

Scar Treatment



NAQI® Challenge

1986 - Geyskens Edgard, founder of NAQI®, asks himself:

- How can we improve the recovery of burn wound patients ?
- How can we stimulate skin repair after a medical intervention ?
- Are there products which keep our skin in top shape ?
- Which products effectively protect the skin against the elements ?
- How can we optimise massage therapy for therapist and patient ?

Geyskens Edgard brings all these answers together in the brand NAQI®. NAQI® has a clear mission: to develop and manufacture the best preventive and post curative skin care products in order to:

- Improve skin condition
- Efficiently target skin problems
- Offer an adapted after care
- Contribute to the quality of care.

NAQI focuses on the market of primary health care, sports medicine and hospitals. Perfect skin does not exist, but its structure, feel and appearance can always be improved. Our challenge ?

To realize its ambitions, Naqi relies on a strong team of experienced and visionary people. A team with a sixth sense for possible skin problems and a passion for solutions. This vision did not only provide a rock solid reputation, but also long lasting ties with several prestigious partners : the universities of Brussels, Liège and Leuven, several first class cycling teams and many world famous sports clubs. As a result, NAQI products and know how are available throughout Europe, Australia, Japan, China and USA.

Belgian Skin Care Expertise

The NAQI production and research plant is located in Belgium. It produces according the European Cosmetic Standards 1223/2009 and ISO 13485/ISO2009.

Content

- Skin Care Expertise
- Treatment of Scare
- Skin Calmer
- Overview of Scar Revalidation Techniques
- Clinical Path
- Scar massage & manuel techniques



E.M. Geyskens
CEO & President NAQI

- Master Econ. Science, University K.U. Leuven, Belgium (1978)
- Master Financial Management, Vlekco Brussels, Belgium ('80-'81)
- Post-University program 'Financial Management' - IPO Antwerpen ('81-'82)
- Post Graduate Management, K.U. Leuven ('82-'83)
- Master in Business Administration, K.U. Leuven ('83-'85)(Cornell University USA)
- Quality of Healthcare, CVZ-K.U. Leuven (2003)
- Evidence Based Medical Care, Cebam (2003)
- Master in HealthCare management, Vlekco Brussels, Belgium (2005) ex.
- Guest Lecturer Health Economy at Brussels University

SKIN CARE EXPERTISE

Scar Treatment

The skin treatment of scars requires a specific approach to

- Activate the skin regeneration process
- Soothe and calm irritated skin
- Adjust Daily Care

NAQI developed a range of lotions for scar treatment. Scar lotions are an alternative to invasive procedures used to remove scars. A topical scar lotion, formulated with specifically selected active ingredients, can make a dramatic improvement in the appearance of scars.

Scar treatment management requires specialized care, practiced within a specific timetable, which will be explained in detail in this paper.

We will illustrate that specific manual treatment techniques will both accelerate and improve the healing process of scars.

This work paper serves as an introduction and is limited to scar treatment only.



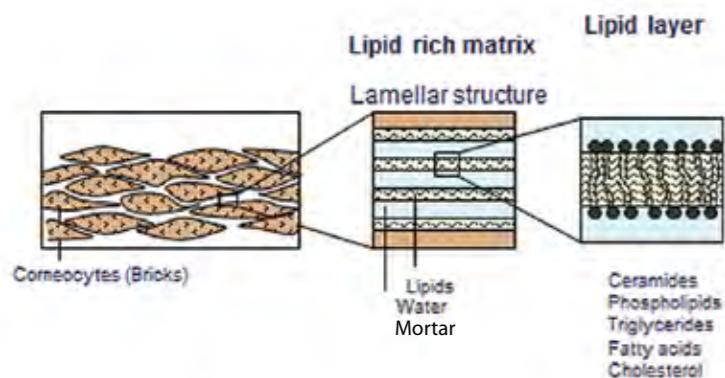
Treatment of Scars

Activates the skin regeneration proces

Damage to the epidermis does not leave scars. Injuries that penetrate through to the dermis do however. The deeper the skin injury, the longer it takes for the skin barrier to be restored.

The renewal of the epidermis takes just fourteen days, but depending on the depth of the wound the increased trans-epidermal water loss (TEWL) may persist for 150 to 500 days.

