# Topical antibacterial therapy for canine pyoderma: what is new and what is good about it?

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Siân-Marie Frosini, after graduating from the Royal Veterinary College in 2013, completed a PhD in 2018, funded by the BBSRC and Dechra Veterinary Products, focusing on the renewed role of topical therapy in an era of multidrug-resistant infections in veterinary practice. She is currently a Post-Doctoral researcher at the RVC, investigating the transmission of multidrug-resistant bacteria between humans and pets.



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**The historical concept that topical treatments have to “sting, stain and stink” in order to be effective has long been overhauled. A broad range of topical antibacterial products is nowadays available, some as prescription-only medicines following efficacy and safety studies, others accessible to owners without prescription and marketed as antibacterial. Now, with the emergence of multidrug-resistant bacteria, the role of topical therapy has changed from supportive to mainstay in many infections. However, the outcome of topical therapy relies heavily on owner and patient compliance, and engaging owners in the process can be time-consuming and challenging. This article summarises the latest evidence relating to topical antibacterial treatments for canine pyoderma, provides practical tips on how to maximise treatment success, and highlights where topical therapy can replace systemic antibiotics to support good antimicrobial stewardship.**

## *Opportunity for good antimicrobial stewardship*

In view of the major threat to human and animal health from antimicrobial resistance in bacterial pathogens, there is an urgent need to review, reduce and prioritise antimicrobial prescribing. For livestock, substantial reductions in antimicrobial use were achieved in many countries over the past two decades through regulatory, educational and marketing efforts. In contrast, antimicrobial prescribing in small animal practice, at least in the UK, currently remains unregulated beyond medicine authorisation requirements and the legal flexibility of the Veterinary Medicines Directorate Cascade, although recently promotion of good antimicrobial stewardship has been seen in advisory recommendations (Lloyd and Page, 2018). This calls for self-motivated reflection and voluntary implementation of responsible prescribing practices.

Canine pyoderma, most commonly caused by *Staphylococcus pseudintermedius*, is a major reason for antimicrobial use in small animal practice, in most cases administered systemically. However, the skin is almost uniquely accessible for direct application of drugs. This presents an exceptional opportunity to replace systemic with topical antibacterial therapy in many cases and new evidence has become available to underpin such clinical decision-making.

## *Indications for topical antibacterial therapy*

Topical application of drugs is widely accepted and recommended for most eye, ear and superficial wound infections, and guidelines for these presentations suggest only using systemic antibacterial therapy if there is specific involvement of deeper structures (orbital abscessation, otitis media, bacterial cellulitis, signs of systemic illness).

For pyoderma, recommendations on antibacterial treatment are critically dependent on the depth of infection (Table 1). Systemic antibacterial therapy is always indicated for cases of deep pyoderma and topical antibacterial therapy is recommended as adjunctive treatment where suitable. For superficial pyoderma though, the textbook dogma of three weeks of systemic antimicrobial therapy is being challenged based on new published evidence as illustrated in recent small animal practice-specific antimicrobial use guidelines (BSAVA ‘PROTECT ME’ poster, FECAVA ‘Advice on Responsible Use of Antimicrobials’ flow chart poster). These guidelines recommend topical antibacterial therapy, wherever suitable for the case, as the only antibacterial treatment modality, highlighting an opportunity for good antimicrobial stewardship in small animal practice. For surface pyodermas, topical therapy is intuitive and effective due to the location, and clinical efficacy has been demonstrated, although this often benefits from combination with topical glucocorticoid. Unfortunately, for superficial pyoderma few clinical studies have been done to prove efficacy or show superiority to systemic drugs.

Indications that are unfortunately gaining importance worldwide are those skin infections that involve methicillin-resistant *S. pseudintermedius* (MRSP) or *S. aureus* (MRSA). For such cases, topical therapy has been shown to be effective not only in the treatment of infection, but also in limiting the risk of zoonotic transmission of multidrug-resistant staphylococci between pets and people during often close contact and via environmental contamination. Such general cleaning and cosmetic benefits of topical antibacterial therapy were detailed in a 1998 review article in this journal (Curtis, 1998) but have now become particularly relevant for their de-contaminating effect on MRSP or MRSA.

