists, with their accessibility and medicines expertise, possess a distinct opportunity to conduct a differential diagnosis, educate patients regarding the management of these prevalent signs and symptoms, and offer suitable treatment and guidance. It is imperative for pharmacists to consistently advocate the safe, prudent and suitable utilisation of antimicrobials to prevent AMR.

While vaccines have received significant attention for their role in preventing respiratory diseases, there is now a noticeable shift in focus within the healthcare landscape. This shift is directed toward the dynamic management of respiratory illnesses, particularly in the context of evolving roles and interactions among pharmacists. The growing recognition of pharmacists as essential healthcare providers and their involvement in patient care is paving the way for a more comprehensive and patient-centred approach to respiratory disease management, highlighting the importance of coordinated efforts and antimicrobial stewardship (AMS) to optimise treatment outcomes while combating AMR.

Indeed, pharmacies occupy a unique position relative to other healthcare providers, whether they independent establishments or chain organisations. An interesting aspect of this discussion lies in the interface between pharmacies, urgent care facilities and primary care physicians. These entities are forging new pathways of collaboration and communication in the realm of respiratory disease management.

The utilisation of swab tests for diagnosing sore throats has become a common practice in primary and urgent care settings across the US. By focusing on the pharmacy's role in relation to other healthcare providers, their potential collaborations, and the possible expansion of their diagnostic services to address various respiratory conditions, this insight board session fostered a deeper understanding of the intricate ecosystem that shapes patient care.

This insight board specifically focused on key topics and challenges in the management of respiratory infectious diseases in the post-COVID-19 era. It discussed innovative AMS interventions, the One Health approach, AMR & AMS education, and patient education about AMR. Expert opinions on these issues were collected to move forward, particularly from pharmacists, educators and regulators in the US.

2 Discussing the issues around antimicrobial resistance in the United States

Respiratory infection management post COVID-19

1. How has the post-COVID-19 era affected the management of acute and chronic respiratory conditions including sore throat, cold & influenza, cough, bronchitis and sinusitis?

After the COVID-19 pandemic, patients have become more at ease when seeking a pharmacy for symptomatic diagnosis, such as for conditions like strep throat. In the US, pharmacists have expanded their testing capabilities to include various tests beyond COVID, allowing them to conduct screenings for strep throat and other ailments. This increased comfort in the public's perception of pharmacies as a destination for diagnosis and treatment has become more prominent after the COVID-19 pandemic. In many states across the US, pharmacists have gained the authority not only to diagnose and treat signs and symptoms of COVID-19 but also to address conditions like sore throat and other respiratory issues.

The implementation of point-of-care testing and treatment policies at the federal level has had a positive impact, leading to significant uptake by pharmacies, including through major chain pharmacies. This increased demand for services has become more pronounced since the pandemic, with several benefits for patients, such as reducing emergency department visits in favour of modern primary care clinics and pharmacies. For instance, large chain pharmacies with a nationwide presence are rolling out comprehensive tests and treatment programmes. In some states where it is legally permissible, a major corporation in the US has been actively promoting these services.

Another positive aspect has been the reimbursement policy, which has contributed to a higher uptake of diagnostic testing and assessments. However, the surge in demand has placed additional stress on pharmacy staff as their responsibilities have expanded without a corresponding increase in personnel. While expanding the role of the pharmacist is beneficial, some pharmacists in these stores may find it overwhelming. There was a temporary increase in staffing for vaccination and testing during 2020 to 2021, but it was subsequently discontinued, and there has been no expansion in the scope of pharmacy technicians. Consequently, pharmacists are now required to process the same number of prescriptions in less time while juggling other responsibilities, and the support provided by pharmacy technicians has proven insufficient.

In terms of education and training for point-of-care testing, different requirements exist across various states. Some offer a one- or two-hour training course, while in others it is left to the pharmacist's discretion to pursue additional education and training. Point-of-care testing itself is generally not considered a challenging aspect of education and training, as many pharmacy students are exposed to it during their academic programmes. Although it is not a requirement set by the American Association of Colleges of Pharmacy (AACCP), the American Pharmacists Association (APhA) offers training programmes, and the role has expanded due to the impact of COVID-19.

According to participants in the discussion, if a pharmacist believes they have received adequate training through postgraduate programmes or on-the-job experiences, they may not need to complete a state-approved or federally approved training programme. Some schools in the US have incorporated such training into their curricula, making it an integral part of the pharmacist's scope of practice. The intention behind the law was to ensure that licensed pharmacists can perform these tasks effectively.

