Abstract of thesis entitled

“A demonstration protocol on wet wrap therapy for patient with eczema to alleviate their severity”

Submitted by

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Eczema, also known as atopic dermatitis (AD), is an inflammatory skin disease. It not only affects children but also affects adults. The relapse of AD increases the social burden of patients and their families, in turn lowering the quality of life and increases the medical burden. In Hong Kong, the prevalence of 6 to 7 years old children with eczema increased from 3.9% to 4.6%, while there is an increased from 2.7% to 3.3% in children who aged between 13 to 14 years old in 6 years' time. Although AD cannot be cured, it is manageable. Wet wrap therapy is advocated as a relative safe and an effective treatment for AD it aims to keep skin in a moist environment and improves the effectiveness of topical medicine.
The objectives of the dissertation are: 1) to perform a systematic review and critical appraisal of wet wrap therapy to alleviate the symptoms of AD patients, 2) to develop an evidence-based protocol in a clinical setting, 3) to assess the implementation potential of the protocol, 4) to develop the implementation plan and gone through the evaluation process.

Total six studies were included under systematic search and they were summarized into tables of evidence. The quality of the studies would be appraised and graded by using the Scottish Intercollegiate Guideline Network checklist.

The finding from the studies were integrated and transferred into the clinical setting. An evidence-based protocol of WWT for AD patients was established. Communication plan and pilot study of the protocol were discussed. The effectiveness of the protocol was evaluated by the patients’ outcome, healthcare provider outcome and the system outcome.

The innovation was effective for moderate to severe AD patient. Their local SOCRAD index reduced by 4 after receiving the intervention guided by the protocol.
“An evidence-based protocol on wet wrap therapy for patient with eczema to alleviate their severity”

By

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B.Nurs. H.K.U.

A thesis submitted in partial fulfilment of the requirements for the Degree of Master of Nursing at The University of Hong Kong.

July 2016
Declaration

I declare that this thesis represents my own work, except where due acknowledgement is made, and that it has not been previously included in a thesis, dissertation or report submitted to this University or to any other institution for a degree, diploma or other qualifications.

Signed _____________________

Leung Ka Wai
Acknowledgements

I would like to express my sincere appreciation to my supervisor, Ms. POON Po Wah, Rebecca, for her guidance, enlightenment, and patience. My dissertation cannot be completed without her supervision.

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Last but not least, I would like to thank my family especially my wife who gave birth to my little angel during the study period.
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## Abbreviations

<table>
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AD</td>
<td>Atopic dermatitis</td>
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<tr>
<td>APN</td>
<td>Advanced practice nurse</td>
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<tr>
<td>COS</td>
<td>Chief of Service</td>
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<tr>
<td>DFI</td>
<td>Dermatitis Family Impact</td>
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<tr>
<td>DOM</td>
<td>Departmental Operation Manager</td>
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<tr>
<td>EBP</td>
<td>Evidence-based practice</td>
</tr>
<tr>
<td>ePR</td>
<td>Electronic patient record</td>
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<tr>
<td>HA</td>
<td>Hospital Authority</td>
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<tr>
<td>HC</td>
<td>Hydrocortisone</td>
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<tr>
<td>HPA</td>
<td>Hypothalamic pituitary adrenal</td>
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<tr>
<td>IDQOL</td>
<td>Infants Dermatology Quality of Life Index</td>
</tr>
<tr>
<td>ISAAC</td>
<td>International Study of Asthma and Allergies in Childhood</td>
</tr>
<tr>
<td>ITT</td>
<td>Intention to treat</td>
</tr>
<tr>
<td>MO</td>
<td>Medical officer</td>
</tr>
<tr>
<td>NTEC</td>
<td>New Territories East Cluster</td>
</tr>
<tr>
<td>NO</td>
<td>Nursing officer</td>
</tr>
<tr>
<td>POEM</td>
<td>Patient-Orientated Eczema</td>
</tr>
<tr>
<td>QOL</td>
<td>Quality of life</td>
</tr>
<tr>
<td>RCT</td>
<td>Randomized controlled trials</td>
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<tr>
<td>SASSAD</td>
<td>Six Area, Six Sign Atopic Dermatitis</td>
</tr>
<tr>
<td>SD</td>
<td>Standard deviation</td>
</tr>
<tr>
<td>SIGN</td>
<td>Scottish Intercollegiate Guidelines Network</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Science</td>
</tr>
<tr>
<td>TEWL</td>
<td>Transepidermal water loss</td>
</tr>
<tr>
<td>WWT</td>
<td>Wet wrap therapy</td>
</tr>
<tr>
<td>WM</td>
<td>Ward Manager</td>
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</table>
Chapter 1: Introduction

1.1 Background

Eczema, also known as atopic dermatitis (AD), is an inflammatory skin disease. It presented with erythema, itchiness, swelling, roughness, dryness, crusting patches. It is an allergy reaction that usually occurs in infants and children (Williams et al., 1999). AD is a chronic, incurable disease that may affect the rest of the patients’ life. The relapse feature of AD increases the careers’ burden, in turn lowers their quality of life and, lastly, increases the medical burden because of high admission rate to hospitals (Lee & Detzel, 2015). Therefore, AD not only affects children but also affects adults. 10% to 20% of children and 1% to 3% of adults were affected by AD in United States and Europe (Foroughi, Thyagarajan & Stone, 2005). While in Hong Kong, according to International Study of Asthma and Allergies in Childhood (ISAAC), the prevalence of 6 to 7 years old children with AD increased from 3.9% to 4.6%, while there was an increased from 2.7% to 3.3% in children who aged between 13 to 14 years old in 6 years' time (1995 to 2001) (Asher et al., 2006). Although AD cannot be cured, it is manageable. Treatment of AD is complicated, the typical treatment of patient with AD is applying emollients and topical steroid. If the condition cannot be controlled and the symptoms flare up or the skin get infected, patients may need to admit to the hospital and receive systemic steroid and antibiotics. Wet wrap therapy (WWT) was first
introduced by Goodyear, Spowart and Harper (1991) as an adjuvant therapy in treating AD. WWT is advocated as a relative safe and an effective treatment for AD. The principal of WWT is to keep skin in a moist environment and improves the effectiveness of topical medicine. In addition, it serves as a physical barrier to prevent patients in scratching. This can decrease the risk of infection in a certain extent (Meurer et al., 2002). By providing moisten environment to patients, symptoms of AD like itchiness can be improved, in turn better sleeping quality and better mood can be predicted for patient using WWT.

1.2 Affirming the Need

Over the past decades, the treatment of AD focus on the use of medication. Emollient therapy aims to prevent skin from drying and avoid skin breakdown. Antihistamines is used to decrease the symptoms of itchiness. Steroids are prescribed to patient with skin inflammation. However, if the symptoms flare up and become severe, patient with AD may need to admit to the hospital for further management. Treatments of moderate to severe AD include the use of systematic steroid and antibiotic which may lead to many side effects.

WWT is a common practice and it is widely used in foreign countries in treating patient in moderate to severe AD (Cox, Lockyer & Watts, 2003). This non-pharmacological method seems to alleviate the severity of AD and serve as another way
to decrease the symptoms and promote patients’ comfort. In-patient WWT is applied by nurses, and the progress is closely monitored. This method can be initiated and applied by patients’ themselves once they have been educated by health care professionals when they discharged from hospitals. However, the practice of WWT is uncommon in Hong Kong. Only the one who specialized and trained in dermatology knows how to apply WWT and provide WWT related education to patient with AD.

5.6% of young children and 3.8% of school children and adolescents in Hong Kong were affected by AD (Wong et al., 2007). It was also the leading cause of chronic dermatologic disease that required referral to a tertiary referral center in Hong Kong. Patient with AD accounted for 33% cases in a public pediatric dermatology clinic in the New Territories East Cluster (NTEC) (Hon et al., 2004).

In Hong Kong, there are only nine public clinics that provide dermatological services. If AD is so severe that cannot be managed as out-patient, hospitalization is needed. Nevertheless, only one public hospital that have dermatologist who can provide specialized in-patient service for patient with AD in the NTEC.

Once patient is admitted to the hospital without dermatologist, he/she will be directed to the general medical ward or general pediatric ward according to his/her age. The standard treatment of AD includes systemic steroid and antibiotics. It aims to strengthen the effect of medications so as to lower the inflammatory reaction and treat
AD associated infections. Even the infection is subsided and the symptoms of AD improved upon discharge, patient with AD relapsed in a short period of time and needed to be re-admitted to the hospital again. WWT is rarely used as a crisis intervention for patient with AD during hospitalization in the non-dermatological ward.

In a local public hospital general medical and pediatric units, nurses are knowledge deficiency in WWT including the theory, the application method, the special occasion needed to pay attention with, and the related education by clinical observation. There is no existing authorized guideline nor protocol on WWT for AD patient in public general medical and pediatric wards. Even if nurses know how to apply WWT, the practice is varied. There is a need to assembly and integrate existing evidence to diminish the knowledge gap. An evidence-based protocol on WWT for in-patient with AD should be developed to decrease the severity of eczema and promote patients’ comfort.

The need of systematic review

In order to assembly and integrate current evidence on WWT to formulate an evidence-based protocol, systematic review of existing studies is necessary. Although there is a literature review released on May, 2015 recently, it focus on the role of WWT in all skin disorders, including all types of eczemas, pruritic diseases like prurigo nodularis, psoriasis and cutaneous lymphomas (Andersen, Thyssen and Maibach, 2015), a deeper look into the effect of WWT for moderate to severe AD only is crucial. As the
literature targeted on all skin disorders, WWT on other skin disorders but not for AD may also regard as an effective treatment. Since AD is an allergy disease, the disease nature is different from other skin disorders. It is important to investigate the pure effect of WWT to patient with moderate to severe AD. In addition to Andersen, Thyssen and Maibach’s literature review (2015), a practical guideline on WWT is published in 2012 (Devillers and Oranje, 2012). This study was based on authors’ own experiences on the use of WWT and supplemented with data from the other literatures. That means the data from the literatures did not gone through the process of systematic review and critical appraisal. The need of systematic review is therefore indicated in order to formulate an evidenced-based protocol.

1.3 Objectives and Significance

Because of the frequent relapse and high admission rate of patient with AD, a new treatment (WWT) should be implemented and a change of current practice should be considered.

In view of this, the objectives of the dissertation are as follows:

1. To systematically review the existing evidences on the effectiveness of WWT for patient with AD in reducing the severity of eczema;

2. To develop an evidence-based protocol for implementing WWT in patients with AD during hospitalization;
3. To assess the implementation potential of a WWT for eczematous patients in a local hospital in Hong Kong;

4. To develop implementation strategies and evaluation plan for the use of WWT protocol in a local setting.

**Significance**

Providing an effective intervention for treating and managing patient with AD with evidenced-based support is crucial and beneficial to patients, nurses and the hospital.

For patients, WWT is an alternative way for the crisis intervention in treating AD. Evidence had supported WWT can reduce the severity of AD and improve symptoms. As a result, improving patients’ comfort and achieving a better quality of life.

For nurses, an up-to-standard nursing care is needed in their daily practice. Therefore, a standardized protocol help to maintain the consistency of nursing care, including WWT. Also, the protocol prevent misconception and variation in WWT. A good quality care and evidenced-based education not only fasten patients’ recovery, but also strengthen the nurse-client relationship. By providing effective WWT and the related education, less re-admission can be predicated because of the risk of AD relapse is lowered.

For the hospital, AD is a chronic and incurable disease, many medical resources are used for frequent re-admission and long term follow-up. By lowering the AD
relapse rate using WWT, less medical expenditure is spent. The resources and manpower can be free up for other uses. A better reallocation of resources can be maintained.

