Criteria-based audit of phototherapy unit in treatment of psoriatic patients in Department of Dermatology, Venereology and Andrology in Assiut University Hospital

Doaa S.S. Abdel-Kader[a], Nashwa A. Abdulla[b], Reham M. Abdel-Gaber[a]

[a]Department of Dermatology, Venereology and Andrology, Faculty of Medicine, Assiut University, Assiut, [b]Department of Dermatology, Venereology and Andrology, Alamin Model Hospital, Damanhur, Egypt

Correspondence to Nashwa A. Abdulla, M.SC, Department of Dermatology, Venereology and Andrology Department, Alamin Model Hospital, Damanhur, Egypt
Tel: +20 100 526 6197;
e-mail: nashwaemara17@yahoo.com

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Background
The use of phototherapy continues to be a principal treatment option in a prevalent disease such as psoriasis and expertise in delivering therapeutic phototherapy is essential within the specialty of dermatology. Clinical audit is the balance that helps us to assess how well we are performing our daily practice against research evidence-based criteria. It is a multidisciplinary tool involving all members of healthcare team.

Objectives
The aim of this study is to assess how useful criteria-based management audit is in improving medical records and how far it helps in the overall cost of care of psoriatic patients attending the Phototherapy Unit of Dermatology Department, Assiut University Hospital.

Patients and methods
A rapid review was conducted to 32 psoriatic patients referred to the phototherapy unit and a quasi-experimental design (audit) of our experience with phototherapy in the treatment of psoriasis was performed retrospectively over a 6 months period from May to November 2018. That was followed by a successive prospective 6 months sustained improvement period from December 2018 to May 2019 following the standards defined by the British Association of Dermatologists phototherapy service guidelines 2018.

Results
Most of the criteria were fulfilled and achieved 100% outcome but the rest were deficient; the most significant were absence of written consent and absent discharge protocol. Patients' records did not include the skin type, minimal erythema dose, minimal phototoxic dose and total cumulative dose which necessary for skin cancer surveillance. Only 62.5% of the patients were subjected to Psoriasis Area Severity Index score measurement.

Conclusions
The present study demonstrated that the phototherapy unit varied in some issues in their capacity to meet international audit standards of British Association of Dermatologists guidelines in the management of psoriatic patients. We established most of the criteria and the reported deficiencies were corrected later during the improvement period.

Keywords:
clinical audit, phototherapy, psoriatic patients

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Background

Psoriasis is a common, chronic, inflammatory long-lasting autoimmune disease affecting ~2–3% of the population characterized by patches of abnormal skin, which are typically red, itchy, well-circumscribed erythematous plaques with thick silvery scales [1,2].

They may vary in severity from small and localized to complete body coverage [3]. It is a multisystem disease with predominantly skin and joint manifestations [1].

Clinical studies have demonstrated the efficacy of phototherapy as one of the most effective treatments, especially for patients with widespread disease who have moderate to severe psoriasis [4].

Narrow-band ultraviolet B (NB-UVB) is used for treating psoriasis, and its efficacy is almost equal to that of psoralen and ultraviolet A radiation (PUVA) therapy. As an alternative, broadband ultraviolet B (BB-UVB) may be employed, but several studies have documented the superiority of NB-UVB over BB-UVB in terms of efficacy and tolerability. As far as the presumed carcinogenic risk is concerned, both spectra are fairly similar in their potential risks. One advantage of NB-UVB, however, is its efficacy even in the suberythemogenic dose range. As a consequence, cumulative erythema doses for induction

of skin clearance are lower, so the carcinogenic risk is decreased [5].

Clinical audit is a way to find out if healthcare is being provided in line with standards and gives the opportunity for care providers and patients to know whether their service is doing well. National clinical audits can look at care nationwide while local audits can also be performed locally in trusts, hospitals or practices anywhere healthcare is provided [6].

The National Institute for Health and Clinical Excellence (NICE) defined Clinical Audit in 2002 as: clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change [6].