“Increased demand for services has become more pronounced since the pandemic, with several benefits for patients, such as reducing emergency department visits in favour of modern primary care clinics and pharmacies.”

2. Beyond prudent antibiotic dispensing, what strategies can pharmacists employ to provide comprehensive patient care, such as offering advice on non-pharmacological interventions, symptom management, triage and preventive measures for respiratory illnesses?

There is an extensive over the counter (OTC) products range available in pharmacies in the US. Many pharmacists are well-equipped to provide advice on the use of OTC products to alleviate symptoms and maintain proper hydration. However, a formal triage process, such as a referral to a pharmacist, is not in place. Some pharmacies have medical clinics staffed by nurse practitioners or physician assistants. Furthermore, there has been a significant expansion of ambulatory care pharmacists, who have often had additional training such as a pharmacy residency beyond their initial pharmacy degree, and telehealth services. In rural areas, there are some newer pharmacies that have implemented a triage system, albeit not a formal one.

Pharmacists are well-informed and trained to guide patients on when to seek further treatment, either upon the initial presentation of symptoms or if the patient's condition does not improve within 48 hours. Part of their training in OTC courses is to educate pharmacists on when it is appropriate to triage or escalate care based on a patient's symptoms, including advising them to seek emergency room care to consult with a physician. However, the challenge lies in payment for these services. As a result, community pharmacists are not typically compensated for the services they provide. Payment is generally based on product sales, and pharmacists often do not receive compensation for offering advice on managing respiratory conditions, unless they are recognised as providers by an insurance company — a designation that only a few pharmacists possess according to the insight board participants. Patients frequently visit pharmacies with specific product requests, so pharmacists in the US are educated on self-management and how to address symptom-based requests.

Participants recognised a significant opportunity to collaborate with various community organisations, such as local churches and community advocacy groups, to support individuals without insurance and connect them with government-funded, low-cost or free clinics. In the US, there is a considerable population of uninsured or underinsured individuals, and community advocacy groups can play a crucial role in aiding vaccination efforts. Pharmacies are instrumental in administering vaccines; however, the specific age groups and vaccines they can administer vary based on state regulations. Ideally, the participants would like to see no age or vaccine restrictions for vaccines approved by US Centers for Disease Control and Prevention (CDC), including travel vaccines. They also highlighted that in some states, pharmacy technicians have the authority to administer vaccines.

“Post-COVID-19 pandemic has heightened the demand for point of care testing, but it also placed additional stress on pharmacy staff due to their expanded scope of responsibilities with limited human resources.”

Pharmacist-led AMS programmes

- 1. Can you provide unique or innovative examples of pharmacist-led AMS programmes from the US?**
- 2. What evidence exists regarding the effectiveness of AMS programmes, and who supports such programmes (CDC, government, national/regional organisations, etc) in preventing AMR?**
- 3. What role can pharmacists have versus nurse practitioners, physician assistants and physicians within the urgent care setting specific to respiratory infection management so as to decrease inappropriate antimicrobial prescribing in AMS?**

The most effective and common AMS programmes in the US are often the ones that are co-led by an infectious disease physician and an infectious disease pharmacist. In the US there is a specialisation in infectious disease. Board-certified pharmacists who have passed an examination in this field are considered experts. They are available to other pharmacists within an organisation and are able to educate members of the healthcare team about appropriate antibiotics use. All pharmacists within the organisation can reach out to the expert team when they encounter difficult questions or when another provider does not follow their advice regarding antimicrobial stewardship, consultation and recommendations.

Various interventions are being implemented to address antibiotics usage, with one approach being formulary restrictions that necessitate consultation with an infectious disease specialist for the use of certain antibiotics. However, a more constructive approach involves providing viable alternatives rather than solely prohibiting their use. Physicians

heavily rely on data, so furnishing them with organisation-specific antibiograms can prove beneficial. Additionally, the development of decision-making algorithms can assist healthcare providers. Furthermore, incorporating community data, particularly surveillance syndromic data, which highlight how community pressures affect antibiotic effectiveness, is crucial in keeping healthcare providers informed about resistance trends.