While the epidermis is not functioning completely and the dermal remodelling is not completed, the barrier function of the renewed skin is problematic and needs special care in order to combat further water loss. This renewal process goes hand in hand with a dry, itchy skin that is much more sensitive and which is more easily penetrated by irritant substances, allergens and micro-organisms.



Essential fatty acids

Linoleic and linolenic acids are essential fatty acids that are not produced by the body naturally. They have to be ingested in the form of food. These fatty acids are necessary for the synthesis of cell membranes and prostaglandins, for defence and growth mechanisms and for the physiological and biochemical procedures of cell regeneration. Fatty acids are part of the ceramides in the intercellular space and involved in the barrier. A lack of these fatty acids leads to red flaky skin with increased porosity. Several surveys have confirmed the positive effects of locally applied essential fatty acids.

Local application of linoleic and linolenic acid slows down the trans-epidermal water loss and the emergence of elements that increase the risk of inflammation.

The local application of natural oils rich in essential fatty acids strengthens the skin barrier and reduces the risk of irritation:

- Rosa Canina Fruit Oil
- Isostearyl Isostearate
- Oxidized corn Oil
- Persea Gratissima (Avocado) Oil
- Hippophae Rhamnoides (Seabuckthorn) Fruit Oil
- Hippophae Rhamnoides (Seabuckthorn) Seed Oil

NAQI®

SKIN OPTIMISING OIL

• Objectives

Treatment of Scars

Intense activation the skin regeneration proces

• Application

Formulated to help repair scarring and other skin problems: healing and regeneration of damaged tissue and diminishing disfiguring scars.

• Solution

Naqi Skin Optimising Oil is based on the regenerating effects of the natural Oils.

- Optimises the barrier function
- Promotes skin regeneration
- Improves the elasticity of the skin
- Improves the appearance of scars
- Increases the moisture content of the skin
- Reduces flaking
- Optimises the quality of primary care

• Use

Gently apply Naqi Skin Optimising Oil 2 to 3/day.





NAQI® SKIN OPTIMISING CREAM

• Objectives

Scar after care

Daily care of scars

• Application

After wound closure the regeneration of the skin is a long way from being complete. The fragile, new skin is very sensitive and needs extra nourishment and care. The barrier function is not yet optimal. The skin remains sensitive and can itch. The regeneration of the skin may take a year. Appropriate skin care is recommended therefore.

• Solution

- Stimulates skin regeneration
- Rebuilds the skin barrier and reduce itching
- Hydrates and smoothen regenerated skin
- Improves the appearance of scars
- Contains Omega 3, 6 & 7 fatty acids

• Use

Gently apply Naqi Skin Optimising Cream twice a day.



Skin Calmer

Soothe and calm irritated skin

Skin innervation is extremely dense and reaches the most superficial layers of the epidermis. The relationship between the skin and the nervous system has been underestimated for a long time. Recent surveys confirm the anatomical and physiological relationship between nerve cells and skin cells.

Neurotransmitters are the mediators transmitting information between the skin and the nervous system. Neurotransmitters are synthesized by the nerve endings, but the cells of the skin itself and the immune system are also able to produce neurotransmitters. All cutaneous and immune cells have specific receptors for these neuromodulators and enzymes for degrading them. All skin cells and the cells of the immune system are regulated and controlled by the nerves. At the same time the skin cells regulate neuronal activity and growth.

The nervous system is important for maintaining skin balance. If there are skin problems this is usually an indication that this balance is disturbed. The great difference between nerve cells and other cells, is that nerve cells are not regenerated. Each time they are damaged therefore means that there are serious repercussions. Because they lie on the surface, they are also exposed to environmental factors such