**Research question**

P: Patients with atopic dermatitis  
I: Wet-wrap therapy  
C: Usual care  
O: Alleviate the severity of atopic dermatitis

The research question of the thesis is:

“Does wet-wrap therapy alleviate the severity of patients with atopic dermatitis?”
Chapter 2: Critical appraisal

2.1 Search and Appraisal Strategies

Keywords search

Based on the objective of the thesis and the research question formulated, keywords were chosen for searching the related literatures. They are listed as the followings:

For the population: “Eczema” and “Atopic dermatitis”.

For the intervention: “Wet wrap therapy”, “Wet wrap treatment”, “Wet wrap dressings”, “Wet dressings” and “Occlusive dressings”.

Search engines

Total two electronic databases were used to search for related literatures, they are: PubMed and CINAHL Plus (EBSCOhost). The searching period of the thesis was started from September to late November, 2015. Titles and abstracts of the searched literatures were screened for further selection based on the inclusion and exclusion criteria.

Inclusion and exclusion criteria

Inclusion criteria

1. Patient with eczema or patient with atopic dermatitis

2. Wet wrap therapy

3. Randomized controlled trials (RCTs)
4. The publishing year of the studies is between 2000 to 2015

Exclusion criteria

1. Primary outcome of the intervention is biological outcome (blood testing like morning cortisol level)

2. The target population is not human

3. The literature is not written in English

4. Full article cannot be retrieved

**Manual search**

Apart from searching from electronic databases, manual search was also performed to retrieve eligible and relevant studies. It was achieved by scanning the reference lists from relevant articles manually in order to identify additional literatures.

**Appraisal strategy**

After relevant publications were identified and selected. Critical appraisal was done using the methodology checklist created by Scottish Intercollegiate Guidelines Network (SIGN). Based on the searching result, the checklist for randomized controlled trials is used to test for the quality of the identified studies systematically. The evidence level of literatures are graded after the assessment.

**2.2 Results**

The searching period of was start from 1st of September to 30th of November, 2015. There were 129 records identified from PubMed and 31 records from CINAHL Plus
(EBSCOhost). 1 article was found using manual search. As a result, there were total
161 studies found after searching. 149 records were obtained after duplicates removed.
Lastly, total 6 studies remained after the application of inclusion and exclusion criteria
and they were all included in this thesis. The process and the result of study selection
is presented with “PRISMA 2009 Flow Diagram” as below:
Records identified through database searching
(n = 160)

Additional records identified through other sources
(n = 1)

Records after duplicates removed
(n = 149)

Records screened
(n = 149)

Records excluded
irrelevancy (n =46)
Not human (n=42)

Full-text articles excluded
not RCT (n =30)

Full-text articles assessed for eligibility
(n =36)

Studies included in qualitative synthesis
(n =6)

Studies included in quantitative synthesis
(meta-analysis)
(n =6)
Table of Evidence

Total six studies were included in this thesis and they were summarized into tables of evidence. (Appendix 1)

Study design

All the studies included (Beattie and Lewis-Jones, 2004; Hindley, Galloway, Murray & Gardener, 2006; Foelster-Holst, Nagel, Zoellner & Spaeth, 2006; Pei, Chan & Ho, 2001; Janmohamed et al., 2014; Schnopp et al., 2002) were RCTs. All of them had evaluated if WWT could decrease the severity AD in eczematous patient.

Randomization method

Only three out of six studies describe the method of randomization in details. Pei et al. (2001) randomized the study participants using 50 envelopes with X or Y and only the pharmacist knew the coding which was not involved in the study. While Hindley et al. (2006) used two equal numbered sets of unmarked envelops with the word “wet wrap” or “conventional” inside, these envelops were then randomly chosen. For Janmohamed et al. (2014), patients were randomized using computerized randomization by a statistician. Among three randomization methods, Hindley et al.’s one was not true randomization and might lead to bias in participants’ characteristics (2006).

Concealment method
Two studies mentioned their concealment method. Sealed envelopes were used by Beattie and Lewis-Jones (2004). Hindley et al. (2006) used unmarked envelopes for concealment in their study.

**Blinding**

Five out of six literatures used blinding. Beattie and Lewis-Jones’s design was blinded to participants (2004) whereas investigators (scoring nurses) were blinded in Hindley et al.’s study (2006). Pei et al. (2001), Janmohamed et al. (2014) and Schnopp et al. (2002) had a double blinded design in their studies. While for Foelster-Holst et al. (2006), blinding to participants was impossible because of its left-right comparison design. In addition, the study did not mention if the investigators were blinded to the intervention. As a result, this study was regarded as no blinding.

**Sample characteristics**

All studies included children as their target participants, the age ranged from three months to seventeen years old. Apart from targeting children, adults were also included (aged 18-63 years old) in Foelster-Holst et al.’s study (2006). The common sample characteristics were moderate to severe AD according to authors’ clinical scoring system. Furthermore, samples from all studies were not received any systematic antibiotics, systematic steroids or other kinds of herbal medicines and without systematic infection before the study recruitment.

**Baseline differences**
One study (Hindley et al., 2006) suggested that there was a substantial discrepancy in the baseline scores (baseline SCORAD) between two groups, therefore, analyses were adjusted for the baseline measure of the outcome. The remaining five studies claimed there were no baseline differences before the intervention. (Beattie and Lewis-Jones, 2004;; Foelster-Holst et al., 2006; Pei et al., 2001; Janmohamed et al.,2014; Schnopp et al., 2002)

Sample size

There were small sample size in all six studies included, ranging from 19 to 50.

Intervention

All six studies focus on the use of WWT, however, there were variation in the use of WWT and different controls were used. Their interventions and controls are listed as below:

Topical hydrocortisone (HC) was applied once in the morning for two weeks with WWT twice daily for the first week. WWT was then applied only at night for the second week and only emollients was applied without WWT for a third week in the intervention group. The control group were asked to apply topical HC twice daily for two weeks and applied emollients only for the third week (Beattie and Lewis-Jones, 2004).

WWT was applied for 24 hours together with 1% HC ointment for one week and continue 12 or 24 hours a day WWT with 1% HC ointment for the next three weeks,
1% HC and emollients were used as required during the non-wet wrap period in the intervention group. The control group received conventional treatment including regular use of emollients and as required use of 1% HC ointment for three weeks (Hindley et al., 2006).

Prednicarbat was applied with WWT for 48 to 72 hours in the intervention group. And the control group applied prednicarbat only without WWT for 48 to 72 hours (Foelster-Holst et al., 2006).

Intervention group applied either mometasone furoate or fluticasone propionate daily for two weeks, and then applied WWT with those steroid respectively for another two weeks for around 8 hours at night. While the control group applied either mometasone furoate or fluticasone propionate daily only for total four weeks (Pei et al., 2001)

According to Janmohamed et al. (2014), the intervention group applied WWT with verum for 28 days while the control group applied verum only for 28 days. The duration of WWT is suggested to be 3 to 24 hours a day according to the WWT protocol published earlier (Devillers and Oranje, 2012).

Morning and evening application of topical steroids under WWT except night time for five days was performed in the intervention group and only vehicle was applied in the morning and the evening in the control group (Schnopp et al., 2002).
Outcomes

The primary outcome of all studies was the severity of AD, different measuring tools were used. Six Area, Six Sign Atopic Dermatitis (SASSAD) severity score was used in Beattie and Lewis-Jones’s study (2004). Disease severity score and disease extent score were used in Pei et al.’s study (2001). Two studies (Foelster-Holst et al., 2006; Schnopp et al., 2002) used local SCORAD as AD measurement. While the remaining two studies (Hindley et al., 2006; Janmohamed et al., 2014) used SCORAD index (or called objective SCORAD) to measure the severity of AD. Only Beattie and Lewis-Jones (2004) and Hindley et al. (2006) showed no difference between the treatment group and control group in lowering the severity of AD. The remaining studies (Pei et al., 2001; Janmohamed et al., 2014; Schnopp et al., 2002; Foelster-Holst et al., 2006) showed positive result of WWT in alleviating the severity of patient with AD.

Some studies also investigated other outcomes upon the use of WWT. Infants Dermatology Quality of Life Index (IDQOL) was measured in the study of Beattie and Lewis-Jones (2004) and the quality of life (QOL) of parents was measured in Janmohamed et al.’s study (2014). There were no improvement in IDQOL but QOL of parents was different between two groups.

Impact of AD on patients and/or patients’ relatives also assessed in half of the studies. They are Dermatitis Family Impact (DFI) score in the study of Beattie and
Lewis-Jones (2004), subjective index score in Pei et al.’s study (2001) and Patient-Orientated Eczema (POEM) in Janmohamed et al.’s study (2014). There were no difference in both DFI and POEM but significant improvement was seen in subjective index score.

In Schnopp et al.’s study (2002), barrier function: Transepidermal water loss (TEWL) and S. aureus Colonization using scab method were assessed. TEWL improved in both groups without reaching statistical significance. Bacterial counts decreased in both groups at day three, and the bacterial counts continued to decrease in the intervention group.

**Attrition**

Four out of six studies (Beattie and Lewis-Jones, 2004; Pei et al., 2001; Hindley et al., 2006; Janmohamed et al., 2014) had samples dropped out and the percentage was range from 10% to 32.5%, only two studies (Beattie and Lewis-Jones, 2004; Janmohamed et al., 2014) performed intention to treat (ITT) analysis. Pei et al. did not discussed the reason why ITT analysis was not performed (2001) and Hindley et al. stated that ITT analysis was impossible in their study.

**2.3 Summary and Synthesis**

By reviewing and critical appraising the selected studies, grading of studies were rated according to the SIGN checklist. (Appendix 2)

**High level of evidence**
The study of Janmohamed et al. (2014) was rated as 1++. It is because this study had a well study design, randomization method and the blinding were clearly explained. Statistical analysis for comparing the baseline characteristics was done and the result was included. Furthermore, it was a multicenter study, making it more generalizable. An acceptable dropout rate was noted (10.2%) with ITT analysis done to these dropouts.

**Medium level of evidence**

Pei et al.'s study (2001) was rated as 1+. This design of study was structuralize with clearly methodology and well explained randomization and blinding. However, the drawback of this study is high attrition rate (32.5%) without mentioning the ITT analysis. The evidence level was lowered because of the high attrition rate.

**Low level of evidence**

The remaining studies (Beattie and Lewis-Jones, 2004; Foelster-Holst et al., 2006; Schnopp et al., 2002) were rated as 1-, the reason are as following:

Beattie and Lewis-Jones’s study (2004) was a pilot study with small number of sample (n=19). Randomization method was not discussed in details. Only single blinded was used. Besides, there was a high attrition rate (21%). All of these implied this study might not yield the true effect of WWT.

In Foelster-Holst et al.’s study (2006), the design and methodology was not clear enough. There were no explanation in the randomization method, concealment method and the blinding method. Due to the left-right design of this study, the baseline
difference was minimal as both intervention and control applied on the same patient. Moreover, there was no drop out in the study.

Schnopp et al.’s study (2002) did not disclose the details of randomization method and concealment method. Since it was a left-right study, the baseline difference was not provided. The blinding method was clearly explained and there was no attrition in the study.

Rejected evidence

One study was rejected due to problematic study methodology which might lead to inaccurate result.

For Hindley et al. (2006), although mentioned the randomization and concealment method, it was not a true randomization and lead to baseline differences between two groups. The intervention group had a mean SCORAD of 53 while the control group had a mean SCORAD of 41 at the baseline. Even though the authors stated that the analyses was adjusted, this difference still largely affect the result of the study. Thus the effect of WWT could not be evaluated.