Urgent care centres present a specific challenge to pharmacists in promoting the appropriate use of antibiotics. Participants hoped that healthcare providers in these urgent care facilities, including physicians, physician assistants and advanced nurse practitioners, would discourage antibiotics prescriptions where they are deemed unnecessary. Instead, they may recommend a different level of care where appropriate. For example, they can suggest a visit to a patient's primary care physician if symptoms do not improve within a given time frame or suggest a visit to an emergency department if symptoms worsen.

Pharmacists have the potential to educate the public and address the AMR issue, particularly because some urgent care centres may be influenced by economic considerations, which may not always align with the best interests of patients. Public health campaigns, such as prominent messages and public announcements, can play a vital role in educating the public that antibiotics are not always necessary. Pharmacists, particularly those serving on public health boards, can have a highly effective impact in this regard.

Pharmacists are committed to individualised care, a fundamental aspect of their profession. By actively engaging with the community, pharmacists can effectively convey their message to the public, ultimately influencing the broader healthcare system and public health policy.

“Incorporating community data on the changing effectiveness of antibiotics is critical in keeping healthcare providers informed about resistance trends.”

Diagnostic services

1. What training and quality assurance measures should be in place for pharmacists to responsibly conduct swab tests for diagnosing respiratory infections in community pharmacy settings, ensuring accurate diagnoses and proper patient care while minimising the risk of unnecessary antibiotics use?

It would be helpful to establish standard operating procedures that align with those used in other clinics conducting similar tests. Clear guidelines are necessary for test selection, conditions, quality assurance and training. It is important to note that quality assurance should not deviate from the Food and Drug Administration-approved directions for point-of-care tests, according to participants.

Excessive testing can potentially lead to inappropriate antibiotics use, so pharmacists should avoid “over testing”. To ensure this, pharmacists should adhere to the same guidelines as other healthcare providers rather than having separate ones. This allows pharmacists to exercise their professional judgement about whether additional education and training is needed.

Patients often bear the cost of tests, antibiotics and pharmacy services, which can range from USD 30 to USD 40. For example, COVID-19 testing is funded, but costs for other tests vary. Apart from COVID-19 tests, the tests available in the US include streptococcus tests, flu tests, respiratory virus tests, HIV tests in some states, and the development of urinary tract infection tests. Some insurers do not recognise pharmacies as the site of care or testing, which can potentially pose issues for reimbursement. Participants believed that standard operating procedures could facilitate collaboration between pharmacists, laboratories and healthcare institutions, enabling the sharing of information. Currently, access to healthcare records is limited in the US, and pharmacy information is not visible to healthcare institutes. Similarly, pharmacists cannot access a patient's laboratory results or hospital discharge papers.

“Some insurers do not acknowledge pharmacies as the site of care or testing, which can potentially pose issues for reimbursement”

2. How can pharmacies collaborate with clinical laboratories and healthcare institutions to standardise diagnostic practices and ensure reliable results from respiratory infection tests, ultimately aiding AMR prevention?

Community pharmacists often do not have access to electronic health records in the US. Thus, if they make a diagnosis or recommendation for medicines, this does not get documented in a place where others can see it. A free, shared information platform could facilitate collaboration among healthcare professionals. In certain areas, some pharmacies have access to hospital electronic health records, enabling the exchange of information. However, this is not always the case, as pharmacy data are not consistently integrated with those of other healthcare settings.

Pharmacy information differs from healthcare institution records, including patient discharge details and treatment plans. Several states have implemented electronic exchange systems, which provide insights into hospital visits, diagnoses and more. However, these systems often suffer from incomplete information.

According to the participants, pharmacists, in collaboration with healthcare institutions, should avoid being overly prescriptive in adding more layers of complexity. The primary focus should be on fostering cooperation across educational institutions and regulatory bodies. This collaborative effort aims to standardise education and practice across states, ultimately improving patient care. While this can be a challenging endeavour, healthcare professionals must unite toward a common goal.

“Healthcare professionals must unite toward a common goal of standardised education and practices across all states.”