*Efficacy against MRSP and MRSA infections*

Multidrug-resistant bacteria, specifically MRSP and MRSA for pyoderma, have added extra complexity to the management of canine bacterial skin infections (Table 2). Although MRSP and MRSA are typically resistant to most or all clinically-relevant systemically used antibacterials, this resistance does not extend to topical antibacterial therapy. *In vitro* studies have consistently shown low minimum inhibitory concentrations (MICs) for antibacterial agents in products licensed for topical use in canine pyoderma. Several clinical studies, although so far only including small numbers of dogs, have indicated good efficacy of chlorhexidine and fusidic acid products applied topically for the treatment of MRS superficial pyoderma and, at least in the short term, for elimination of MRS carriage using the same regimens as for infections caused by methicillin-susceptible staphylococci (Borio and others*,* 2015; Loeffler and others*,* 2011a).

*Which active ingredients for canine pyoderma?*

A multitude of licensed and over-the-counter topical products is marketed as antibacterial, using various words with similar interpretations (Box 1). However, evidence for clinical efficacy specifically for canine pyoderma is currently only available for a small number of active ingredients (Mueller and others*,* 2012), and even fewer agents have gone through efficacy and safety testing leading to a product authorisation in the UK, as listed in Table 3. Authorised products should always be first choice when starting treatment as this will ease assessment of suitability and compliance. The frequency of application of these products should be governed by the datasheet recommendation (often twice weekly for shampoo products), although higher frequencies (up to daily applications of spray or mousse products) have been implemented by some clinical studies, indicating the safety of using topical products more frequently if desired. If a licensed product with proven efficacy fails despite appropriate prescription and good compliance, then other factors may be involved, and alternatives need to be considered.

In addition, the same active ingredient may also be available in over-the-counter products or in medicines authorised for other indications or for humans (off-license, if used in pets). Usually, there will be some differences in product formulation with unknown effects on clinical efficacy. For example, chlorhexidine is available as (di)gluconate in 2% or 3% shampoos authorised for canine pyoderma (Table 3) or as 4% in the antimicrobial skin cleanser Hibiscrub (Mölnlycke, Buckinghamshire, UK) or in a 4% spray or shampoo (Chlorexyderm, Vetruus [UK distributor for ICF], Buckinghamshire, UK).

Other active ingredients for which efficacy against staphylococci has been shown, at least *in vitro,* but where no product formulations are licensed in the UK for dogs include several well-known compounds such as acetic and boric acid, benzoyl peroxide, ethyl lactate, medical honey, povidone-iodine, salicylic acid, silver sulfadiazine and sodium hypochlorite (bleach). However, there is no strong *in vivo* veterinary evidence to support these ingredients and further clinical studies are needed. For example, sodium hypochlorite (bleach), at a concentration of 2.5µL/mL, has been suggested in human medicine to be suitable as a bleach bath for killing MRSA based on *in vitro* data (this extrapolates to 30mL of 8% household bleach in 1L of water; Fisher and others, 2009), but little veterinary evidence exists to support its use with only a single open-label, combination-shampoo pilot study available (Fadok and Irwin, 2019).

Lastly, owners are increasingly exposed to a wide-range of products or ‘care’ formulations on pet shop or supermarket shelves, through the internet or even in veterinary practice waiting area displays. Many of these claim antibacterial properties due to herbal or chemical ingredients, such as eucalyptus oil in Green Veterinary Salve (Hyperdrug Pharmaceuticals, Co Durham, UK) or chloroxylenon (PCMX), found in both Coatex (VetPlus Ltd, Lancashire, UK) and also in Dettol (Reckitt Benckiser Group plc, Slough, UK), however evidence for clinical efficacy is not always available through peer-reviewed publications.

## *Which formulation: Shampoos, creams, foams, wipes?*

Efficacy of topical antibacterial therapy depends not only on appropriate product choice and correct prescribing, but also on good compliance from owners and the patient. Although the wide range of product formulations offered nowadays may feel overwhelming, it provides opportunities for a tailor-made treatment plan to suit the type of patient, the type of infection and the owner’s lifestyle and budget (Table 4). While clinical studies will have been conducted for a specific indication, e.g. canine superficial pyoderma, some formulations are available for different purposes with subtle differences in application.