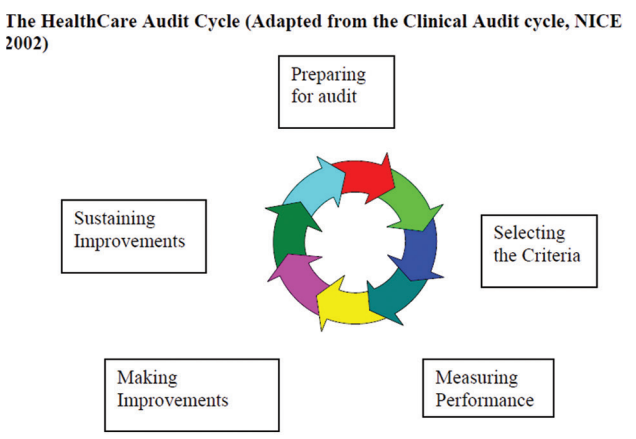
The approach to quality improvement is based on clinical data collected by clinicians, to support their work in improving the quality of care for patients [7]. Aspects of the structure, process and outcomes of care are selected and systematically evaluated against explicit criteria. When indicated, changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery [8] Fig. 1.

The main purpose of this study was to provide improvement of care, service, and management of psoriatic patients in the Phototherapy Unit of Dermatology Department, Assiut University Hospital.

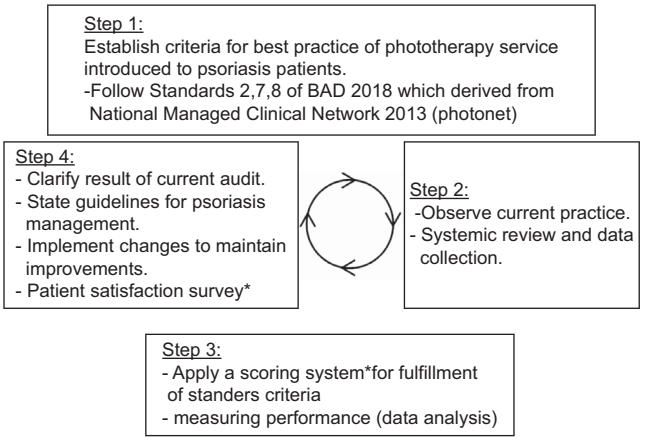
Patients and methods

All psoriatic patients attending the Phototherapy Unit of Dermatology Department, Assiut University Hospital were included in our study in quasi-experimental design (audit). Patients' data was recorded over 6 months retrospectively (May–November 2018) and 6 months prospectively during sustained improvement period (December 2018 to May 2019). It analyzed according to the preset criteria and standards of phototherapy service guidance of British Association of Dermatologists [9]. The Assiut Faculty of Medicine's Ethical Committee approved the study. Our study was registered at Institutional Review Board (IRB) Approval number (17101879).

Figure 1



A diagram summarizing the different stages to the audit cycle [6].



Stages of the study

Step 3: Comparing the current practice documented in the records with the standards, and a score* was given according to the fulfillment of these standards. Each criterion that was fully met was awarded one unit, if it was partially met half a score was given and if it was not met at all, zero was given.

$$\frac{\text{Care score}}{\text{Criteria score}} \times 100$$

*A patient satisfaction survey, about the whole phototherapy service, was done randomly at the end of our audit to estimate the percentage of patient satisfaction. It was done on 30 patients using a 5-point Likert- type scale with labeled endpoints (1 = not satisfied at all, 5 = very satisfied, numbers 2, 3, 4 are in between) [10,11].

Results

This study was conducted on 32 patients of psoriasis recruited from the phototherapy unit of Dermatology Department, Assiut University Hospital retrospectively during a 6 months period starting from May to November 2018, and 31 patients recruited during the improvement period over the next 6 months prospectively from December 2018 to May 2019. Sixty percent were referred from psoriasis clinic and 40% from general the dermatology clinic.

Tables 1–3 demonstrate the preset criteria and standards of phototherapy service guidance of