Patient education

- 1. How effectively does the patient educational content developed for nurses and physicians in urgent care settings address the educational needs of community pharmacy teams, and what specific adaptations might be necessary to ensure its relevance and applicability in the context of respiratory disease management and AMR prevention?**
- 2. What strategies can pharmacies implement to ensure consistent and accessible distribution of AMR-related educational resources to patients, fostering a culture of informed decision-making and responsible antibiotics use?**
- 3. To what degree are community pharmacists engaging in dialogue with their patients who present with respiratory tract infections and are asking for advice/counselling before going to the doctor? You may share your thoughts about the specific example here: If pharmacists can collaborate more with the urgent care centres in terms of educating patients on the “wait and see” approach to taking antibiotics and focusing on symptom relief, can this collaborative work help reduce antibiotics prescriptions?**

The CDC provides valuable materials for patient education, offering pharmacists resources to discuss with patients or to guide them to explore on their own. Some of these materials can even be printed with the pharmacy’s logo for display within the premises. While there are hands-on educational materials available, pharmacists primarily engage in verbal education to explain why antibiotics may not be prescribed. When a patient has specific questions, pharmacists can print relevant educational materials from software or package information, such as literature from sources like the CDC.

Many community pharmacies use CDC materials, but they can also incorporate local health department resources for patient education. Some pharmacies may opt for local materials, although practising pharmacists often lack the time for adaptation. In these cases, local administrative staff can help with this process, providing content that goes beyond what the CDC offers. Additionally, there are podcasts available that pharmacists can recommend to patients. These podcasts use layman’s terms and are a more accessible way for patients to receive information. They do not need to read a document; they can simply listen, making it highly beneficial.

In hospital settings, patient education about viral illnesses and the reasons healthcare professionals do not prescribe antibiotics is prevalent.

Another crucial aspect of patient education is ensuring that patients understand what their prescribers or physicians have told them. During the COVID-19 pandemic, patients have become more resourceful in seeking information on their own.

A well-trained patient information process by pharmacist is gaining significance, where the physician's message is effectively translated for patients so that patients understand what the physician says regarding the disease management. Pharmacists need to listen to patients, which sometimes includes addressing their emotional concerns. This approach facilitates shared decision-making and is a vital component of patient safety.

During patient education, pharmacists should inquire if patients have any questions and correct any misinformation they may have obtained from social media. In certain community settings, education primarily focuses on teaching patients about disease symptoms, symptom management, when to seek medical attention and why antibiotics may not be necessary.

Patient education can be conducted in other settings, such as emergency departments and ambulatory clinics, where pharmacists serve as excellent educators and are highly accessible. They can engage with patients under the right conditions. Encouraging the appropriate treatment of asymptomatic bacteria is an important AMS intervention for pharmacists in emergency departments. When there is a concern for a urinary tract infection but the patient does not have any symptoms, pharmacists can await the results of the urine culture before prescribing any antibiotics, which is a positive patient-centred approach.

“During patient education, pharmacists must address and correct any misinformation that patients may have obtained from social media.”

Health care professionals' education

- 1. What key components, topics or areas of AMR and AMS should be incorporated into education for pharmacists?**
- 2. How can continuous education programmes for pharmacists be tailored to emphasise the latest guidelines and best practices in respiratory disease management, aligning with AMR prevention strategies?**

According to participants, there were some commonalities between patient education and student education: “What you teach to the students, you hope that you are also teaching to the patients.” It is very important to put the patient at the centre of shared decision making, which is highly adopted in US health care systems.

Having a strong pharmacology and medicinal background is important. But students must also know how to identify trusted resources as they may not remember everything they learned at pharmacy school. AMR and AMS education should be the same for medical, dentistry and pharmacy students. In pharmacy schools there are skills labs where students are taught how to educate patients. A critical aspect of these skills labs is that students have the opportunity to practise in front of skilled preceptors and are more likely to develop confidence and proficiency as future practitioners.

There is a significant level of interaction between students and academic staff, allowing students to learn how to effectively respond to questions. This engagement mirrors their future relationships with patients. When patients ask questions, students are more likely to feel empowered to provide answers.

Patient education stands as a cornerstone of pharmacy education in the US. It involves instructing pharmacists on the importance of asking the right questions to help patients feeling heard and understood, zeroing in on their specific needs. Students should also be taught how to provide side effect information without alarming patients.

Furthermore, education must encompass the pharmacist's role in educating healthcare providers and nurses. This concept should be instilled in pharmacy students, giving them the confidence to share their knowledge as experts in medicines. Encouraging healthcare providers to utilise available data and evidence to prevent inappropriate prescribing is crucial.

“Patient education is a cornerstone of pharmacy education in the United States.”

One Health approach in the US context

The World Health Organization defines One Health as “an approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes”. The One Health approach is critical to addressing health threats in the animal-human-environment interface.