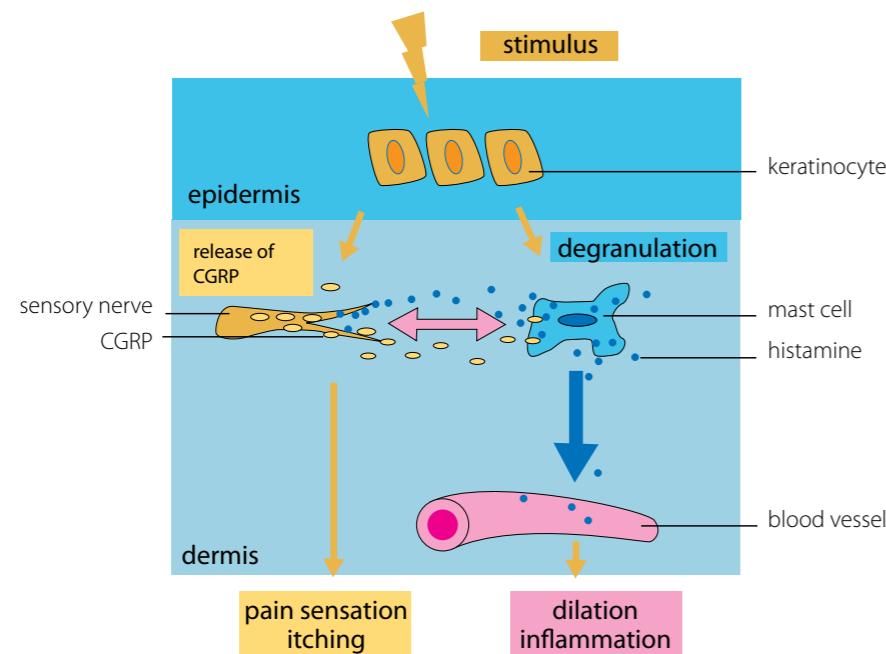
as UV rays and they need to be protected therefore. NAQI Sense Gel or Cream contains Glistin in order to protect the nerves of the skin.

50 % of the population has a sensitive skin, more specifically dry skin that feels taut.

Sensitive skin reacts more strongly to environmental factors. It becomes red, itches or breaks out when it comes into contact with cosmetics, plants, clothing, heat or cold, etc.

Itching is caused by the interaction between the stratum corneum, the free nerve endings and the mast cells (a type of white blood cells) when skin is irritated.

Irritation of the skin leads either to a direct reaction of the nerve endings or to the activation of mast cells. Irritation of the nerves leads to a reflex reaction, pain and the release of neuropeptides through the nerve endings. These neuropeptides cause dilation of the surrounding blood vessels with inflammation and activation of mast cells. The activation of mast cells releases histamine that causes itching and ends up as a local inflammation caused by the stimulation of the nerve endings. The NAQI Sense Gel and Cream reduces the release of neuropeptides and thus reduces irritation and itching.



NAQI® SENSE GEL

• Objectives

Soothe and calm irritated skin.

• Application

A softening lotion and gel for sensitive, red or itchy skin.
Adapted for **warm weather with a light skin feeling**.

• Solution

NAQI Sense Gel has the following properties :

- Reduces tingling and pulling sensations
- Reduces localised inflammation and redness
- Reduces the reaction of sensitive skin to environmental factors
- Hydrates
- Reinforces the skin barrier function
- Improves patient comfort.

• Use

Massage gently the Naqi Sense Gel twice a day.





NAQI® SENSE CREAM

• Objectives

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Massage gently the Naqi Sense Cream twice a day.



Overview of techniques

Multidisciplinary After Care of Scars & Burn Wounds

Patient care is a multidisciplinary treatment, which requires from the provider a broad knowledge and a perfect team work. First-line management in terms of scar prevention is massage and moisturisation. Because of the altered functions of the skin after a burn, patients must be shown how to massage and moisturise the affected site, using small circular motions **up to three times a day for a period of at least ten minutes each time.** (1) Massage does lead to a flat, soft supple scar. Herewith an overview of the different techniques. In this paper we focus our attention on massage & micro-mobilisation techniques.