Summary

There were total six studies selected after searching and one study was rejected after critical appraisal, remaining five studies for generating protocol in the thesis.

The review included five studies in which the use of WWT together with topical steroid can decrease the symptoms or the severity of atopic dermatitis. All studies aimed
at patient suffered from moderate to severe AD according to their scoring tools. One study (Foelster-Holst et al., 2006) mainly focus on adults, while the others (Beattie and Lewis-Jones, 2004; Pei et al., 2001; Janmohamed et al., 2014; Schnopp et al., 2002) focus on children only. In addition, all studies targeted on patients without treatment of systematic steroid, antibiotics and without signs of systematic infection before the studies. They all had similar sample characteristic without extrinsic factor. In two left-right comparison studies (Foelster-Holst et al., 2006; Schnopp et al., 2002), they required samples to have skin lesions symmetrically affecting either side to minimize the baseline differences. Therefore, the study results were mainly because of the intervention delivered.

All five studies provided WWT as the intervention to patients, there were variations in applying WWT for patients. The duration of WWT application ranged from 3 hours to 24 hours a day. And the treatment regime varied from 2 days to 4 weeks.

The material used in WWT were similar except one study did not mention the material used (Beattie and Lewis-Jones, 2004). The remaining four studies (Foelster-Holst et al., 2006; Pei et al., 2001; Janmohamed et al., 2014; Schnopp et al., 2002) used dressing materials called “Tubifast®” or “Coverflex®”. These two dressings are elastic and stretchable. They made by silk-like fabric which are light and do not strike through of ointments (Coverflex®, 2015; Tubifast® with 2-Way Stretch Technology®, 2015).
In addition, they are usually tubular in shape and provided in different size so they can apply in any part of the body. Apart from bandage, tubifast garment was used in Janmohamed et al.’s study (2014). Tubifast garment is a ready-to-use specialized garment. It works like a cloth but is more stretchable and elastic, making it specialized in wet or dry wrapping and dressing fixation (Tubifast® Garments with 2-Way Stretch Technology®, 2015).

There were different topical medications mentioned in the studies, namely corticosteroid and emollient. There were four kinds of corticosteroid used in different studies, they were mometasone furoate, hydrocortisone acetate, fluticasone propionate and prednicarbat. For mometasone furoate, 0.1% and 0.05% preparation were used and both concentration applied together with WWT could achieve a positive result in the studies (Pei et al., 2001; Janmohamed et al., 2014; Schnopp et al., 2002). When fluticasone propionate 0.05% was compared to mometasone furoate 0.1% with the application of WWT, fluticasone propionate 0.05% obtained a more favorable result than mometasone furoate 0.1% (Pei et al., 2001). Prednicarbat is a relative new topical corticosteroid with a medium potency, when it combined with WWT, the severity of AD was alleviated (Foelster-Holst et al., 2006). Among those corticosteroid used in the studies, only hydrocortisone acetate 1% with WWT was not effective when compared with using hydrocortisone acetate 1% alone (Beattie and Lewis-Jones, 2004). The
insignificance result obtained was likely because hydrocortisone acetate 1% is a weak corticosteroid (Oranje et al., 2006).

The technique of WWT application were similar in all studies. Firstly, patients were asked to take a bath and dried up their body. Secondly, applied topical steroid to the affected area according to the instruction of the studies. Thirdly, soaked one set of dressing in warm water and squeezed out excessive water. Fourth, applied the wet dressing on the required area. Lastly, applied a dry set of dressing over the wet one. The duration of WWT and time of re-wet were varied in different studies but the basic principle of WWT application was the same.

To measure the severity of AD, three valid measuring tools were used in five studies. The first one was Six Area, Six Sign Atopic Dermatitis (SASSAD) severity score. SASSAD is a scoring system for recording and monitoring disease activity in atopic dermatitis, six signs of AD (erythema, exudation, excoriation, dryness, cracking and lichenification) and six site of AD (arms, hands, legs, feet, head and neck, trunk) are graded (Berth-Jones, 1996). The second one was SCORAD index, it consists of six parameters (erythema, papulation, lichenification, exudation, excoriations and dryness) to measure the severity of AD on one part of the body. Eight areas of the body can be assessed (head and neck, anterior trunk, back, genitalia and four limbs). These two measurement combined is the SCORAD index, when only one part of the body is being
assessed, it called local SCORAD (European Task Force on Atopic Dermatitis, 1997).

The third one was disease severity score, score is given according to six signs of AD (erythema, edema/papulation, oozing/crusting, excoriation, lichenification, and dryness) and eight areas of the body (head and neck, anterior trunk, back, genitalia and four limbs). A disease extent score was assessed by using the rule of nine (Pei et al., 2001).

**Synthesis**

Four out of five studies achieve a positive outcome on WWT with topical corticosteroid compared with using topical corticosteroid alone (Foelster-Holst et al., 2006; Janmohamed et al., 2014; Pei et al., 2001; Schnopp et al., 2002). That means WWT with topical corticosteroid is an effective intervention in treating AD and alleviating patient’s severity.

The studies population mainly focus on children (3 months to seventeen years old). It is because children are commonly affected by AD. As mentioned before, AD is incurable, when children grow up, they still have the problem of AD. Although there is only one study targeted on eczematous adult with small sample size (Foelster-Holst et al., 2006), the result is positive. It is worth to apply WWT to both children and adult with moderate to severe eczema in order to decrease their symptoms.

There is inconclusive WWT application method in the studies. The shortest total treatment duration is two days with a significance result (Schnopp et al., 2002). While
the longest total treatment duration is up to four weeks with minimal adverse effect (folliculitis). For the application time of WWT, it ranged from 3 to 24 hours a day, all different application time achieve a positive result. In a ward setting, it is feasible to apply WWT on patients for whole day under supervision of health care professionals in order to achieve the best outcome. To conclude, the minimum WWT application time should be 3 hours a day and the total treatment duration should not less than two days. In this thesis, the WWT application time is suggested to be 8 hours to 24 hours a day for consecutive 5 days, the treatment can be adjusted upon health care professionals’ judgement and patients’ tolerance based on the evidence from studies.

The most common used topical steroid used in the effective studies is mometasone furoate, a lower concentration (0.05%) can also obtain a positive result. Other used topical corticosteroid include fluticasone propionate and prednicarbat. Because of the inconclusive and variation of the use of topical corticosteroid, physicians should choose the most optimal one for patient to minimize adverse effects.

The suggested dressings used for WWT is elastic tubular bandage. It is because they are common in wards. They are available in different sizes which are convenient and easy to use. In addition, health care professionals are used to use it in their daily practice, no special training is required.
The main outcome of the use of WWT with topical corticosteroid is to alleviate the severity of patient with AD. Studies had tested out the effectiveness of the intervention on improving symptoms of AD. Other outcomes are subjective data of patients and/or their relatives (IDQOL, QOL, DFI, and POEM). They are not statistical significance but they indeed showed some improvement over the use of WWT. This is because some participants were too young, they might not have the abilities to finish the questionnaires. Also, since the battle against AD is long, only a small improvement can be seen under a long process of treatment, the burden of family members cannot be decreased in a short period of time.

In conclusion, an evidence-based protocol on the use of WWT should be developed and implemented in a ward setting. The aim of WWT is to decrease the symptoms of AD. Subjective outcomes like QOL are not measured in this thesis. The protocol provides guidance to health care professionals on the assessment of AD and the application of WWT in an evidence-based manner. As a result, health care professionals can provide good quality of care to patient with AD during hospitalization.
Chapter 3: Implementation Potential and Clinical Guideline

To generate evidenced-based protocol for implementing WWT in patient with AD, implementation potential including transferability, feasibility and cost-benefit ratio are discussed.

3.1 Transferability

Target setting

The target setting of four included studies were in the out-patient department (Beattie and Lewis-Jones, 2004; Foelster-Holst et al., 2006; Pei et al., 2001; Schnopp et al., 2002). While for Janmohamed et al.’s study, the target setting not only took place in the out-patient department, but also for in-patients. The proposed target settings of the evidenced-based protocol are general medical and pediatric units in public hospitals.

In the out-patient department, after the assessment using the SCORAD to determine the AD severity, patients with moderate to severe AD will receive education and instruction for the application of WWT. The severity of AD will be reviewed and evaluated in the follow-ups ranged from day 1 to day 28.

The proposed target setting is patients during hospitalization. If the intervention is carried out for the in-patient, the procedure will be the same as in the out-patient department. First, once the patient is admitted in the hospital, nurses can assess patient’s AD severity by using SCORAD. Second, if the patient fulfill the WWT application
criteria, nurses can initiate WWT and provide related WWT education. Third, the severity of AD can be evaluated at any time or at the time of changing dressings for any condition change. As a result, greater flexibility, tailor made WWT and better intervention adjustment with closer monitoring can be provided in the in-patient setting and increased patients’ compliance.

**Target population**

The population in all studies included were in developed countries. Three of them are in European counties (Germany, United Kingdom and Netherland) (Beattie and Lewis-Jones, 2004; Foelster-Holst et al., 2006; Janmohamed et al., 2014). The target population of the remaining study is Chinese and the study was done in Hong Kong. Moreover, the characteristics of the target population in all studies are patients with moderate to severe AD without receiving systematic steroid and systematic antibiotics. In addition, the aged is between 4 months to 63 years old in the studies

The proposed target population is moderate to severe AD patients in medical and pediatric public hospitals in Hong Kong without receiving systematic steroid and systematic antibiotic. Both children and adults are included for the protocol. Hong Kong was the colony of United Kingdom before, she is a developed region with westernized health care system. Therefore, the proposed target population shared similar characteristics with the one in the reviewed studies as one of them are also Hong Kong population.
**Assessment tool**

To assess the severity of AD, a universal assessment tool SCORAD is used in most of the selected studies (Foelster-Holst et al., 2006; Janmohamed et al., 2014; Schnopp et al., 2002). The details of SCORAD is discussed in character 2.3. Among the 3 studies which used SCORAD as an assessment tool, only Foelster-Holst’s study mentioned the assessment was done by physician. Whereas other studies did not mentioned the assessment is done by doctors or nurses. According to The Royal Children’s Hospital Melbourne, the AD assessment using SCORAD can be done by medical practitioners or trained nurses (The Royal Children's Hospital Melbourne, 2013). As Hong Kong has a similar nursing training and nursing education with Australia, this advocated and suggested that nurses can perform AD assessment by using SCORAD independently after proper training.

**Philosophy of care**

All studies included shared the same principle of philosophy of care that is to provide the best intervention (WWT) for patients who suffered from moderate to severe AD to alleviate their symptoms and promote health. According to Hospital Authority (HA), there are three basic corporate statements, which is Vision, Mission and Values. Vision refers to healthy People, happy Staff and trusted by the Community. Mission aims to help people staying healthy. People-centered care, providing professional service by committed staff through teamwork are the core component of Values
(Hospital Authority, 2016). As all public hospitals are under HA, the evidenced based protocol has the similar philosophy of care when compared to the available evidence. That is, providing patient-centered professional service by using best evidence (WWT) for patients with moderate to severe AD to relieve their symptoms, keeping them away from the disease and staying healthy through teamwork among health care professionals.

**Potential benefit**

The number of inpatient discharges and deaths for diseases of the skin and subcutaneous tissue had been increased from 22,565 in 2008 to 37,770 in public hospitals in 2014 (Department of Health, 2016). As mentioned in chapter 1, there is an increasing prevalence of AD worldwide. According to the clinical estimation in 2014, there is around 3% of adult admitted to general medical wards and around 7% of children admitted to general pediatric units because of AD in a public acute hospital in Tai Po. Although this kind of patients may not belong to the majority group of patients, the lack of WWT protocol for treating AD prolonged hospital stay and increased re-admission rate from the clinical data in 2014. Both adult and pediatric patients with moderate to severe AD will be benefit from the evidenced-based protocol.