1. What strategies can be employed to encourage cross-sector communication and collaboration among different stakeholders and pharmacists, to address AMR from a comprehensive One Health perspective?

Participants emphasised the need for enhanced education and training for pharmacists and pharmacy students, as well as the importance of awareness campaigns. They discussed the role of pharmacists in addressing AMR and explored opportunities for pharmacists to extend their involvement beyond the health sector. Collaboration with individuals from various sectors is crucial, requiring extensive negotiations and preparation for the workforce to operate both within and outside the health sector.

The discussion also touched on the importance of preventive antimicrobial use in food sources, which plays a significant role in driving AMR. Community pharmacists often counsel patients, contributing to the public perception of pharmacists as public health professionals. Collaboration and communication with all healthcare professionals are essential.

Some pharmacies are heavily involved in veterinary compounding, offering a chance for collaboration between veterinary and pharmacy schools. This collaboration could involve case-based education related to animal sources of infections, including companion animals. Many pharmacy schools are situated on campuses with medical and veterinary schools, presenting an excellent opportunity for pharmacy, medical and veterinary students to engage in cross-disciplinary learning. This approach enables students to learn from each other and promotes multidisciplinary and interdisciplinary learning.

It was noted that the National Academy of Practice, which includes veterinarians, has adopted the One Health approach. While some government agencies embrace the One Health concept, there is currently no federal statement in the US that outlines One Health as a strategy to combat AMR. Participants believed that a mere statement, whether from organisations like the CDC, the Environmental Protection Agency, the Food and Drug Administration Agency and other regulators, would not suffice. Instead, they emphasised the need for operational and actionable measures to drive meaningful change in practice.

“Merely having a statement on One Health does not bring about a change in practice; it should be operational and actionable.”

2. How do the roles and responsibilities of independent pharmacy establishments and chain organisations differ in promoting responsible antibiotics use, educating patients and collaborating with healthcare stakeholders to effectively address the challenges posed by AMR?

In many US states, pharmacies do not necessarily need to be owned by pharmacists. Some states allow non-pharmacist individuals to own pharmacies as long as certain conditions are met and licensed pharmacists have proper oversight. But according to various laws and regulations, at least one licensed pharmacist is employed and responsible for overseeing the pharmacy’s operations. This pharmacist, often called the “pharmacist-in-charge”, is responsible for ensuring that the pharmacy operates in compliance with all relevant laws and regulations.

There is little research on how the effectiveness of interventions differs among chains compared with independent pharmacies. Participants noted that corporate chains tend to be risk-averse, leading to slower adoption of new services. Although pharmacists are granted the authority to perform certain novel tasks, many pharmacy chains wait until these new roles are adopted across all US states before creating programmes for them. This slow adoption is influenced by differences between corporate-driven chain management and the flexibility of independently owned stores.

However, as a positive example, some chain pharmacies have implemented antibiotics-use dashboards, which provide printed reports. Pharmacists are guided by specific metrics related to antibiotics use, such as a daily report in chain

pharmacies that lists individuals who have been prescribed antibiotics in the past seven days. Pharmacists can review this report for reference and advise on patients' treatment accordingly.

“Antibiotics-use dashboards can be a useful tool to inform pharmacists of specific metrics related to antibiotics use for individual patients.”

3 Conclusions

This insight board revealed unique practices in the US related to antimicrobial resistance and stewardship, as well as respiratory infection management, which are useful to target and focus support.

The post-COVID-19 period has seen a surge in demand for point-of-care testing in pharmacies, expanding the role of pharmacists in the community. Pharmacists can make decisions about advanced education and training necessary to meet these demands based on their professional judgement, given that most pharmacy schools in the US provide adequate education in this regard.

Concerning respiratory infection management, pharmacists can offer advice on various over-the-counter medicines for symptom management and refer patients to physicians where needed.

However, a challenge lies in the fact that insurance companies often do not recognise pharmacists as healthcare providers eligible for reimbursement, and payment is typically limited to medical products rather than counselling services.

Patient education is a fundamental component of pharmacy education, with most US pharmacy schools providing skills labs to enhance students' patient education skills. In addition to educating patients and the public, pharmacists should also receive training on educating healthcare professionals about antimicrobial resistance and use.

The concept of One Health in the US lacks a well-established practical approach. To increase awareness about One Health, there is a need for interprofessional and multidisciplinary education and training.

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