Scar Revalidation Techniques

1. Exercises & training	Mobility	: Not just the joint, but also the skin
	Muscle strength	: Related to the skin = restriction in movement + muscular atrophy
	Cardio	: Less important, if no cardiologic problem
2. Mobilisations	Prevention & contracture treatment	
3. Oedema treatment	Moisture balance	
4. Positioning & splints	Prevention & contracture treatment (reduces friction problems)	
5. Topical scar treatment	Pressure therapy	: Most important during start up
	Silicone	: Target 16 - 20h a day
Massage & Micro-mobilisation		
	<ul style="list-style-type: none">- Smoothing strokes- Friction- Petrissage- Palpating-Rolling Technique of subdermal tissue massage- Pinching & Pulling- Kineplastic- Mixing epidermis-dermis- Stretching Circle	
3-S - techniques	<ul style="list-style-type: none">- Smoothing => day 5 post-op- Stretching => 30 - 40 days after wound healing- Splitting => 9 - 12 months after wound healing	
Postural stretching	<ul style="list-style-type: none">- Articular and Scar stretching- Stretch credits- 3-points posture- Divergence posture	
6. Optimal Techniques	<ul style="list-style-type: none">- Shock-Wave- Electro stimulation (only wound-care)- Wound dressing (electrode): micro-current- Skin-needling (Older scar)- Depress massage (Vacuum therapy)- Laser- Hydrotherapy- Microdermabrasion(Controlled peeling of the upper layers)	
7. Pain & Itch	<ul style="list-style-type: none">- Pain: - Drugmanagement- Itch: - Antihistaminica- Creams- Massage- Electro stimulation- Bath	

1. Patino O, Novick C, Merlo A, Benaim F. *Massage in Hypertrophic Scars*. *Journal of Burn Care and Rehabilitation*. 1998;20(3):268-271.



Clinical Path After Care Scars & Burn Wounds

Scar treatment needs the right technique on the right time with the right product. Therefore we developed a Clinical Path of After Care Scar in collaboration with Prof. kin. Eric Van den Kerckhove (FABER-KULEUVEN / AZ Maastricht) - Kin. Peter Moortgat (Oscar VZW, Antwerp - Belgium)

Type of Care	Acute Care	Sub-acute Care		Post-acute Care		After Care
Place	ER – OR – ICU	Burn Unit		Revalidation		Home
Phase	Phase 1	Phase-2 : Wound Healing		Phase 3 : Para-Medics		Phase 4 : Patient
Team		Physiotherapist – Nurse – Psychologist		Physiotherapist – Ergo-therapist - Psychologist • Hospital - Patients with complications once a week – Other days to Firstline • First line Health System - Specialized multidisciplinary home care Clinic - Home care physiotherapist with burn wounds skills and vacuum applications.		Patient with support of first line providers
Start						
Treatment		After wound healing		Start between 3 and 5 weeks post OP: Epidermis has to be strong enough - Visible skin healing: Approx. 3 weeks - Healing dermis: between 6- 24 months		
Objective		General healing techniques	Pressure garment* (Target: 8 days after surgery)	Silicone garment*	Massage & Micro-Mobilisation techniques* Soft massage techniques - No friction	Self-massage
Frequency (Treatment)		2x/day	Hydration before & after treatment	16-20h /day	3 to 5 treatments/week 20min – 2 hours	At least 2x /day Skin Lotion Different choice of lotions
Self Treatment		Selftreatment as maximum - Patient has always access to lotions.		When no using garment	At least 2x and between physio sessions	
Products Objective		■ Hydration ■ Barrier function optimising ■ Improving skin elasticity		■ Hydration ■ Barrier function optimising ■ Improving skin elasticity		
Products		- NAQI Skin Optimising Oil - NAQI Skin Optimising Cream		- NAQI Skin Optimising Cream - NAQI Glide Gel (helps to put on the garments)	- NAQI Skin Optimising Cream - NAQI Sense Gel - NAQI Sense Cream	- NAQI Skin Optimising Cream - NAQI Sense Gel - NAQI Sense Cream
Remarks		Hydration: Around wound / closed skin	- NAQI Wash soap Cleaning pressure garment	- NAQI Wash Soap	Different choice of lotions	Children under 18 year: spontaneous scar tissue true the years – 2-5 years



The POSAS

The Patient and Observer Scar Assessment Scale.