Table 1 Standard 2: patient information and consent

No.	Criteria	Comments finding/audit outcomes	Outcome achieved
2A	Patient information		
2A.1	All patients should receive a Patient Information Leaflet (PIL) prior to treatment	All patients receive a PIL	100%
		Information is explained to each patient by nurse before the first session	
2A.2	All patients should have equal access to NHS services and materials to inform on their care	Not available	0%
2A.3	Patient leaflets produced by phototherapy units must be kept up to date and reviewed at least every 2 years	The PILs is up to date but deficient in information about pt. care after the session such as sunscreen before leaving phototherapy unit	60%
	Patients who takes whole body. phototherapy should be strictly advised about scrotal shield	Not available	
2A.4	Patient information leaflets should be provided in plain English and presented in accordance with NHS brand Guidance	PILs are available in simple Arabic languages suitable for patients	100%
2B	Consent		
2B.1	There must be a record of formal written informed patient consent in the patient's medical notes	No written consent	100%
		Verbal consent is taken	Verbal
2C	Compliance		
2C.1	The Unit must carry out a patient satisfaction surveys every 6 months	No Patient Satisfaction Questionnaire is being offered to pts	0%
2C.2	Staff are given the opportunity to review and respond to patients' queries and complaints	Staff are always available to respond and discuss patients' complaints every sessions	100%

Table 2 Standard 7: discharge protocol

No.	Criteria	Comments finding/audit outcomes	Outcome achieved
7A			
7A.1	A protocol with guidance on when to stop treatment, and when to seek a Dermatologist's advice	The written phototherapy protocols used include course of treatment, maintenance and protocol of missed sessions	100%
7A.2	On discharge, patients are given information on how to access services again after discharge	No discharge report.	0%
7A.3	Consultants should be informed about any follow-up arrangement and cumulative doses	Consultant is informed about the phototherapy treatment course but cumulative is not calculated	50%

Table 3 Standard 8: skin cancer surveillance

No.	Criteria	Comments finding/audit outcomes	Outcome achieved
8A			
8A.1	It must be documented that patient has reached >200 whole-body PUVA treatments and/or >500 whole-body UVB treatments	No screening is done for any patient and the sheet does not include this item	0%

PUVA, psoralen and ultraviolet A radiation; UVB, ultraviolet B.

BAD (2018) against our audit outcomes and the outcome achieved during the retrospective part of the study (first 6 month). Red Flag Service Standard is a service that has to be met. Failure to meet such service will be considered as a clinical risk on patients and mandatorily requires action to correct this failure (Action Absolutely Required). Yellow Flag Service Standard is a service that is recommended to meet, however, failure to fulfill does not imply the level of clinical risk of a Red Flag.

Table 4 demonstrate the implementation of changes applied on defective criteria during the prospective part of the study (6 months improvement period) after being discussed with and approved by the leads of phototherapy unit.

Discussion

Although large national audits are becoming more common, clinical audit is sometimes seen as a local exercise undertaken independently in NHS Trusts according to local priorities. Clinical audit does not require a multicenter approach often required in research to obtain adequate sample size for reliable generalization of results [12].

Criteria-based audit is considered not only a valuable tool to determine the gaps in the standard of care, but also for monitoring and evaluation as it establishes the baseline of care and facilitates and postintervention assessment to determine improvement in quality of care during a certain period of time [13].

Table 4 Implementation of changes during improvement period

Standards and criteria standard	Change and improvement
STANDARD 2: Patient Information and Consent	2A. Patients receives adequate orientation about the nature of psoriasis and phototherapy in psoriasis clinic before starting treatment
	Pt. take additional leaflets about their disease, treatment, nutrition and daily life activity
	2C. Patient satisfaction survey is applied during audit
Standard 7: discharge protocol	7A. - A discharge report was formulated and given to all patients after the end of each treatment course
	The report gives information about the type of disease, type of received phototherapy, the number of treatment courses, total number of sessions, any adverse effects during the course of treatment, any contraindication for further phototherapy, PUVA cumulative dose, date of next course and any other treatment needed after phototherapy
Standard 8: skin cancer surveillance	8A. Clinical screening for skin cancer was added to the sheet
	It must be done for patient who received >200 sessions of whole body PUVA and/or <500 whole body UVB treatment

PUVA, psoralen and ultraviolet A radiation; UVB, ultraviolet B.

This study presents the first criteria-based audit in the Phototherapy Unit for treatment of psoriatic patients in the Department of Dermatology, Venereology and Andrology, Assiut University Hospital.

On reporting the training and educational standard in our phototherapy unit, well trained specialized phototherapy nurses were available for regular monitoring of phototherapy sessions to be fulfilled according to the preset schedule. That was unlike the audit reported by the Royal Collage, 2008, where 34% of the units had specialized dermatology nurses, 25% had trained nurses, and 41% had untrained nurses or treatment was applied by the patients themselves which falls below the standard recorded [14].