## *How to get owners on board and improve compliance?*

Convincing owners to put our recommendations for topical therapy into action may be challenging, particularly since systemic alternatives are likely to be less labour-intensive and more convenient. Similarly, there may be perceptions that owners expect to be prescribed systemic antibiotics for their pets. However, newer studies in veterinary and human medicine have also shown the opposite. Some owners (or patients) report a perceived pressure towards systemic antibiotics from the prescriber, and would be interested in exploring alternatives in light of the increasing media attention on antimicrobial resistance. Thus, topical therapy might be more acceptable to owners than we assume. Conversational ‘nuggets’ that might be helpful in this context include:

* **Comparison with something familiar**: topical therapy is widely used in human medicine for bacterial skin infections.
* **Safety**: Drugs will only be used on the diseased organ (skin) or even only on affected areas.
* **Antimicrobial resistance**: Reduced risk of drug-resistant bacteria causing infections in the future (risk to dog) and potentially spreading to owners (risk to in-contact people through transmission).
* **More control for owners**: As for all prescription drugs, treatment will need to be applied as prescribed, but topical therapy provides more opportunity to tailor treatment to the patient’s needs.
* **Value-added**: Antibacterial shampoos will help to remove dirt and improve coat condition and smell, properties often desired by owners who frequently wash their dogs for cosmetic reasons. Additional benefits may include mechanical disruption of biofilm (e.g. in lip folds) and reduction of pruritus.

The risk of poor compliance is likely higher with topical therapy compared to systemic treatment and extra consultation time may be needed to explain the merits and correct application of topical products. Supporting owners in making topical treatment work should contribute to long-term success, particularly for cases of chronically recurrent superficial pyoderma, and veterinary nurses will be well placed to enhance this process, give practical advice and monitor compliance.

## *Do we need to worry about resistance to topically used antibacterials?*

In the context of topical antibacterial therapy, it is important to differentiate between clinical resistance (i.e. treatment failure) and *in vitro* measurements reported by the laboratory (MICs or ‘resistant/susceptible’ interpretations).

Individual cases of suspected failure of topical antibacterial agents are intermittently discussed, including the most recent reports of cleaning agent-resistant *S. aureus* infections in a human hospital. However, MICs to topically used antibacterial agents, including those for MRSP and MRSA from dogs, have so far remained consistently low and convincing treatment failures of appropriately applied topical therapy have not been described for canine pyoderma. Often, other factors potentially contributing to poor response to treatment such as compliance, co-morbidities or product formulation need to be considered.

Regarding the predictive value of ‘resistant/susceptible’ results reported by laboratories, these rely on the availability of clinical breakpoints that take into account pharmacokinetic and pharmacodynamic factors (specific to bacterium, agent, host and site of infection). Such breakpoints have not yet been defined for topical application and laboratory results will only be relevant to systemic therapy.

With topical treatment, the active ingredient is expected to reach the site of infection directly, bypassing the metabolic effects of the liver and avoiding any dilution effects related to blood perfusion. This concept of high concentrations reaching the site of infection with topical application has recently been supported by measuring fusidic acid concentrations at the level of the canine hair follicle infundibulum, after direct application to skin, which exceeded the highest MICs described for *S. pseudintermedius* *in vitro* (Frosini and others*,* 2017).

*Conclusion*

Since the last article in this journal on topical therapy twenty years ago, the threat from multidrug-resistant bacterial pathogens and the need for responsible antimicrobial prescribing have become urgent. For skin infections, topical antibacterial therapy presents a valuable opportunity to help with both. In addition, many different products are available for use in practice and while an element of “trial and error” remains with some products due to the paucity of evidence, more data are becoming available to support our clinical decision making. The increased effort involved for vets and owners is hopefully compensated by preventing multidrug-resistant infections through the practice of good antimicrobial stewardship.

*Competing Interests*

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Figure 1. Nine-month-old English bulldog with generalised superficial pyoderma following resolution of demodicosis (Image 1). Culture identified methicillin-resistant Staphylococcus pseudintermedius (MRSP). Marked improvement of clinical signs after three weeks (image 2) and resolution after 14 weeks (image 3) of chlorhexidine-based shampoo therapy and wipes and twice daily fusidic acid application. Images: Kirsten Pantenburg.

Figure 2: Five-year-old crossbreed with acute moist dermatitis (‘hot spot’) secondary to a suspected fleabite hypersensitivity. Clinical resolution achieved after 21 days of iodine solution and steroid spray twice daily. Image 1: day of presentation; image 2: day 2; image 3: day 14.