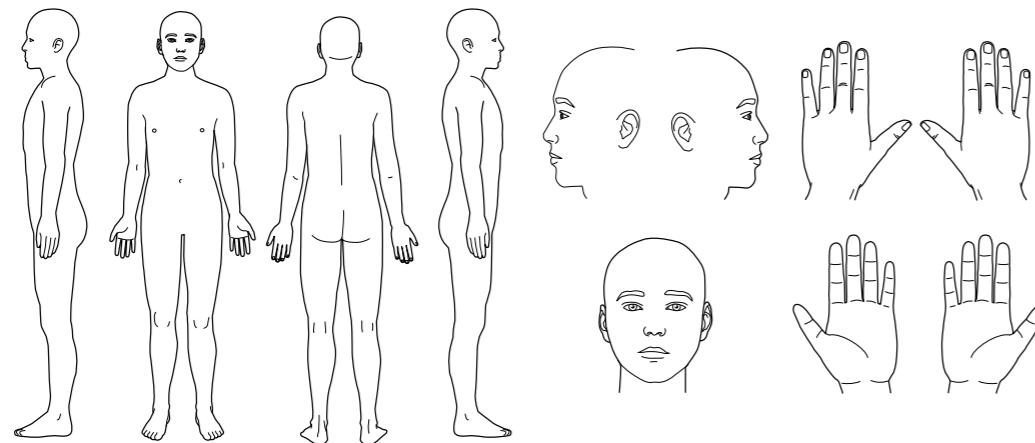
The POSAS aims to measure scar quality. Current developments in scar treatment necessitate reliable and valid scar assessment tools. The POSAS is a comprehensive scale that is designed for the evaluation of all types of scars by professionals and patients. The Patient Scale gives the POSAS an important extra dimension because the patient's opinion is mandatory for a complete scar evaluation. When indicated patients may update their opinion without having the need to visit the hospital. This can be achieved at their convenience by internet or eMail. Clinimetric studies support the use of the POSAS for subjective scar evaluation. More details see : www.posas.org

POSAS Observer scale

The Patient and Observer Scar Assessment Scale v2.0 / EN

Date of examination:
Observer:
Location:
Research / study:

Name of patient:
Date of birth:
Identification number:



1 = normal skin worst scar imaginable = 10

PARAMETER	1	2	3	4	5	6	7	8	9	10
VASCULARITY	<input type="radio"/>									
PIGMENTATION	<input type="radio"/>									
THICKNESS	<input type="radio"/>									
RELIEF	<input type="radio"/>									
PLIABILITY	<input type="radio"/>									
SURFACE AREA	<input type="radio"/>									
OVERALL OPINION	<input type="radio"/>									

Explanation

The observer scale of the POSAS consists of six items (vascularity, pigmentation, thickness, relief, pliability and surface area). All items are scored on a scale ranging from 1 ('like normal skin') to 10 ('worst scar imaginable'). The sum of the six items results in a total score of the POSAS observer scale. Categories boxes are added for each item. Furthermore, an overall opinion is scored on a scale ranging from 1 to 10. All parameters should preferably be compared to normal skin on a comparable anatomic location.

Explanatory notes on the items:

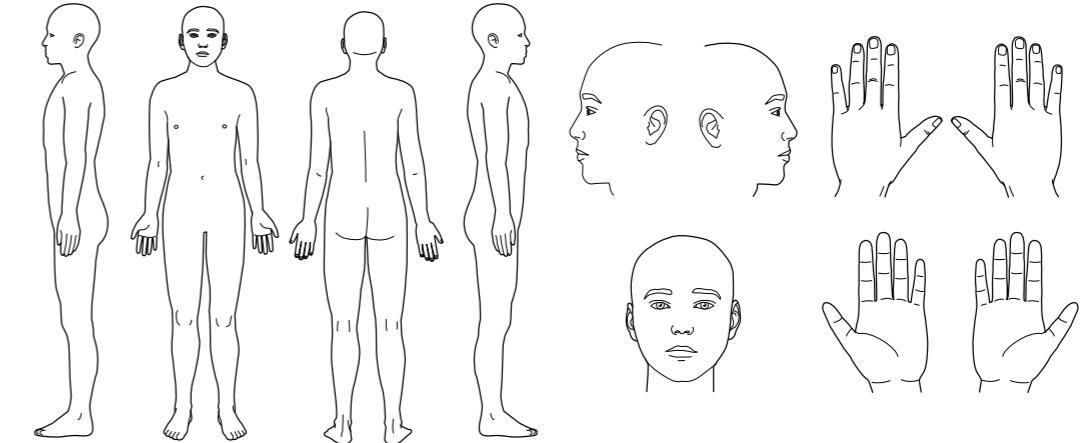
- **VASCULARITY** Presence of vessels in scar tissue assessed by the amount of redness, tested by the amount of blood return after blanching with a piece of Plexiglas
- **PIGMENTATION** Brownish coloration of the scar by pigment (melanin); apply Plexiglas to the skin with moderate pressure to eliminate the effect of vascularity
- **THICKNESS** Average distance between the subcutical-dermal border and the epidermal surface of the scar
- **RELIEF** The extent to which surface irregularities are present (preferably compared with adjacent normal skin)
- **PLIABILITY** Suppleness of the scar tested by wrinkling the scar between the thumb and index finger
- **SURFACE AREA** Surface area of the scar in relation to the original wound area