Patient satisfaction about nurses in the current study was 100% compared with other studies [10,15], which revealed a lower percentage of patient satisfaction (60–72% and 92%, respectively).

Nurses at the phototherapy unit of Assiut University Hospital give every patient a Patient Information Leaflets and they educate them about the phototherapy treatment protocol and advise them about what should be done before and after the phototherapy session. Also they answer any question about their condition and refer to doctors, if needed, in case of any adverse reaction before or during the session.

The phototherapy unit has multiple facilities that reach 100% patient satisfaction level regarding its suitable design which ensures patient's privacy with good cooling and ventilation. Also there are specific days for males only and other days for females only to enhance more privacy. Also two afternoon shifts were arranged to give more suitable times to all patients. Each patient is provided with well-protected goggles during the session. These facilities meet the standard of BAD mentioned in BAD audit 2018 in the UK [9]. But further facilities as PUVA bath, scrotal shield protection and sunscreen are deficient.

Such facilities were not completely fulfilled in other studies such as BAD and Royal Collage of Physician, 2008 where there was an afternoon shift in 32 centers out of 93 centers in the United Kingdom but there was no specific day for men or women.

The present study revealed some defects in several standards but most of them were corrected during the improvement period.

'Waldmann protocol' has been used for NB-UVB treatment, which is not the most recent evidence-based protocol. This showed a difference from the updated protocol both in the number of the total of sessions in a single course and in maintenance. This is considered as a red flag failure in BAD standards.

Psoriasis Area Severity Index (PASI) score was recorded for 20/32 (62.5%) of patient before the start of treatment and monthly for 4 months. In comparison with BAD audit 2012 in the UK, 59.6% was recorded [16]. Also no discharge protocol was provided.

An action point was taken against the defects during the improvement period to achieve successful treatment.

After meeting with the unit leads, guidelines of care for treatment of psoriasis were chosen according to phototherapy and photochemotherapy: section 5 published by American Academy of Dermatology 2010 to be used as the most recent evidence-based protocol. It was summarized, written, put in clear place and started to be applied.

The audit team agreed that the starting dose decided to would be according to skin phototype (IV) not according to minimal erythema dose or minimal phototoxic dose because it is difficult to be assessed for every patient and it is time consuming. However, minimal erythema dose test was used by five centers out of 18 centers which were audited in the UK in

2012 [17]. Erythema schedule was enclosed in the phototherapy sheet.

Both PASI and Dermatology Life Quality Index are helpful in the overall care and treatment plans, so, we must ensure that every patient starts by an application sheet containing these data in the psoriasis clinic.

Additional data were added to the psoriasis sheet cover; the most important of which is the number of treatment course to assess the cumulative dose to ensure that patients does not exceed 200 sessions in PUVA or 500 sessions for whole body NB-UVB to decrease risk of skin cancer.

A discharge report was introduced containing essential data about phototherapy treatment such as cumulative dose, number of treatment session, type of phototherapy given and date of next visit.

Ensure that improvements are sustained, so re-audit once a year is beneficial and helpful in assessment of safe and successful treatment.

Patient satisfaction survey was done randomly at end of our audit by 30 patients showing a high percentage of satisfaction about the whole phototherapy service. Overall in our survey they were most satisfied with the level of dignity and respect they were shown, confidence in the nurses' knowledge about psoriasis and phototherapy treatment, length of time waiting to start phototherapy treatment course (100%). They were least satisfied with being informed about a delay on the day of treatment (24/30, 80%). That was in accordance with the result of Blake *et al*. [15] whom patients were generally very satisfied about all aspects of the service with a satisfaction level of 92%.

Conclusions

Clinical audit is the balance that helps us to assess how well we are performing our daily practice against research evidence-based criteria. It is a tool to improve healthcare and service that enable us to work as a team. It is not only limited to doctors, but can be multidisciplinary involving every members of healthcare team.

The present study demonstrated that the phototherapy unit varied in some issues in their capacity to meet international audit standards of BAD guideline in management of psoriatic patient receiving phototherapy treatment. We established most of the criteria but the most significant deficiencies reported were corrected later in the improvement period.

Based on our finding we recommend the applying of PASI score for all psoriatic patient and well scheduled health education program to all psoriatic patient to learn how to for fill the discharge sheet as it will help clinicians for the appropriate time for skin cancer screening.

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Conflicts of interest

There are no conflicts of interest.

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