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## Brief Report

## Antimicrobial stewardship and infection prevention and control in atopic dermatitis in children

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Atopic dermatitis is a chronic, recurrent inflammatory skin disease, characterized by frequent exacerbations that can necessitate increased antibiotic use. A qualitative study was conducted at a specialist pediatric hospital to explore the perceptions of dermatology nurses on their role in antimicrobial stewardship when caring for children with atopic dermatitis. Thematic and content analysis derived that the awareness of nurses on antimicrobial stewardship was low, although they were implementing key elements in their clinical practice.

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Eichenfield et al<sup>1</sup> defines atopic dermatitis (AD) as a “chronic, pruritic inflammatory skin disease that occurs most frequently in children, but also affects many adults.” Patients with AD are often predisposed to a higher incidence of bacterial and viral infections due to the combination of genetic predispositions for skin barrier dysfunction and dysfunctional innate and adaptive immune responses.<sup>2</sup> There has been little research performed linking antibiotic resistance and AD despite patients with AD being potentially exposed to multiple courses of antibiotics.<sup>3–5</sup>

One way to manage and to decrease the incidence of antimicrobial resistance is through antimicrobial stewardship (AMS). Nurses potentially have a significant role within AMS programs; however, it is poorly understood how nurses contribute.<sup>6</sup> There is a paucity of Australian research on AD and AMS, and, to our knowledge, there has been no published research exploring the use of AMS in AD, specifically in the pediatric setting. This study bridges this research gap and aimed to explore and to describe nurses' understanding, perception, and knowledge of their role in infection prevention and control (IPC) and AMS when providing care for children with AD.

## METHODS

## Design

A qualitative exploratory descriptive study was undertaken to obtain semi-structured interview data from registered nurses on their attitudes and knowledge of AMS and AD management.

## Participants

Sixteen registered nurses were recruited from a tertiary metropolitan children's hospital, 15 were women (Mean age = 31) and 1 was a man (age = 39). Most of the participants had been qualified between 1–7 years (Mean years = 9.2).

## Procedure

An open information session at the study facility, promotional flyers, networking, and snowball sampling were utilized to promote study participation. Participants were recruited from 3 different sub-sectors in the hospital: the emergency department, the short-stay medical ward, and the dermatology outpatient department clinic. These 3 areas were chosen to reflect the views of nurses from the areas that typically constitute the journey of the patients. Patients usually present in the emergency department are transferred to the medical ward if they need admission, and receive specialist nursing input as an inpatient, and are followed up as an outpatient in clinics. The interviews and focus group were audio-recorded with the permission of participants and subsequently transcribed verbatim.

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Conflicts of interest: None to report.

Twelve participants volunteered to participate in a focus group, and 4 volunteered to participate in 1-on-1 interviews that lasted between 20–40 minutes. All members of the research team took part in data collection and analysis. Thematic and content analysis were used to identify themes and patterns within the data, the approach of which is commonly used in naturalistic inquiry.<sup>7</sup>

### Ethics

This study was approved by the appropriate university and health care facility ethics committees.

## RESULTS

The 4 primary themes that emerged from the data were (1) our role is education, (2) advocating for children and their families, (3) the nurse's role in AMS and the practice-to-theory gap, and (4) self-protection and IPC.

### Our role is education

Throughout the interviews and in the focus groups, education emerged as pivotal (Table 1). The main focus of education was surrounding management strategies for AD and educating family members about these strategies.

### Patient advocacy

Although the majority of participants did not use the term "advocating" or "advocacy," they described a key focus of their practice as providing individualized care, facilitating a positive patient experience, or advocating for parents who care for children with AD (Table 2).

### AMS and practice-to-theory gap

The majority of the participants were unaware of the term AMS. However, when made aware of what AMS entails, all of the participants stated that they had not received any education on AMS, and all but 1 of the participants were unaware of the existing AMS hospital policies. Due to a lack of the terminology knowledge, many of the participants did not recognize that they had in fact been describing AMS practices throughout the interviews and in the focus groups. For example, 2 participants stated that they felt they could question prescribers on their use of

**Table 1**  
Our role is education and patient advocacy

Nurse 1	"I think particularly our role is education. So, a lot of people can give [education], can tell them [the parents] the right things to do, but [they need to be] getting that understanding of why to do it, when to do it, and how to do it."
Nurse 6	"I think education is for families as well. I think that's a big part of management because they often have no idea or they often have an idea but haven't been able to do it at home."
Nurse 11	"I think the only issue I've ever come across with eczema management here is that I find the dermatology team very quick to accuse families of being noncompliant. It's really hard when doctors come in and question why isn't this done, and I say that it is the best I could get done in 2 hours. Parents come in exhausted asking for help and get labeled as noncompliant, but the children are really difficult."
Nurse 6	"They [parents] often find it very difficult at home, if prior to coming into hospital because it hurt so much, popping a child into a bleach bath, hurts their child so much that they physically can't get them into the bleach bath."