Further reading: guidelines and recommendations (Open Access)

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## *Useful websites and posters*

Bella Moss Foundation, including information for owners and practice infection control guidance

<https://www.thebellamossfoundation.com/>

British Small Animal Veterinary Association (BSAVA) ‘PROTECT ME’ poster, 2018: <https://www.bsavalibrary.com/content/chapter/10.22233/9781910443644.chap6_1#supplementary_data>

Federation of European Companion Animal Veterinary Associations (FECAVA), Advice on Responsible Use of Antimicrobials Flow Chart (includes indications where systemic antimicrobial use is not necessary), 2018: <https://www.fecava.org/files/ckfinder/files/FECAVA_Responsibleuse_2018_LR(1).pdf>

Worms and Germs blog, University of Guelph, including information on contagious disease and infection control tips, with useful advise for owners: <https://www.wormsandgermsblog.com/articles/diseases/mrsamrsp/>

## *Self-assessment questions*

1. Which skin lesion is indicative of deep pyoderma?
   1. Alopecia
   2. Haemorrhagic Crust
   3. Epidermal collarette
   4. Pustule
2. Why is fusidic acid considered an appropriate active ingredient for the treatment of superficial pyoderma?
   1. Fusidic acid has been shown to penetrate to the level of the hair follicle infundibulum
   2. Fusidic acid can be found in shampoo formulations
   3. Fusidic acid has broad spectrum activity against both Gram positive and Gram negative bacterial pathogens
   4. Clinical breakpoints exist for fusidic acid and allow prediction of clinical efficacy of topical treatment based on *in vitro* testing
3. What are the advantages of topical therapy when treating a case of superficial pyoderma involving MRSP or MRSA?
   1. Topical therapy can replace systemic antimicrobials in some cases
   2. High concentrations of antibacterial agent can be achieved at the site of infection
   3. Reduction of MRSP/MRSA contamination of the environment through shedding of bacteria adherent to squames and hair
   4. All of the above
4. Which active ingredient in topical therapy would be a suitable choice for widespread superficial pyoderma, considering UK licensed product formulation?
   1. Chlorhexidine
   2. Chloroxylenon
   3. Fusidic acid
   4. Medical honey

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Depth / type of pyoderma** | **Typical skin signs** | **Other potential features** | **Confirm diagnosis** | **Type of therapy** |
| **Surface**  (acute moist dermatitis/hot spot, intertrigo/fold pyoderma, bacterial overgrowth syndrome) | Very variable depending on presentation but may include:  Erythema  Exudation | Skin folds  Obesity  Otitis  Anal sac disease  Flea-related disease | Cytological findings: neutrophils and intracellular cocci, possibly in a mixed microbial population | **Always topical alone** |
| **Superficial**  (bacterial folliculitis, impetigo, mucocutaneous pyoderma) | Papules  Pustules  Epidermal collarettes  Erythema  Alopecia | Often pruritic | Cytological findings: neutrophils and intracellular cocci, possibly in a mixed microbial population | **Topical alone** or in combination with **systemic** first tier antimicrobial drugsa |
| **Deep**  (chin acne, acral lick dermatitis, furunculosis, interdigital infected nodules) | Papules  Haemorrhagic crusts  Discharging sinuses  Nodules  Erythema | May be painful or pruritic | Cytology alongside bacterial culture and susceptibility testing from draining sinuses, or tissue culture from skin biopsy specimens | **Always systemic** based on bacterial culture and antimicrobial susceptibility testing. Combine with supportive **topical** therapy where practical and tolerated |

### ***Tables and Boxes***

### Table 1: Tips on differentiating surface, superficial and deep canine pyoderma.

### a Hillier and others,2014 details current consensus on first tier systemic antimicrobials for canine bacterial folliculitis

## Table 2. Selected features of methicillin-resistant *Staphylococcus aureus* (MRSA) and *S. pseudintermedius* (MRSP) with relevance to small animal practice.