**Existing protocol**

There is no existing protocol for WWT application in the proposed setting. WWT is rarely performed. Only a few health care workers know the existing of WWT and the application method. As a result, the development of the evidence-based protocol helps
them to consolidate the concept of treating AD patient and guide them to perform WWT in a proper way.

To conclude, the transferability of the evidence-based protocol is high in terms of the suitable target setting, population and assessment tool, similar philosophy of care, great potential benefit to patient and no contradiction to the current practice.

3.2 Feasibility

Nurses’ autonomy and support

As mentioned in the part of transferability, nurses can assess patient’s AD severity using SCORAD independently after training. Once patient is eligible for WWT, nurses can initiate WWT and provide the related education. Nurses can evaluate patient’s AD severity when changing the dressing or assess the condition at any time as patient’s request. Nurses can observe for any adverse effect and they are free to terminate the intervention if it is considered undesirable.

Skin care is nurses’ duty and they are doing that in their daily practice including wound dressing, pressure sore prevention. Caring AD patients’ skin and apply WWT through assessment, implementation and evaluation is nurses’ obligation. Therefore, the implementation of the innovation fits smoothly with current staff functions. As AD patients will admit to the hospital no matter the protocol is present or not, when the evidence-based protocol is developed, it provides guidance for nurses on how to take
care these patients. This equips in nurses’ daily practice and may shorten the time for care in a certain extent. As a result, nurses will welcome the evidenced-based innovation.

Training of nurses

Since there is no proper way of using WWT in the medical and pediatric units. Specific training is needed for nurses in order to carry out the evidence-based protocol. Education on the use of SCORAD for assessment, correct application of the wet wrap dressing and the related education to patient. Therefore, training section for nurses is necessary. There are two proposed training sections and each of them last for 2 hours. Compensated hours will be offered to nurses who attended the training section. One representative from each ward should attend the training. During the training section, 30 minutes will be spent on the theory of AD and WWT. Then 1 hour on-hand practice including the assessment using SCORAD and the skill of applying WWT will be demonstrated. For the last 30 minutes, return demonstration and question and answer section will be offered. After the representatives finished two training section, they are responsible to educate their colleague and act as the protocol facilitators in their setting. Nursing staff should welcome the training as it does not occupy staff’s own time.

Administration support

A Journal club was set up in the public acute hospital in Tai Po since 2005. The committee members came from different departments in the hospital including accident
& emergency department, psychiatric department, ear, nose, throat department, pediatric department and medical department. In the journal club, different departments will share the new evidence or innovation. New guideline and protocol will be formulated after reviewing those evidence. The new evidence-based guideline or protocol will then be approved and endorsed by the quality and safety department. Pilot innovation will be implement in the corresponding units. For example, the reviewed guideline for fall prevention was implemented in 2013 while the reviewed guideline for enteral feeding was implemented in 2014 in medical units. There is a supportive organizational climate for the evidenced-based practice. And the people in the administrative role welcome and encourage the new innovation. Furthermore, before implementing the new guideline, questionnaire will be distributed to frontline staff including nurses for their opinion. This help to gain consensus among the staff and among the administrators.

Potential friction

Evidence proved that WWT can benefit AD patients. However, little is known for nurses in the proposed setting. They may not know the importance of using WWT on AD patients. As a result, they may not willing to learn and equip the new knowledge of WWT. The reluctant to change leads to resistance of the implementation of the innovation. Moreover, nurses may challenge the effectiveness of the protocol. In order
to overcome the potential barriers, collecting feedback from frontline staff and education should be the solution.

**Support from other departments**

WWT includes the use of wet dressing and topical medication. Doctors are responsible to prescribe topical medication including emollients and steroids in treating AD. Consensus should be made between nursing staff and medical practitioner on the use of topical medication to maximize the effect of WWT. Endorsement of the evidence-based protocol and support from physicians helps the innovation to implement smoothly. There should be no problem in communicating with doctors as all the on-call doctors are not dermatologist, the proposed protocol helps them to made decision on the choice of topical steroid. Apart from doctors, cooperation with pharmacist also crucial in implementing the intervention as they are responsible to prepare the topical medication used in WWT. Cooperation and communication between different departments help in implementing the protocol.

**Resources**

In order to apply WWT in wards, equipment like bandages or tubifast are needed. These dressing materials are available in the general and pediatric ward in the public hospital. Topical medications will be provided by the pharmacy. A lecture theater will be booked as the training venue in the hospital and it is free of charge. An expert in WWT, that is me, will be the instructor who is responsible for teaching the
representatives from each ward for the use of WWT. Therefore, all the resources needed for the evidenced-based protocol are accessible and available.

**Evaluation**

The aim of the proposed evidence-based protocol on WWT is to alleviate AD patients’ symptom. In order to evaluate the effectiveness of the intervention, the measuring tools SCORAD is used to measure the severity of AD of patients. The innovation regards as effective when there is a decrease in SOCRAD of AD patients at the end of the WWT.

All in all, the feasibility for the proposed protocol is high. Though there may be some barriers for the implementation, they can be overcome.

**3.3 Cost-Benefit ratio**

**Potential risk**

The side effects of WWT is developing bacterial superinfection of skin and hypothalamic pituitary adrenal (HPA) axis suppression.

According to Schnopp, although the S. aureus colonization could be detected on the site of applying WWT at day 3, the S. aureus counts continued to decrease at day 5. Hence, WWT with topical steroid has a minimal risk of developing skin infection (Schnopp et al., 2002).
Before applying WWT, nurse will review patients’ past medical history. If the patient has the history of HPA abnormality, WWT will not be applied. With the close monitoring of the skin condition, the risk of having HPA suppression is low.

**Potential benefit**

For patients, WWT protocol can alleviate symptoms of AD, by providing a hydration and cooling effect to skin. Thus, decreasing itchiness. The dressing act as a physical barrier to prevent scratching. As a result, WWT improves patient’s sleep quality and mood, promotes wound healing and in turn, increases quality of life.

For nurses, the implementation of evidence-based protocol of WWT provides an opportunity for continuous learning. They can make clinical decisions according to proposed protocol. The protocol helps nurses to maintain a high quality and consistent nursing care.

At the organization’s level, the healthcare cost spending on in-patient care will be reduced. The average length of stay in medical unit is 4.47 days. The suggested duration for WWT is consecutive 5 days. Although the proposed protocol do not shorten the length of stay in the proposed setting, 70% of AD patient feel that WWT reduced hospital admissions (Goodyear & Harper, 2002). By reducing the rate of re-admission, the health care expenditure on in-patient service will be lowered. Moreover, the promotion of the proposed protocol creates a climate for continuous evidence-based practice, providing professional service for patients.
Risks of Maintaining Current Practice

The usual practice of AD patients in wards are using topical emollients and topical steroid, however, the effectiveness of the treatment is fair. It takes long time for patients to improve their symptoms, prolonging their suffering. If the symptoms become uncontrollable, systematic steroid and systematic antibiotic will be used. The use of antibiotic will increase the risk of increasing the number of drug-resistant germs.

The in-patient cost subsidized by the government is HKD 4,580 per day per patient in the public hospitals in Hong Kong (Hospital Authority, 2015). Up to 30% of AD patients needed to be re-admitted to the hospital and stay for 5 more days according to the clinical estimation in 2014, there will be an extra HKD 22,900 spend on each patient. The risk of maintaining the current practice not only increased patients’ suffers, but also increased the workload for health care workers and increased the health care expenditure.

Material cost

As mentioned, the material needed for implementing the proposed protocol is dressing materials, training cost and manpower. Appendix 3 will compare the material cost of implementing the innovation and the material cost of not implementing the innovation in details.

Potential Non-material Costs of implementing the innovation
Change of practice is needed when implementing the innovation, the stress of frontline staff may increase when facing change. Extra effort is needed for them to adopt the new change and learn the skills of applying WWT.

**Potential Non-material Benefits of implementing the innovation**

Patients’ faith in the health care system increased as they have less suffering and less re-admission rate. Job satisfaction for nurses and their autonomy improved. As the protocol is a multidisciplinary approach, the cooperation between health care providers increased.

### 3.4 Evidence-based practice Protocol

An evidence-based protocol is developed for the use of wet-wrap therapy to alleviate the severity of patients with moderate to severe atopic dermatitis is presented in Appendix 4. The evidence is extracted from the selected studies. The level of evidence is rated through the process critical review by using SIGN checklist. The grading of the recommendation is given according to Grades of Recommendation from SIGN.
Chapter 4: Implementation Plan

After assessing the implementation potential, implementation plan including communication plan, pilot study plan and evaluation plan will be discussed in this chapter.

4.1 Communication plan

Stakeholders

Stakeholders are crucial in the implementation plan as the initiation of the protocol is determined by their support. A thorough communication plan is needed to sustain the change. The stakeholders for the proposed protocol are listed as below:

1. Managerial level: Chief of Service (COS), departmental Operation Manager (DOM), ward Manager (WM).

2. EBP committee: Trainer (nurse expert in wet wrap therapy), clinical management staff including nursing officer (NO) and advanced practice nurse (APN).

3. Medical officer (MO)

4. Care providers: Frontline nursing staff

5. Recipient of the proposed EBP protocol: Target patients

Managerial level
To implement a new protocol or guideline in the department, the COS will be the first one to be notified as he is the policy marker. A proposal is presented to COS for discussion and approval.

If the proposed protocol is related to the nursing field, the DOM will be the second one to be notified after COS’s approval. The agreement from DOM is fundamental in the development of proposed protocol for proper resources allocation. Furthermore, the proposed protocol will be reviewed and compared with the existing protocol to prevent overlapping of the protocol.

Thirdly, the message of new protocol development will be delivered to WMs of the department. As they are expert in the management, they can assist in providing clear command and instruction for the proposed protocol. By building a good communication in the management level, a clear guidance can help in developing the protocol.

All in all, gaining the support from the managerial level is the first and biggest step as they have the authority to approve the proposed protocol. The development of the protocol cannot be done without their agreement.

**EBP (evidence-based practice) committee**

After the proposal is confirmed and can be carried out. A detailed plan of the protocol should be developed. The EBP committee included the protocol trainer who is expert in WWT, clinical management staff including NO and APN. They are responsible to formulate the workflow of the innovation. They allocate and organize
work for frontline ward nurses. More importantly, they act as educator and ambassador for the WWT. They are responsible to answer the question raised form the frontline staff and solve the related problems. The clinical management experience from NOs and APNs also help in carrying out the protocol smoothly.

**Medical officer**

WWT include the use of occlusive dressing and topical medication. Topical medication including emollients and topical steroid will be used to maximize the effect of WWT. As nurses do not have the authority to prescribe medication, MOs are invited to give their experience on the use of topical medication and have endorsement of the protocol.

**Care providers**

Care providers refers to the frontline nursing staff that deliver WWT to clients based on the proposed protocol. This group of people is vital because they are the one to deliver service. Their cooperation determine the success of the WWT protocol. Therefore, a thorough, detailed description of the proposed protocol is introduced to them in the handover time between the AM shift and PM shift. By telling them the importance of the implementation of the proposed protocol and its significance, they are more willing to accept the protocol. After the frontline staff acquired the concept of WWT, they will be arranged to attend the training section on the practice of applying WWT.
Recipient of the proposed EBP protocol

Recipient of the proposed EBP protocol are patients with moderate to severe AD during hospitalization. As WWT is relatively new to this group of clients, an introduction of WWT and its therapeutic use will increase patients’ understanding towards the new innovation. This also allows active patients’ participation in the treatment plan. As a result, they are more cooperate and have a higher compliance to the intervention. Promoting the implementation of the protocol.