**Table 2**  
Nurse's role in ASP and IPC

Nurse 5	"We [are] not very good, I don't think we are very good at questioning why a child is on antibiotics. We'll often look at a medical chart and go, 'Oh, why are they on this?' or 'Oh, they must just want to keep it going.' You know or they might just want to cover with it, so sometimes I think we overdo it, but as nurses we don't question antibiotic use as much as we probably should do."
Nurse 11	"I think we are pretty good with questioning antibiotics and being an advocate for not overdoing it, but I didn't know it actually had a title."
Nurse 2	"Unfortunately, children or people get put on antibiotics for the wrong reasons, when it is unnecessary, and I think that is what the great thing about the introduction of bleach [is] because they have been able to prevent lots of infections, and the need for antibiotics."
Nurse 6	"I mean, occasionally, you will question what the antibiotic of choice is, but I don't tend to question. Occasionally, I'll say, 'Why are they on it?', 'What are you covering?' 'Why are you putting them on that?' But in terms of when they go home, you know they are given a script, I don't even think twice about it, sending parents home with a script to complete the oral antibiotics at home. I was told as an undergraduate nurse, whether it's an old wives' tale or not, to finish the course of antibiotics. You are meant to be on a 10-d course you need to have your 10-d course regardless [if] at Day 5 you look fantastic. So, when I educate families, I always say, 'Finish your course, don't stop it.'"
Nurse 6	[Regarding use of personal protective equipment] "I think it's mainly because my clothes get wet and dirty, as opposed to infection prevention"
Nurse 14	"Gloves and gowning usually, mainly just because you don't want to get creams and stuff on your scrubs."

ASP, antimicrobial stewardship; IPC, infection control prevention.

antibiotics, and many of the participants used culture and swab results to discuss treatment with the treating physicians. In addition, the specialist dermatology nurses were able to link a thorough understanding of AD management strategies with minimizing the use of antibiotics. Diluted bleach baths are an anti-infective treatment that can assist in reducing the quantity of localized skin infections and may decrease the requirement for oral or topical antibiotics for patients with AD with colonized skin (Table 2).<sup>8</sup>

### Nurse's perceptions on IPC

All participants discussed the different IPC methods they used when caring for children with AD. The participants discussed the importance of IPC management in the context of managing children with AD and preventing cross-infection between patients. Some participants, however, described their use of personal protective equipment as self-protection, more specifically their clothes, rather than for the protection of patients. Some participants also stated that they provide education to parents concerning decreasing the risk of cross-contamination when providing care (Table 2).

## DISCUSSION

Four themes were drawn from the data. The first theme was the importance that nurses placed on providing family education. The second theme described practices that demonstrated the nurses were acting as a patient advocate. When exploring the role of nurses in AMS, 2 additional themes emerged. The third theme was the lack of recognition of the role of the nurse within AMS and the practice-to-theory gap. The fourth theme was the importance of implementing effective IPC strategies.

In line with previous research, participants perceived that providing education to caregivers was a key principle of caring for children

with AD, especially in regard to preventing repeat presentations to the emergency department.<sup>9–11</sup> Consistent with Burford et al,<sup>12</sup> advanced practice dermatology nurses discussed the importance of providing education to health professionals, providing them with the knowledge needed to implement best practice and ensure patient safety was maintained.

Patient advocacy, a key role for any nurse, emerged as a theme within this study.<sup>13,14</sup> Multiple participants noted that parents were considered noncompliant with AD treatment by the medical team, through what they perceived as misinterpretation of the families' behavior.

The study findings confirmed previous reports that there is a lack of education about AMS principles provided to clinicians providing direct patient care,<sup>15</sup> and that the role of nurses is underrecognized.<sup>16–19</sup> The lack of AMS terminology knowledge resulted in the identification of a major theme of practice-to-theory gap.<sup>14,15</sup> Addressing this practice-to-theory gap through organizational policies and training should be viewed as a prerequisite to the success of AMS programs.

## LIMITATIONS

Although participants were recruited from 3 different areas, reflecting the journey a patient presenting with an exacerbation of AD would take (eg, emergency department, medical ward, and dermatology outpatient), the sample size might appear limited and could be perceived as a limitation to the study. However, the study sample size is in keeping with the tenets of the qualitative exploratory descriptive method.<sup>20</sup>

## CONCLUSIONS

The perceptions of the roles of nurses emphasized the need to prevent and control infections to reduce antimicrobial use. The study findings demonstrate that nurses were operationalizing the key principles of AMS in their practice. The low awareness of AMS for nurses, however, is concerning as this might reinforce the common misperception that AMS programs largely involve prescribers and pharmacists. Integrating AMS principles and the nurses' role within AMS programs in the undergraduate nursing education needs to be investigated.

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