|  |  |  |
| --- | --- | --- |
|  | MRSA | MRSP |
| UK prevalence in dogs | Low | Low but increasing |
| Epidemiology | Human hospital-associated. Pets considered ‘innocent bystanders’ | Veterinary ‘nosocomial’ pathogen. Well adapted to canine host |
| Zoonotic transmission | Yes, in both directions. Origin typically from human healthcare but, once infected, pets can perpetuate human infection | Yes, in both directions. Considered low risk from pets to healthy people but higher risk for immunocompromised humans or e.g. if wounds present |
| Diagnosis | Bacterial culture and antimicrobial susceptibility testing | Bacterial culture and antimicrobial susceptibility testing |
| Treatment | Topical therapy alone for surface and superficial infections. Culture-based antimicrobial choice for deep infections | Topical therapy alone for surface and superficial infections. Culture-based antimicrobial choice for deep infections |
| Prognosis | Can be excellent, depending on depth of infection and underlying primary cause | Can be excellent, depending on depth of infection and underlying primary cause |
| Follow-up | Determine carriage status | Determine carriage status. Practice infection control procedures should be implementeda |
| Owner education | Recommend owners inform their GP of MRSA diagnosis in pet | Hygiene recommendationsa, explanation zoonotic potential, especially to people at risk (see above) |
| Risk factors for infection | Previous antibiotic therapy, hospitalisation, surgical implants, contact with MRSA infected or carrier people | Previous antibiotic therapy, hospitalisation, repeated veterinary visits, chronic skin and ear disease (including chronic allergic disease) |

## aGuidance on infection control measures can be found in Morris and others, 2017

Box 1 – Selected terminology describing the inhibitory or destructive effect of a product against bacteria (± other microorganisms)

|  |
| --- |
| Box 1 – Selected terminology describing the inhibitory or destructive effect of a product against bacteria (± other microorganisms) |
| **Antibiotic** – Substance derived from a [microorganism](https://www.merriam-webster.com/dictionary/microorganism)  **Antiseptic** – Substance applied to living tissue (e.g. skin)  **Biocide** – Diverse group of substances, sometimes including disinfectants, but also pest control products and preservatives  **Disinfectant** – Substance used on inanimate objects |

Table 3: Topical antibacterial products licensed in the UK for canine microbial skin infections.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Primary active ingredient** | **Product type** | **Product name (Manufacturer)** | **Concentration** | **Other active ingredient(s) / concentration** | **Product indication(s) from SPC** | **Evidence base (*in vitro / in vivo*)** |
| Chlorhexidine (di)gluconate1 | Shampoo | Adaxio  (Ceva Animal Health Ltd, Buckinghamshire, UK) | 2% (20 mg/mL) | Miconazole nitrate 2% (20 mg/mL) | For the treatment and control of ‘seborrhoeic’ dermatitis associated with *Malassezia pachydermatis* and/or *Staphylococcus pseudintermedius*. | *In vivo:*  **Clinical efficacy** of chlorhexidine shampoos as a sole therapy of 3-4 weeks duration (clinical and microbiological assessment) in canine superficial pyoderma, including cases caused by methicillin-resistant staphylococci (Murayama and others, 2010; Loeffler and others, 2011b; Borio and others*,* 2015).  *In vitro:*  Demonstration of **low MICs**,with synergy between chlorhexidine and miconazole, for *S. pseudintermedius,* including MRSP and MRSA, (Clark and others, 2015, 2016).  **Residual activity** has been shown on hair treated with shampoo for up to 10 days (Kloos and others, 2013; Mesman and others*,* 2016).  **Review**2:  Recommended for topical antimicrobial treatment of cutaneous infections. |
| Malaseb  (Dechra Veterinary Products, Shrewsbury, UK) | 2% (20 mg/mL) | Miconazole nitrate 2% (20 mg/mL) | For the treatment and control of seborrhoeic dermatitis associated with *Malassezia pachydermatis* and *Staphylococcus intermedius*. |
| Microbex  (Virbac, Suffolk, UK) | 3% (30 mg/mL) | None | For the treatment of *Malassezia pachydermatis* surface proliferation and the control of associated clinical signs. |
| Fusidic acid | Gel | Betafuse (Norbrook Laboratories Ltd, Newry, UK) | 0.5% (5 mg/g) | Betamethasone valerate 0.1% (1 mg/g) | For the treatment of acute surface pyoderma in the dog, such as acute moist dermatitis (‘hot spots’) and intertrigo (skin fold dermatitis), caused by Gram positive bacteria sensitive to fusidic acid. | *In vivo:*  **Clinical efficacy** for the treatment of surface pyoderma (hot spots). (Cobb and others, 2005).  *In vitro:*  Demonstration of **low MICs** for staphylococci, including MRSP and MRSA (Clark and others, 2015, Frosini and others, 2019).  **Concentrations achieved** in superficial canine skin **significantly exceed MICs** (Frosini and others, 2017).  **Review**2: Recommended for the treatment of bacterial skin infections. |
| Isaderm (Dechra Veterinary Products) | 0.5% (5 mg/g) | Betamethasone valerate 0.1% (1 mg/g) | For the topical treatment of surface pyoderma in the dog such as acute moist dermatitis (‘hot spots’) and intertrigo (skin fold dermatitis). |
| Polymyxin B Sulfate | Cutaneous suspension | Surolan (Elanco Animal Health, Hampshire, UK) | 0.5293 mg/mL | Miconazole nitrate (23 mg/mL)  Prednisolone acetate (5 mg/mL) | For the topical treatment of otitis externa and skin infections caused by Gram positive bacteria e.g. *Staphylococcus aureus* and *Streptococcus* spp. and Gram negative bacteria *Escherichia* *coli* and *Pseudomonas* *aeruginosa.* | *In vitro:*  Demonstration of **low MICs** for staphylococci (Boyen and others, 2012).  **Review**2**:** Not mentioned. |
| SPC - Summary of Product Characteristics  1Chlorhexidine digluconate versus chlorhexidine gluconate: The active ingredient of both is the same, but digluconate or gluconate affects the solubility of the chlorhexidine in the final solution. It is common practice to use “chlorhexidine gluconate” and “chlorhexidine digluconate” interchangeably when referring to the concentrated chemical antiseptic; the pharmacopoeias usually list both names and cross reference to the other.  2Review of the evidence for topical therapy in the treatment of canine bacterial skin infections (Mueller and others*,* 2012).  MIC = minimum inhibitory concentration | | | | | | |