Flow of communication

After identifying the key stakeholders in developing the proposed protocol, the process of communication will be discussed and a simplified flow chart is attached.

1. The COS is the first one to communicate as he is the policy marker. There is an official channel for staff to communicate with COS by using the hospital intranet. Staff can give opinion on daily working procedure of proposed new intervention or protocol. Therefore, a comprehensive proposal of the proposed innovation will be delivered to the COS through the intranet for further discussion and seeking approval. After the top management personnel agree the proposal, the following management personnel like DOM and WMs will be communicated. There is a monthly meeting for nursing staff in the department. Review of the proposed protocol and the distribution of the resource can be discussed in the meeting.

2. After the approval and agreement from the management level. A workgroup will
be formulated to facilitate the development of the EBP protocol. The committee member include the expert of the innovation (WWT), the NO or APN as ward representatives from each ward. The committee is responsible to develop step by step protocol on the use of WWT for patient with moderate to severe AD based on the evidence from the reviewed journals. They also act as a troubleshooter for the foreseeing difficulties.

3. WWT protocol includes the use of medication. After the draft of protocol is develop, MO is consulted for the recommendation of the use of topical medication. After the topical medication is endorsed by MO, nurses can distribute the medication together with WWT according to the protocol.

4. Last but not the least, frontline nurses should be communicated. As mentioned before, they are the service provider, they directly apply WWT on patient. It is important to communicate and gain their support.

Initiate the change
When a new protocol is introduced, change is needed. Stress developed on frontline staff when facing change. Stress not only lowing their moral, but also decreased their productivity. In order to initiate the proposed protocol in a more comfortable way, the current situation of the problem is explained. Providing the fact that AD patient experience relapse and 10% of them are re-admitted to ward within 3 months according to clinical statistic in 2014. There is a risk of maintaining current practice because of the high re-admission rate. There is definitely a room for improvement by using the evidence from literatures, that is, the implementation of the proposed WWT protocol.

The duty of nurse is to provide holistic care to clients so as to decrease their suffering and promote comfort. A clear vision of promoting health should be reinforced to frontline staff. Change is needed not only because of the potential benefit to alleviate AD patients’ symptoms, but also the support from the stakeholders including the management level.

In order to overcome the obstacles to the proposed change, serval methods like questionnaires, interviews and focus group will be arranged. Questionnaires will be distributed to all frontline staff to collect their opinions on the implementation of the protocol, identifying who has difficulties when facing the change. After knowing those staff with difficulties, focus group interviews will be arranged for them. The aim is to
develop common language between them, listen to their main concern, and encourage them to voice out their difficulties. Hoping their confidence on facing change increased by providing reassurance.

**Guide the change**

The change is guided by clear explanation of the EBP protocol including the aim and vision. Deadlines will be set up for the change for facilitation. The protocol is guided by clinical expertise and the clinical management staff including NOs and APNs as they are more knowledgeable and equipped with experienced management skill for guidance. Adequate training with return demonstration and Q&A section helps the frontline staff to go through the change. In addition, a step by step guideline (quick guide/ manual) will be developed to let the staff to follow during the implementation.

**Sustain the change**

The change is sustained by monitoring patients’ outcome after implementation of the proposed protocol. Staff’s compliance and satisfaction is assessed by using questionnaire.

Furthermore, praises staff’s effort to boost their satisfaction and confidence. Lastly, frequent revision and update of the EBP protocol is necessary to maintain quality service.
4.2 Pilot study plan

A pilot study plan will be conducted to assess the feasibility of the protocol. It aims to avoid unforeseen problem. By going through the pilot study, the need of revision of the protocol can be evaluated before the implementation of the protocol in the corresponding units.

Objective

1. To test the workability of the EBP protocol.
2. To address the potential problem of the EBP protocol.
3. To develop possible solution for the potential problem.
4. To revise the proposed protocol.

Target setting

The pilot study will be conducted in one general medical ward and one general pediatric ward as the proposed protocol will be implemented in both medical and pediatric units.

Target users

The target users of the proposed protocol will be those nurses in the selected medical and pediatric wards. They are responsible to carry out the proposed protocol for the suitable clients in the pilot period.

Sampling method
Convenient sampling is used for patient recruitment. Once the patient is eligible, he or she will be selected to participant in the pilot study. The recruitment process will be last for two month and at least five patients will be recruited during the pilot study.

**Time frame**

The pilot study will last for four months. Two weeks will be used to formulate the protocol committee, two weeks will be used to educate the protocol users. After these preparation works, Patient recruitment and protocol implementation will last for one months. One month will be the outcome evaluation.

**Outcome measurement**

The outcome of the pilot study is to evaluate users’ compliance and satisfaction on the proposed protocol. At the end of the pilot study, a 5-point Likert Scale (Likert, 1932) of a self-designed, open ended questionnaire is used. It aims to investigate users’ workload, compliance, satisfaction and difficulties towards the protocol.

**Evaluation of the pilot study**

After the pilot study finished, evaluation will be done. The EBP committee will identify the limitation and problems of implementing the protocol. In addition, users’ attitude towards the protocol can be known by collecting opinion from them. As a result, the EBP protocol can be revised through the evaluation.
4.3 Evaluation plan

An evaluation plan is developed after the implementation of the proposed protocol. It aims to assess the feasibility and effectiveness of the protocol which targeted in the general and pediatric wards. Outcomes of the intervention are identified and the data is analyzed by statistical method. The result of the implementation is intergraded and presented to the top managerial level to see if the protocol should be continue or not.

Outcomes

Outcomes of the protocol are identified and they are classified into patient outcome, healthcare provider outcome and the system outcome. They are then analyze in a statistical way.

Patient outcome

The patient outcome of the EBP protocol is the severity of the AD. A universal measurement tool local SCORAD index is used to assess the outcome. Before applying the protocol, the baseline local SCORAD index for AD patient is obtained. The intensity of AD lesions in the affected area is then graded after the 5 five days of treatment. The change in the local SCORAD index of AD patient after receiving treatment indicates the effectiveness of the protocol.

Healthcare provider outcome

The healthcare provider outcome of the protocol refers to the users’ compliance and the satisfaction on the proposed protocol. After the implementation of the protocol, frontline nurses will receive a questionnaire concerning the protocol in the format of 5-
point Liker Scale (Likert, 1932) and open-ended questions (Appendix 5). The result is then collected and analyzed.

**System outcome**

The system outcome is the readmission rate of the AD patient. Re-admission refers to the AD patient, who had been discharged after the course of WWT under the EBP protocol from a hospital is admitted again with the same diagnose within three months. The data is collected through tracing the discharge patient’s electronic patient record (ePR).

**Nature and the number of clients**

The nature of the protocol include patient with moderate to severe AD who has local SCORAD index ≥ 10. They needed to be systematic infection free and without hypothalamic pituitary adrenal axis abnormality. The baseline characteristic including the mean and standard deviation (SD) of age, gender and the SCORAD index is provided to exclude baseline differences.

The number of clients needed for the protocol is determined by the patient outcome, that is, the primary outcome. As the SCORAD index is a continuous variable and the statistical method is pre-test and post-test, two-tailed paired t-test had been used. From the reviewed studies, the smallest meaningful difference is 4.4 (Foelster-Holst et al., 2006). By having the level of the significance is 5%, the power is 80%, and the SD is
4.5. The sample size is 11 using Piface sample size calculator. Assuming the drop-out rate is 20%, total 14 clients should be recruited for the EBP protocol.

Data analysis

The collected data for the implementation of the protocol will be analyzed by using the Statistical Package for Social Science (SPSS) version 23. The analysis of the primary outcome is discussed in the section of the sample size calculation with the use of two-tailed paired t-test. While the data of the healthcare provider outcome and the system outcome is summarized using the descriptive statistic. Written reports of these two outcomes are generated after analysis. The opinions of the users are identified and classified into categories for further exploration and revision of the protocol.

Timeline

The protocol will last for nine months. Two weeks is used to gain approval from COS in developing the protocol. Two weeks is used for resources allocation from DOM and WMs. One month is prepared for forming of the EBP committee and developing the protocol. Another month is the training section. Three months for the implementation of the protocol in the in-patient setting in the medical and pediatric wards. And the last 3 months is for evaluation (Appendix 6).

4.4 Basis for implementation

From the reviewed literature, the smallest difference in SOCARD index before the intervention and after the intervention is 4.4 (Foelster-Holst et al., 2006). This finding
showed that patients with moderate to severe AD can decrease their severity by 4.4 in terms of local SOCRAD index after having the WWT. Therefore, the innovation will be fully implemented if moderate to severe AD patients can reduced their SOCRAD index by 4 after receiving the intervention guided by the protocol.

To conclude, WWT is an evidence-based practice that used in the treatment of moderate to severe AD. By introducing and implementing WWT protocol to patients during hospitalization, their symptoms can be alleviated and be reduced by 4 in terms of local SOCRAD index.
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Appendix 1: Table of evidence
A pilot study on the use of wet wraps in infants with moderate atopic eczema

<table>
<thead>
<tr>
<th>Citation / Design (Study quality)</th>
<th>Sample characteristics</th>
<th>Intervention</th>
<th>Control</th>
<th>Outcomes (Assessment time)</th>
<th>Effect size (Intervention - Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beattie and Lewis-Jones (2004)/ RCT (-)</td>
<td>1. 19 children aged 4 months to 3 years 2. AD covering 30% or more body surface area (BSA) and without clinical evidence of infection 3. Not using regular TCS stronger than 1%HC 4. Not using oral steroids or antibiotics or Chinese herbs or homeopathy before 2 weeks of study</td>
<td>Apply topical hydrocortisone (HC) once in the morning for 2 weeks with wet wrap therapy (WWT) twice daily for the first week and WWT only at night for the second week and emollients only for a third week (n=10)</td>
<td>Apply topical hydrocortisone (HC) twice daily for 2 weeks and apply emollients only for a third week (n=9)</td>
<td>1. Six Area, Six Sign Atopic Dermatitis (SASSAD) severity score - a) 1st visit, b) 2nd visit, c) 3rd visit, d) 4th visit 2. Infants Dermatology Quality of Life Index (IDQOL) - a) Initial visit, b) 2 weeks after active therapy 3. Dermatitis Family Impact (DFI) score - a) Initial visit, b) 2 weeks after active therapy</td>
<td>1. a) -1.9, b) 3.5, c) 3.4, d) -0.9 2. a) -1.5, b) 2 3. a) -1.8, b) 1.3</td>
</tr>
</tbody>
</table>
**A randomized study of “wet wraps” versus conventional treatment for atopic eczema**

<table>
<thead>
<tr>
<th>Citation / Design (Study quality)</th>
<th>Sample characteristics</th>
<th>Intervention</th>
<th>Control</th>
<th>Outcomes (Assessment time)</th>
<th>Effect size (Intervention - Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindley, Galloway, Murray &amp; Gardener (2006)/ RCT (0)</td>
<td>1. 50 children aged 3 months to 5 years old 2. Moderate or severe eczema according to the SCORAD index (&gt;15) 3. Not in active skin infection 4. Eczema not predominantly on the face 5. Not allergy to WWT</td>
<td>Wet wrap therapy (WWT) for a 24 hours with 1% hydrocortisone ointment for 1 week and 12 or 24 hours a day WWT with 1% hydrocortisone ointment for the following 3 weeks, 1% hydrocortisone and emollients were used as required during the non-wet wrap period. (n=23)</td>
<td>Conventional treatment(regular use of emollients and as required use of 1% hydrocortisone ointment) for 3 weeks (n=22)</td>
<td>SCORAD index -a) 96 hours, b) 1 week, c) 2 week, d) 4 week</td>
<td>No significant difference was found between two groups. Children receiving conventional treatment had slightly lower scores at 4 weeks; intervention effect was -3.4 (95% CI -12.2 to 5.5). The results of the other outcome measures “extent”, “intensity” and “subjective” were similar</td>
</tr>
</tbody>
</table>
Table: Efficacy of Crisis Intervention Treatment with Topical Corticosteroid Prednicarbat with and without Partial Wet-Wrap Dressing in Atopic Dermatitis