POSAS Patient scale

The Patient and Observer Scar Assessment Scale v2.0 / EN

Date of examination:
Observer:
Location:
Research / study:

Name of patient:
Date of birth:
Identification number:



1 = no, not at all yes, very much = 10

CATEGORY	1	2	3	4	5	6	7	8	9	10
HAS THE SCAR BEEN PAINFUL THE PAST FEW WEEKS?	<input type="radio"/>									
HAS THE SCAR BEEN ITCHING THE PAST FEW WEEKS?	<input type="radio"/>									
IS THE SCAR COLOR DIFFERENT FROM THE COLOR OF YOUR NORMAL SKIN AT PRESENT?	<input type="radio"/>									
IS THE STIFFNESS OF THE SCAR DIFFERENT FROM YOUR NORMAL SKIN AT PRESENT?	<input type="radio"/>									
IS THE THICKNESS OF THE SCAR DIFFERENT FROM YOUR NORMAL SKIN AT PRESENT?	<input type="radio"/>									
IS THE SCAR MORE IRREGULAR THAN YOUR NORMAL SKIN AT PRESENT?	<input type="radio"/>									

1 = as normal skin very different = 10

PARAMETER	1	2	3	4	5	6	7	8	9	10
WHAT IS YOUR OVERALL OPINION OF THE SCAR COMPARED TO NORMAL SKIN?	<input type="radio"/>									

Scar Massage & Micro-mobilisation Techniques

Time Table Treatment

The Massage & Macro-Mobilisation Techniques are usually combined with several other modalities. Deep massage reportedly stretches fresh scar and breaks down the cement or matrix holding the scar contracted. Massage therapy appears most beneficial in preventing adherents.

Treatment protocol

Stage	Technique	Positioning	Procedure	Product
First stage 2 weeks after incidence	Effleurage	Stretching off skin	Smoothly striking off skin with 2 hands No lifting of skin	NAQI Skin Optimising Cream or NAQI Skin Optimising Oil
	Micromobilisation	Stretching off skin	Fixation off skin with one hand, one hand striking No lifting of skin	NAQI Skin Optimising Cream Or NAQI Skin Optimising Oil



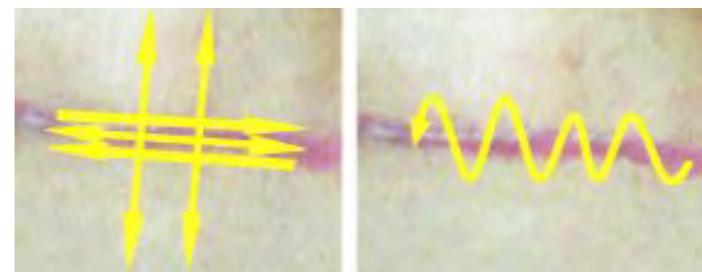
Treatment protocol

Stage	Technique	Positioning	Procedure	Product
Second stage 5 weeks after incidence of post-scar/ burn	Micro-mobilisation	Stretching off skin	Striking off skin with 2 hands No lifting of skin	NAQI Skin Optimising Cream or Massage Oil NAQI Skin Optimising



Treatment protocol

Stage	Technique	Positioning	Procedure	Product
Third stage 4 to 8 weeks post-scar/	Petrissage	No stretching off skin	Alternated lifting and moving off the skin 3 techniques : 1) lifting off the skin on the side, intensive move up/down 2) lifting off the skin in the middle, intensive move left/right 3) lifting off the skin and scrolling up No lifting of skin	NAQI Skin Optimising Cream
Follow Up till End stage	Stretching skin with help off the joint and/or muscle	Stretching off skin	Active and passive mobilisation off the skin and joint 2-techniques : 1) left/right – up/down 2) intensive left/right	NAQI Skin Optimising Cream



Notes

Notes

Our mission is to develop preventive and post curative skin care products and to thus contribute to the quality of the care provided and to patient satisfaction.

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