### Table 4: Pros and cons of commonly used formulations of topical antibacterial therapy in canine pyoderma.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Formulation** | **Definition** | **Pros** | **Cons** | **Most suitable for** |
| Cream | A thick liquid or semi-solid cosmetic or medical preparation applied to the skin | * Quick and easy to apply * No rinsing required | * Of use for smaller areas only * Product can ‘sit on’ hair rather than reaching skin | * Localised lesions of surface pyoderma (‘hot spots’) |
| Gel | A thick, clear, slightly sticky substance, especially one used in cosmetic or medicinal products | * Quick and easy to apply * No rinsing required | * Of use for smaller areas only * Product can ‘sit on’ hair rather than reaching skin | * Localised lesions of surface pyoderma (‘hot spots’) |
| Cutaneous Suspension | A mixture in which particles are dispersed throughout the bulk of a fluid | * Quick and easy to apply * No rinsing required | * Of use for smaller areas only * Product can ‘sit on’ hair rather than reaching skin | * Localised lesions of surface pyoderma (‘hot spots’) * Interdigital microbial overgrowth |
| Mousse | A cosmetic or skincare product with a foamy consistency | * Quick and easy to apply * No rinsing required * Residual antibacterial effect on hair | * Of use for smaller areas only | * Interdigital microbial overgrowth |
| Shampoo | Liquid preparation for washing hair | * Residual antibacterial effect on hair * Reduces environmental contamination from bacteria shed on hair and squames (important in MRSP/MRSA infections) | * Difficult in longhaired breeds * Accessible bath or shower needed * Less suitable in colder weather * Potentially messy * Time-consuming * Minimum contact time required before rinsing | * Superficial pyoderma with widespread lesions * MRSP and MRSA infections / carriage / contamination |
| Spray | Liquid that is blown or driven through the air in the form of tiny drops | * Quick, easy and clean to apply * No rinsing required | * Product can ‘sit on’ hair rather than reaching skin | * Localised lesions of surface pyoderma (‘hot spots’) |
| Wipe | A disposable cloth treated with a cleansing agent, for wiping things clean | * Quick, easy and clean to apply * Can be used to reach difficult areas e.g. skin folds * No rinsing required | * Product can ‘sit on’ hair rather than reaching skin * Of use for smaller areas only | * Intertrigo, especially in facial folds * Reduction of carriage or surface contamination of MRSP/MRSA from areas that are difficult to wash (face, folds) |