<table>
<thead>
<tr>
<th>Citation / Design (Study quality)</th>
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<th>Control</th>
<th>Outcomes (Assessment time)</th>
<th>Effect size (Intervention - Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foelster-Holst, Nagel, Zoellner &amp; Spaeth (2006)/ RCT (-)</td>
<td>1. 24 patients (mean age: 30.5 years old)</td>
<td>Prednicarbat was applied with wet-wrap dressing for 48–72 hours</td>
<td>Only prednicarbat was applied for 48–72 hours</td>
<td>Local SCORAD - initial visit and following the treatment</td>
<td>The severity of AD improved in the intervention group at an average of 4.4 points, in the control group 3.0 Local SCORAD in the intervention group was significantly better (p&lt;0.011) than control group</td>
</tr>
<tr>
<td></td>
<td>2. 20 adults (18-63 years old)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. 4 children (6-16 years old)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Local SCORAD of at least 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Skin lesions equally affected the right and the left arm or leg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. No systemic treatment with corticosteroids and antibiotics or topical corticosteroids was allowed 7 or 2 days respectively before the study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The effectiveness of wet wrap dressings using 0.1% mometasone furoate and 0.005% fluticasone propionate ointments in the treatment of moderate to severe atopic dermatitis in children.

<table>
<thead>
<tr>
<th>Citation / Design (Study quality)</th>
<th>Sample characteristics</th>
<th>Intervention</th>
<th>Control</th>
<th>Outcomes (Assessment time)</th>
<th>Effect size (Intervention - Control)</th>
</tr>
</thead>
</table>
| Pei, Chan & Ho (2001)/ RCT (+)    | 1. 40 children aged 1-15 years old  
2. Disease severity score at least 40  
3. Patient not on systemic steroids, immunosuppressive, Chinese herbal medicine, antibiotic within previous 6 weeks. | 1. Daily application of fluticasone propionate for 2 weeks followed by 2 weeks of application with wet warp therapy (WWT) in the evening for overnight (Group 3)  
2. Daily application of mometasone furoate for 2 weeks followed by 2 weeks of application WWT in the evening for overnight (Group 4) | 1. Daily application of fluticasone propionate for 4 weeks (Group 1)  
2. Daily application of mometasone furoate for 4 weeks (Group 2) | 1. Disease severity score  
2. Disease extent score  
3. Subjective index score  
All outcomes assessed on week 0, 1, 2, 3, 4 | 1. Group 3 (The median from 40 reduced to 16, p=0.018)and group 4 (The median from 60.5 reduced to 14, p=0.05)have a significant, continue effect in lowering the disease severity score  
2. The extent of disease significantly lower in group 3 (The median from 54 reduced to 24, p=0.028) and group 4 (The median from 70 reduced to 22.5, p=0.025)  
3. Group 4 reduced the subjective index score (median) from 20 to 16.5 (p=0.011) |

<table>
<thead>
<tr>
<th>Citation / Design (Study quality)</th>
<th>Sample characteristics</th>
<th>Intervention</th>
<th>Control</th>
<th>Outcomes (Assessment time)</th>
<th>Effect size (Intervention - Control)</th>
</tr>
</thead>
</table>
| Janmohamed et al. (2014)/ RCT (++) | 1. 39 children (0.5-10 years old)  
2. Objective SCORAD at least 35 on two measuring points  
3. Without underlying severe illness, secondary infected eczema, signs of systemic infection, abnormalities of the hypothalamic-pituitary-adrenal axis, systematic steroids and growth retardation | Wet wrap therapy (WWT) with verum for 28 days (n=19) | WWT with emollient for 28 days (n=20) | 1. Objective SCORAD  
-a)day 1, b)day 4,  
c)day 7, d)day 14 and e)day 28.  
2. Patient-Orientated Eczema (POEM)  
3. Quality of life (QOL) of parents | 1. a) 0.522 (p=0.8150), b)-14.358 (p<0.0001), c) -16.308 (p<0.0001), d) -12.171 (p<0.0001), e)-9.927 (p=0.0028)  
2. No significantly difference between two groups (p=0.1668)  
3. Significantly difference between two groups (p=0.002) |
**Topical Steroids under Wet-Wrap Dressings in Atopic Dermatitis – A Vehicle-Controlled Trial**

<table>
<thead>
<tr>
<th>Citation / Design (Study quality)</th>
<th>Sample characteristics</th>
<th>Intervention</th>
<th>Control</th>
<th>Outcomes (Assessment time)</th>
<th>Effect size (Intervention - Control)</th>
</tr>
</thead>
</table>
| Schnopp et al. (2002)/RCT (-)    | 1. 20-2-17 years old in-patient children  
2. Medium age: 7.2  
3. Present with atopic dermatitis exacerbation  
4. Not treated with systemic steroids or antibiotics before enrollment  
5. Medium SCORAD = 52.6 with skin lesions symmetrically affecting either inside of elbows or back of knees | Morning and evening application of topical steroids under wet wrap therapy (WWT) except night time for 5 days | Morning and evening application of vehicle under WWT except night time for 5 days | 1. Local SCORAD - before the treatment, day 3, day 5  
2. Barrier function - Transepidermal water loss (TEWL)  
3. S. aureus Colonization - scrub method | 1. Intervention group has significant improvement in local SCORAD than the control group (p<0.01)  
2. TEWL measurements improved in both study arms without reaching statistical significance  
3. Bacterial counts decreased in both groups at day 3, and the bacterial counts continued to decrease in intervention group |
### Methodology Checklist 2: Controlled Trials

**Study identification**  
*Include author, title, year of publication, journal title, pages*


<table>
<thead>
<tr>
<th>Guideline topic: An evidence-based protocol on wet wrap therapy for patient with eczema to alleviate their severity</th>
<th>Key Question No:</th>
<th>Reviewer:</th>
</tr>
</thead>
</table>

**Before** completing this checklist, consider:

1. Is the paper a **randomised controlled trial** or a **controlled clinical trial**? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a **controlled clinical trial** questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

**Reason for rejection:** 1. Paper not relevant to key question  □  2. Other reason  □  (please specify):

---

### Section 1: Internal validity

**In a well conducted RCT study…**

| Does this study do it? |
|---|---|
| Yes □ | No □ |
| Can’t say □ | The PICO is well defined and clear. |

1.1 The study addresses an appropriate and clearly focused question.

1.2 The assignment of subjects to treatment groups is randomised.

1.3 An adequate concealment method is used.

1.4 The design keeps subjects and investigators ‘blind’ about treatment allocation.

1.5 The treatment and control groups are similar at the start of the trial.
1.6 The only difference between groups is the treatment under investigation. | Yes ☑ | No □ |

1.7 All relevant outcomes are measured in a standard, valid and reliable way. | Yes ☑ | No □ |

1.8 What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed? | 4 participants dropped out in the study (21%) |

1.9 All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis). | Yes ☑ | No □ |

1.10 Where the study is carried out at more than one site, results are comparable for all sites. | Yes ☑ | No □ |

### SECTION 2: OVERALL ASSESSMENT OF THE STUDY

2.1 **How well was the study done to minimise bias?**

**Code as follows:**

- High quality (++)
- Acceptable (+)
- Low quality (-)
- Unacceptable – reject 0

2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?

The overall methodology in this study is clear. The randomization method is not clearly explained. But there is an explanation on the concealment method. The statistical power is not clearly explained, not all the data including the p-value provided in the study. Also, it only use the paragraph to describe the findings. It would be better to use statistics to describe the result, e.g. mean, SD, and provide the actual p-value. Moreover, since it is a pilot study, the sample size is small (n=19) with 4 samples dropped out afterwards, more samples should be include to investigate the effect of the intervention.

2.3 Are the results of this study directly applicable to the patient group targeted by this guideline? | Yes, the target population is also patient with eczema and the intervention is similar.

2.4 **Notes.** Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.

The use of wet-wrap therapy (WWT) together with daily application of hydrocortisone do not have a superior effect over conventional therapy of hydrocortisone applied twice daily and emollients in infants with moderate eczema of 30% or more body surface area. The study suggested that WWT should not apply to patient with mild to moderate eczema. If WWT is used, it is better to use emollients instead of topical steroid to prevent systematic side effect. The result of this study is highly related to the question, however, a deeper study with more participants should be conducted to evaluate the effect of WWT and the related side effect.
### Methodology Checklist 2: Controlled Trials

**Study identification**  
*Include author, title, year of publication, journal title, pages*  

**Guideline topic:** An evidence-based protocol on wet wrap therapy for patient with eczema to alleviate their severity

<table>
<thead>
<tr>
<th>Key Question No:</th>
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<tbody>
<tr>
<td>Before completing this checklist, consider:</td>
<td></td>
</tr>
<tr>
<td>1. Is the paper a <a href="#">randomised controlled trial</a> or a <a href="#">controlled clinical trial</a>? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a <a href="#">controlled clinical trial</a> questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+</td>
<td></td>
</tr>
<tr>
<td>2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.</td>
<td></td>
</tr>
</tbody>
</table>

Reason for rejection: 1. Paper not relevant to key question □ 2. Other reason □ (please specify):

### Section 1: Internal validity

#### In a well conducted RCT study…

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ No □ Can’t say □</td>
</tr>
</tbody>
</table>

#### 1.1 The study addresses an appropriate and clearly focused question.

Yes ☑ No □ Can’t say □ The PICO is well defined and clear.

#### 1.2 The assignment of subjects to treatment groups is randomised.

Yes ☑ No □ Can’t say ☑ By two equal numbered sets of unmarked enveloped only

#### 1.3 An adequate concealment method is used.

Yes ☑ No □ Can’t say □ Concealment by unmarked enveloped

#### 1.4 The design keeps subjects and investigators ‘blind’ about treatment allocation.

Yes ☑ No □ Can’t say □ Single blind to investigators (scoring nurse)

#### 1.5 The treatment and control groups are similar at the start of the trial.

Yes □ Can’t say □ No ☑ There was a substantial discrepancy in the baseline scores between the groups
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6</td>
<td>The only difference between groups is the treatment under investigation.</td>
<td>Yes [✓] No [ ] Can’t say [ ]</td>
</tr>
<tr>
<td>1.7</td>
<td>All relevant outcomes are measured in a standard, valid and reliable way.</td>
<td>Yes [✓] No [ ] Can’t say [ ]</td>
</tr>
<tr>
<td>1.8</td>
<td>What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?</td>
<td>5 samples dropped out in the study. (10%)</td>
</tr>
<tr>
<td>1.9</td>
<td>All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis).</td>
<td>Yes [ ] No [✓] Can’t say [ ] Does not apply [ ] ITT were not possible as stated in the study</td>
</tr>
<tr>
<td>1.10</td>
<td>Where the study is carried out at more than one site, results are comparable for all sites.</td>
<td>Yes [ ] No [ ] Can’t say [ ] Does not apply [✓]</td>
</tr>
</tbody>
</table>

SECTION 2: OVERALL ASSESSMENT OF THE STUDY

2.1 **How well was the study done to minimise bias?**

   **Code as follows:**

   High quality (++)

   Acceptable (+)

   Low quality (-)

   Unacceptable – reject 0 [✓]

2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? The overall methodology in this study is clear. The randomization method and the concealment method are explained. The statistical power is clearly explained with p-value provided. However, there is baseline difference between two groups, this may affect the overall result of the study.

2.3 Are the results of this study directly applicable to the patient group targeted by this guideline? Yes, the target population is also patient with eczema and the intervention is similar.

2.4 **Notes.** Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.

This study suggested that there is no advantages of wet wraps to conventional treatment when used over a four week period. Furthermore, they are some disadvantages, including increased risk of skin infections and wet wrap is complicated to apply in parents’ point of view. This study can answer my question in a large extent, however, because of the baseline difference of samples, the result of the study is affected and may not be reliable. Also, more sample size is needed to prove the effectiveness of the intervention.
Study identification  
Include author, title, year of publication, journal title, pages

Guideline topic: An evidence-based protocol on wet wrap therapy for patient with eczema to alleviate their severity

<table>
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<tr>
<th>Key Question No:</th>
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</tr>
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</table>

Before completing this checklist, consider:

1. Is the paper a randomised controlled trial or a controlled clinical trial? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a controlled clinical trial questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question □ 2. Other reason □ (please specify):

Section 1: Internal validity

<table>
<thead>
<tr>
<th>Does this study do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ No □</td>
</tr>
<tr>
<td>Can't say □ The PICO is well defined and clear.</td>
</tr>
</tbody>
</table>

In a well conducted RCT study…

| 1.1 The study addresses an appropriate and clearly focused question. | Yes ☑ No □ |
| Can't say □ The PICO is well defined and clear. |

| 1.2 The assignment of subjects to treatment groups is randomised. | Yes □ Can't say ☑ |
| No □ Does not mention the randomization method in detail |

| 1.3 An adequate concealment method is used. | Yes □ Can't say □ |
| No ☑ No concealment method mentioned in the study |
| 1.4 | The design keeps subjects and investigators ‘blind’ about treatment allocation. | Yes ☐ | No ☐ | At least the subjects are not blinded, and the study does not mention if the investigators are blinded to the intervention |
| 1.5 | The treatment and control groups are similar at the start of the trial. | Yes ☐ | No ☐ | The study does not mention if the samples are similar before the intervention including the statistical testing |
| 1.6 | The only difference between groups is the treatment under investigation. | Yes ☑ | No ☐ | |
| 1.7 | All relevant outcomes are measured in a standard, valid and reliable way. | Yes ☑ | No ☐ | |
| 1.8 | What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed? | No drop out in the study |
| 1.9 | All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis). | Yes ☐ | No ☐ | Does not apply ☑ |
| 1.10 | Where the study is carried out at more than one site, results are comparable for all sites. | Yes ☐ | No ☐ | Does not apply ☑ |

**SECTION 2: OVERALL ASSESSMENT OF THE STUDY**

2.1 *How well was the study done to minimise bias?*

**Code as follows:**

- High quality (++) ☑
- Acceptable (+) ☐
- Low quality (-) ☒
- Unacceptable – reject 0 ☐

2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? The overall methodology in this study is unclear. The randomization method and the concealment method are not mentioned. No statistical testing is done to find out if there is differences between two groups before the intervention. The statistical power is not clearly explained, not all the data provided in the study, e.g. p-value. In addition, more sample size is needed to strength the result.
<table>
<thead>
<tr>
<th>2.3</th>
<th>Are the results of this study directly applicable to the patient group targeted by this guideline?</th>
<th>Yes, the target population is also patient with eczema and the intervention is similar</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4</td>
<td><strong>Notes.</strong> Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.</td>
<td>Wet wrap therapy (WWT) is an effective treatment option in patients with exacerbated atopic eczema. Management of acute episodes of eczema with topical corticosteroids can be significantly improved and accelerated by combining with wet-wrap dressings in this study. Patients with eczema feel comfortable with the use of wet-wraps on their inflamed skin and this treatment does not lead to a bacterial superinfection. This study provide evidence to my research question. However, in order to have a greater extent of effect size, more samples is needed.</td>
</tr>
</tbody>
</table>


Methodology Checklist 2: Controlled Trials

Study identification  
*Include author, title, year of publication, journal title, pages*

Guideline topic: An evidence-based protocol on wet wrap therapy for patient with eczema to alleviate their severity

Key Question No:  
Reviewer:  

**Before** completing this checklist, consider:

1. Is the paper a **randomised controlled trial** or a **controlled clinical trial**? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a **controlled clinical trial** questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question  
2. Other reason  (please specify):  

### Section 1: Internal validity

*In a well conducted RCT study…*  

| 1.1 | The study addresses an appropriate and clearly focused question. | Yes ☑  
Can’t say ☐  
No ☐  
The PICO is well defined and clear. |
|-----------------|-------------------------------------------------|-----|
| 1.2 | The assignment of subjects to treatment groups is randomised. | Yes ☑  
Can’t say ☐  
No ☐  
Randomisation using 50 envelopes with X or Y |
| 1.3 | An adequate concealment method is used. | Yes ☐  
Can’t say ☐  
No ☑  
No concealment method mentioned in the study |
| 1.4 | The design keeps subjects and investigators ‘blind’ about treatment allocation. | Yes ☑  
Can’t say ☐  
No ☐  
Double blind is used (patient and observer) |
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 The treatment and control groups are similar at the start of the trial.</td>
<td>Yes ☑ No □ Can’t say □ The study mentioned the use of statistical analysis to compare the baseline characteristics but not include the result</td>
</tr>
<tr>
<td>1.6 The only difference between groups is the treatment under investigation.</td>
<td>Yes ☑ No □ Can’t say □</td>
</tr>
<tr>
<td>1.7 All relevant outcomes are measured in a standard, valid and reliable way.</td>
<td>Yes ☑ No □ Can’t say □</td>
</tr>
<tr>
<td>1.8 What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?</td>
<td>13 participants dropped out (32.5%)</td>
</tr>
<tr>
<td>1.9 All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis).</td>
<td>Yes ☐ No ☑ Can’t say □ Does not apply □ ITT does not mention in the study</td>
</tr>
<tr>
<td>1.10 Where the study is carried out at more than one site, results are comparable for all sites.</td>
<td>Yes ☑ No □ Can’t say □ Does not apply ✓</td>
</tr>
</tbody>
</table>

### SECTION 2: OVERALL ASSESSMENT OF THE STUDY

#### 2.1 How well was the study done to minimise bias?

**Code as follows:**

<table>
<thead>
<tr>
<th>Quality Level</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>High quality (++)</td>
<td>☐</td>
</tr>
<tr>
<td>Acceptable (+)</td>
<td>☑</td>
</tr>
<tr>
<td>Low quality (-)</td>
<td>☐</td>
</tr>
<tr>
<td>Unacceptable – reject 0</td>
<td>☐</td>
</tr>
</tbody>
</table>

#### 2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? |

The overall methodology in this study is clear. The randomization method is clearly explained. However, it is better to mention the concealment method and the study should clearly state the number of participants in each group after second randomization and after drop out. The statistical power is clearly explained, p-value and the median is provided in the study. It would be better to provide the effect size of the intervention. Moreover, more sample size is needed to strengthen the result.

#### 2.3 Are the results of this study directly applicable to the patient group targeted by this guideline? |

Yes, the target population is patient with eczema and the intervention is similar.
2.4 **Notes.** Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.

| Wet-wrap therapy (WWT) is useful and can be an effective second-line treatment for acute exacerbation and persistent moderate to severe atopic dermatitis. The effect of steroid is enhanced by the use WWT. The result suggested that WWT can be used as an intermittent and short-term measure. The result is highly related to the question, however, a deeper study with more participants should be conducted to consolidate the effect WWT. |
Methodology Checklist 2: Controlled Trials

### Study identification

(Include author, title, year of publication, journal title, pages)


Guideline topic: An evidence-based protocol on wet wrap therapy for patient with eczema to alleviate their severity

Key Question No: 
Reviewer: 

### Before completing this checklist, consider:

1. Is the paper a **randomised controlled trial** or a **controlled clinical trial**? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a **controlled clinical trial** questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question [ ] 2. Other reason [ ] (please specify):

### Section 1: Internal validity

In a well conducted RCT study…

<table>
<thead>
<tr>
<th></th>
<th>Does this study do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>The study addresses an appropriate and clearly focused question.</td>
</tr>
<tr>
<td>1.2</td>
<td>The assignment of subjects to treatment groups is randomised.</td>
</tr>
<tr>
<td>1.3</td>
<td>An adequate concealment method is used.</td>
</tr>
<tr>
<td>1.4</td>
<td>The design keeps subjects and investigators ‘blind’ about treatment allocation.</td>
</tr>
</tbody>
</table>
### 1.5 The treatment and control groups are similar at the start of the trial.

<table>
<thead>
<tr>
<th>Yes ☑️</th>
<th>No ☐</th>
<th>Can’t say ☐</th>
</tr>
</thead>
</table>

The study mentioned the use of statistical analysis to compare the baseline characteristics and included the result.

### 1.6 The only difference between groups is the treatment under investigation.

<table>
<thead>
<tr>
<th>Yes ☑️</th>
<th>No ☐</th>
<th>Can’t say ☐</th>
</tr>
</thead>
</table>

### 1.7 All relevant outcomes are measured in a standard, valid and reliable way.

<table>
<thead>
<tr>
<th>Yes ☑️</th>
<th>No ☐</th>
<th>Can’t say ☐</th>
</tr>
</thead>
</table>

### 1.8 What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?

4 participants dropped out (10.2%)

### 1.9 All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis).

<table>
<thead>
<tr>
<th>Yes ☑️</th>
<th>No ☐</th>
<th>Can’t say ☐</th>
</tr>
</thead>
</table>

Does not apply

ITT mention in the study and statistical testing is performed.

### 1.10 Where the study is carried out at more than one site, results are comparable for all sites.

<table>
<thead>
<tr>
<th>Yes ☑️</th>
<th>No ☐</th>
<th>Can’t say ☐</th>
</tr>
</thead>
</table>

### SECTION 2: OVERALL ASSESSMENT OF THE STUDY

#### 2.1 How well was the study done to minimise bias?

**Code as follows:**

- High quality (++)
- Acceptable (+)
- Low quality (-)
- Unacceptable – reject 0

#### 2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?

The overall methodology in this study is clear. The randomization method is clearly explained. However, it is better to mention the concealment method. The statistical power is clearly explained, p-value and the effect size are provided in the study. Also, ITT with statistical testing is mentioned in the study. The only drawback is the relatively small sample size, more sample is needed to strengthen the result.

#### 2.3 Are the results of this study directly applicable to the patient group targeted by this guideline?

Yes, the target population is patient with eczema and the intervention is similar.
<table>
<thead>
<tr>
<th>2.4</th>
<th><strong>Notes.</strong> Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In this study, the objective SCORAD values declined in both groups of patients (using wet wrap therapy), but much faster and more pronounced in the verum group. Therefore, wet-wrap therapy (WWT) is useful in the treatment for acute exacerbation and persistent moderate to severe atopic dermatitis. The effect of steroid is enhanced by the use WWT in the study. Apart from the symptoms improvement, WWT with verum also improve quality of life. The result suggested that WWT with verum can be used as an intermittent and short-term measure. The result is highly related to the question and provide valuable evidence in a large extent. In order to provide a greater effect size, a deeper study with more participants should be conducted.</td>
</tr>
</tbody>
</table>
### Methodology Checklist 2: Controlled Trials

**Study identification**  
(Include author, title, year of publication, journal title, pages)


**Guideline topic:** An evidence-based protocol on wet wrap therapy for patients with eczema to alleviate their severity

**Key Question No:**

**Reviewer:**

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### Section 1: Internal validity

**In a well conducted RCT study…**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>1.1</strong></td>
<td>The study addresses an appropriate and clearly focused question.</td>
</tr>
<tr>
<td></td>
<td>Yes ✓</td>
</tr>
<tr>
<td></td>
<td>Can't say □</td>
</tr>
<tr>
<td></td>
<td>No □</td>
</tr>
<tr>
<td></td>
<td>The PICO is well defined and clear.</td>
</tr>
<tr>
<td><strong>1.2</strong></td>
<td>The assignment of subjects to treatment groups is randomised.</td>
</tr>
<tr>
<td></td>
<td>Yes □</td>
</tr>
<tr>
<td></td>
<td>Can't say ✓</td>
</tr>
<tr>
<td></td>
<td>No □</td>
</tr>
<tr>
<td></td>
<td>Did not mention the randomization method in detail</td>
</tr>
<tr>
<td><strong>1.3</strong></td>
<td>An adequate concealment method is used.</td>
</tr>
<tr>
<td></td>
<td>Yes □</td>
</tr>
<tr>
<td></td>
<td>Can't say □</td>
</tr>
<tr>
<td></td>
<td>No ✓</td>
</tr>
<tr>
<td></td>
<td>No concealment method mentioned in the study</td>
</tr>
<tr>
<td><strong>1.4</strong></td>
<td>The design keeps subjects and investigators ‘blind’ about treatment allocation.</td>
</tr>
<tr>
<td></td>
<td>Yes ✓</td>
</tr>
<tr>
<td></td>
<td>Can’t say □</td>
</tr>
<tr>
<td></td>
<td>No □</td>
</tr>
<tr>
<td></td>
<td>Double blind is used</td>
</tr>
<tr>
<td><strong>1.5</strong></td>
<td>The treatment and control groups are similar at the start of the trial.</td>
</tr>
<tr>
<td></td>
<td>Yes □</td>
</tr>
<tr>
<td></td>
<td>Can’t say ✓</td>
</tr>
<tr>
<td></td>
<td>No □</td>
</tr>
<tr>
<td></td>
<td>Not mentioned in the study</td>
</tr>
<tr>
<td><strong>1.6</strong></td>
<td>The only difference between groups is the treatment under investigation.</td>
</tr>
<tr>
<td></td>
<td>Yes ✓</td>
</tr>
<tr>
<td></td>
<td>Can’t say □</td>
</tr>
<tr>
<td></td>
<td>No □</td>
</tr>
<tr>
<td>Question</td>
<td>Yes</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>1.7 All relevant outcomes are measured in a standard, valid and reliable way.</td>
<td>☑</td>
</tr>
<tr>
<td>1.8 What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?</td>
<td>No drop out in the study</td>
</tr>
<tr>
<td>1.9 All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis).</td>
<td>Yes</td>
</tr>
<tr>
<td>1.10 Where the study is carried out at more than one site, results are comparable for all sites.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**SECTION 2: OVERALL ASSESSMENT OF THE STUDY**

<table>
<thead>
<tr>
<th>Question</th>
<th>Code as follows:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 How well was the study done to minimise bias?</td>
<td>High quality (++): ☑</td>
</tr>
<tr>
<td>Code as follows:</td>
<td>Acceptable (+): ☐</td>
</tr>
<tr>
<td></td>
<td>Low quality (-): ☑</td>
</tr>
<tr>
<td></td>
<td>Unacceptable – reject 0 ☐</td>
</tr>
<tr>
<td>2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?</td>
<td>The overall methodology in this study is unclear. The randomization method and the concealment method. The statistical power is not clearly explained, not all the data provided in the study, e.g. S. aureus Colonization. Also, it only use the paragraph to describe the findings. It would be better to use statistics to describe the result, e.g. mean, SD, provide the actual p-value. Moreover, more sample size is needed to strength the result.</td>
</tr>
<tr>
<td>2.3 Are the results of this study directly applicable to the patient group targeted by this guideline?</td>
<td>Yes, the target population is also patients with eczema and the intervention is similar</td>
</tr>
<tr>
<td>2.4 Notes. Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.</td>
<td>The use of wet-wrap therapy (WWT) is effective in treating exacerbation of atopic dermatitis. The effect of WWT is enhanced by the use of topical steroid together. The result also suggested that WWT will not increase the chance of wound infection. The result is highly related to the question, however, a deeper study with more participants should be conducted to consolidate the effect WWT</td>
</tr>
</tbody>
</table>
# Appendix 3: Cost-Benefit Ratio of the innovation

<table>
<thead>
<tr>
<th></th>
<th>Usual practice</th>
<th>WWT (For one adult patient with WWT for 4 limbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials cost</strong></td>
<td>none</td>
<td>Dressing:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 2.75 inches Tubular dressing (for upper limbs) for 10 meters: HKD$80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 3.5 inches Tubular dressing (for lower limbs) for 10 meters: HKD$92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Tubifast (2 layers) needed for upper limbs for 1 day: 254 cm (average arm length: 63.5 cm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Tubifast (2 layers) needed for lower limbs for 1 day: 284 cm (average leg length: 71 cm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cost of tubifast for 1 day: HKD$46.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cost of tubifast for 5 day: HKD$232</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total cost: HKD$232 for 5 days</td>
</tr>
<tr>
<td><strong>Non-materials cost</strong></td>
<td>1 RN to implement: HKD 179/hour</td>
<td>1 RN to implement: HKD 179/hour</td>
</tr>
<tr>
<td></td>
<td>- 5 minutes for performing usual practice per day</td>
<td>- 10 minutes for performing WWT per day</td>
</tr>
<tr>
<td></td>
<td>Total = 179 ÷ 60 x 5 = HKD$14.9</td>
<td>Total = 179 ÷ 60 x 10 = HKD$29.8</td>
</tr>
<tr>
<td><strong>Risks of Maintaining Current Practice</strong></td>
<td>1 day hospital stay HKD$4580</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>5 days hospital stay = 4580 x 5 = HKD$22900</td>
<td></td>
</tr>
<tr>
<td><strong>Training cost</strong></td>
<td>none</td>
<td>● Lecture theater with computer facility: Free</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Instructor fee: Free (by me using office hours)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Representatives from wards: Free (using office hours)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Tubifast cost for demonstration: HKD$688 (4 packs of 2.75 inches and 4 packs of 3.5 inches)</td>
</tr>
<tr>
<td><strong>Total Cost (each patient per day)</strong></td>
<td>HKD$4,594.9</td>
<td>HKD$764.2</td>
</tr>
</tbody>
</table>
Appendix 4: Evidence-based practice Protocol

Title:

An evidence-based protocol of wet wrap therapy for patient with moderate to severe atopic dermatitis

Aim:

To alleviate symptoms of moderate to severe atopic dermatitis patients in medical and pediatric units.

Objective:

- To describe the evidence-based wet wrap therapy strategy
- To promote the proper use of wet wrap therapy for patients with moderate to severe atopic dermatitis in order to alleviate their symptoms.

Target users:

Nurses in medical and pediatric units.

Target group:

1. Patients with moderate to severe atopic dermatitis
2. Local SCORAD ≥ 10
3. Without systematic infection
4. Without hypothalamic pituitary adrenal axis abnormality

Recommendation: Assessment
1. Assess if patients had systemic infection or hypothalamic pituitary adrenal axis abnormality.

    Should treat the underlying infection before performing WWT. History of hypothalamic pituitary adrenal axis abnormality may cause hypothalamic pituitary adrenal axis suppression when using topical steroid under occlusive dressing.

    (Janmohamed et al., 2014) (1++) (Pei, Chan & Ho, 2001) (1+) (Schnopp et al, 2002; Foelster-Holst, Nagel, Zoellner & Spaeth, 2006) (1-) Grade A

2. Assess the extent and the severity of atopic dermatitis (local SCORAD)

   1. The severity is assessed by the clinical symptoms: erythema, papulation, lichenification, exudation, excoriation and dryness. They are graded on a 4 point scale: 0=none, 1=mild, 2= moderate and 3= severe (local SCORAD)

       (Foelster-Holst, Nagel, Zoellner & Spaeth, 2006) (1-) Grade B

       SCORAD is the universal assessment tool for atopic dermatitis.

**Recommendation: Procedures**

1. Apply the prescribed topical steroid and emollients to the affected area

   (mometasone furoate/ fluticasone propionate/ prednicarbat)

   WWT with the use of emollients together with the above steroid is more efficacious.
2. Soak one set of tubifast in warm water and squeezed out excessive water.

(Schnopp et al, 2002) (1-) Grade B

3. Apply the wet tubifast on the required area.

(Schnopp et al, 2002) (1-) Grade B

4. Apply a dry set of tubifast over the wet one.

(Schnopp et al, 2002) (1-) Grade B

5. The duration of WWT should be last for 8-24 hours/day

WWT is most efficacious for 8-24 hours/day

(Janmohamed et al., 2014) (1++) (Pei, Chan & Ho, 2001) (1+) Grade A

6. Re-wet the tubifast if necessary

(Janmohamed et al., 2014) (1++) Grade A

7. WWT should be applied for consecutive 5 days.

The best duration for applying WWT is 5 to 14 days

(Janmohamed et al., 2014) (1++) (Schnopp et al, 2002; Foelster-Holst, Nagel, Zoellner & Spaeth, 2006) (1-) Grade A

**Recommendation: Evaluation**
1. Evaluate patients’ condition and monitor patients’ progress when the affected skin is uncovered by tubifast (during the change of dressing) by local SCORAD. Local SCORAD is the universal assessment tool for measuring the severity of atopic dermatitis. (Janmohamed et al., 2014) (1++) (Pei, Chan & Ho, 2001) (1+) (Schnopp et al, 2002) (1-) Grade A

2. Assess for any side effect
   1. Skin infection.
   2. Hypothalamic pituitary adrenal axis suppression.
Appendix 5: Self-designed nursing compliance evaluation questionnaire

Staff compliance and satisfaction questionnaire

Please choose the appropriate number in the following questions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The severity of atopic dermatitis is easy to assess using SOCRAD index</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Wet wrap therapy is easy to apply</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Applying wet wrap therapy does not increase my workload</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Wet wrap therapy can benefit patient</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>I will apply wet wrap therapy to patient who meet the criteria</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>I have confidence in applying wet wrap therapy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>The use of wet wrap therapy increase my job satisfaction.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>The use of wet wrap therapy increase my autonomy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>I will recommend wet wrap therapy to others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>The protocol is worth conducting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

11. Strength of the protocol:

________________________________________________________________________
________________________________________________________________________

12. Problems/difficulties encountered when applying wet wrap therapy:

________________________________________________________________________
________________________________________________________________________

13. Suggestion for improvement:

________________________________________________________________________
________________________________________________________________________

Thank you
# Appendix 6: Gantt chart of wet wrap therapy protocol in moderate to severe atopic dermatitis patients

<table>
<thead>
<tr>
<th></th>
<th>1&lt;sup&gt;st&lt;/sup&gt; month</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; month</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; month</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; month</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; month</th>
<th>6&lt;sup&gt;th&lt;/sup&gt; month</th>
<th>7&lt;sup&gt;th&lt;/sup&gt; month</th>
<th>8&lt;sup&gt;th&lt;/sup&gt; month</th>
<th>9&lt;sup&gt;th&lt;/sup&gt; month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeking approval</td>
<td></td>
<td></td>
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<tr>
<td>Resource allocation</td>
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<tr>
<td>Forming committee</td>
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<td></td>
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<tr>
<td>Protocol implementation</td>
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<td></td>
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<tr>
<td>Evaluation</td>
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<td></td>
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</tbody>
</table>