

# BEST PRACTICES IN: Psychosocial Impact of Rosacea

Rosacea is a common, variable, and chronic inflammatory skin condition that can be characterized by recurrent episodes of facial flushing, erythema, papules, pustules, and telangiectasia in the central, convex portion of the face. It is estimated to occur in 10% of the general population, and, although it occurs in all ethnic groups, it is most common in people of European and Celtic descent. Rosacea is more common in women than men, and the typical age of onset is between



**Debra B. Luftman, MD**  
Coauthor of *The Beauty Prescription: The Complete Formula for Looking and Feeling Beautiful*  
Calabasas, California

30 and 50 years. According to the National Rosacea Society (NRS), 16 million Americans are currently living with the disease, and it accounts for an estimated 7 million annual physician visits.<sup>1,2</sup>

The correlations among dermatologic diseases, poor quality of life, and depression, anxiety, and other psychiatric comorbidities are well established.<sup>3-7</sup> Any skin disease, regardless of its location on the body, may cause psychological distress and adversely affect quality of life, and may do so independently of clinical severity.<sup>3,6,7</sup> Even diseases of mild severity may induce severe psychological distress. Rosacea is no exception: like patients with acne vulgaris and other dermatologic diseases, patients with rosacea frequently suffer from depression, low self-esteem, anxiety, feelings of shame and embarrassment, and a loss of confidence.<sup>1,8</sup> However, preliminary evidence using rosacea-specific quality-of-life instruments, such as the RosaQoL and others, which still await validation, indicates that successful treatment can alleviate the psychological sequelae of rosacea.<sup>3,5</sup>

But the psychological consequences of rosacea do not stop with the patient. New data from a digital perception survey funded by Galderma Laboratories, L.P. and in association with the NRS, indicate that rosacea causes more than negative self-perception; it also negatively biases the first perceptions of others.<sup>1,9</sup> The adult men and women with and without rosacea who participated in the survey, when shown digital images of women with and without rosacea, formed comparatively negative first impressions of those with the condition. Women with rosacea were perceived as having different and less favorable personality characteristics, lifestyles, and career skills than were those without rosacea. The implications are potentially far-reaching and suggest that rosacea affects not only self-esteem and perception but also career options, professional advancement, and social functioning and relationships as well. Indeed, many patients with rosacea included in the survey reported feeling unfairly and inaccurately judged and said that rosacea adversely affects their professional lives.

## NRS DIGITAL PERCEPTION SURVEY

The NRS Digital Perception Survey looked at how women with rosacea are perceived by the general population as well as by other women with rosacea.<sup>1,9</sup> In addition, the survey considered how women with rosacea believe they are perceived.

The study enrolled 1,511 adult men and women, 502 of whom were women with rosacea. Participants were shown three images at random. At least one of the images was a woman with rosacea, and at least one image was a woman without rosacea. Participants were then asked to complete a survey of their first impressions of the women in each photograph.

Overall, respondents with and without rosacea had unfavorable first impressions of women with rosacea. Women with rosacea were generally perceived as being stressed, tired, shy, lonely, and insecure. Conversely, women without rosacea were more often initially perceived as intelligent, confident, happy, fun, successful, and healthy (Table 1).<sup>9</sup>

**Table 1. Survey Participants' First Impressions of Women With Clear Skin and Those With Rosacea<sup>9</sup>**

Characteristic	Participants With Rosacea (n=502)		Participants Without Rosacea (n=1,009)	
	Clear Skin	Rosacea	Clear Skin	Rosacea
Stressed	23%	45%	23%	40%
Tired	35%	45%	32%	43%
Shy	26%	47%	26%	44%
Intelligent	44%	39%	43%	36%
Confident	52%	24%	49%	27%
Happy	61%	39%	54%	36%
Fun	37%	28%	34%	24%
Successful	33%	19%	32%	18%
Healthy	52%	18%	45%	17%

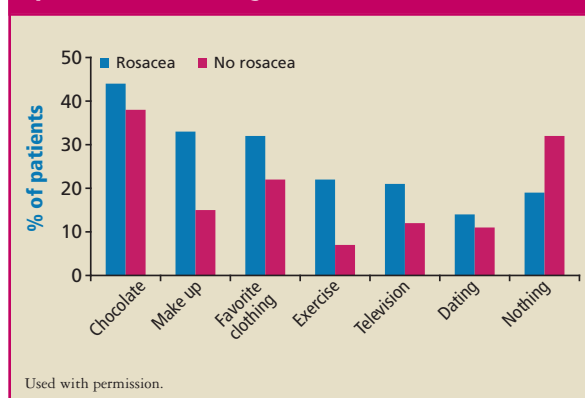
In addition to biasing the perception of personality traits, the presence or absence of rosacea affected assumptions about capabilities and lifestyles. For example, women with rosacea were more often assumed to hold entry-level jobs and less likely to hold executive-level positions. Women with rosacea were consequently also perceived as making less money than were those without rosacea. Survey participants were more likely to assume that women with rosacea were single and less likely to go on dates or to go out on weekend nights than were those without rosacea. Women with rosacea were rated as needing to improve their skin care as well. Interestingly, these judgments and first perceptions were consistent among respondents with and without rosacea (Table 2).<sup>9</sup> Respondents with rosacea did not appear to be any more sympathetic or empathetic than were those without rosacea.

**Table 2. Survey Participants' Assumptions About the Careers and Lifestyles of Those With and Without Rosacea<sup>9</sup>**

Characteristic	Participants With Rosacea (n=502)		Participants Without Rosacea (n=1,009)	
	Clear Skin	Rosacea	Clear Skin	Rosacea
Entry-level job	13%	24%	11%	22%
Executive	12%	5%	14%	6%
Mean annual income	\$40,670	\$36,450	\$41,534	\$36,434
Likely in a relationship	85%	70%	81%	64%
On weekends, goes on dates	21%	11%	22%	14%
On weekends, stays home	39%	47%	39%	47%
Needs to improve skin care	10%	79%	10%	73%

The study revealed that 70% of women with rosacea, as compared to 60% without rosacea, believe that their physical appearance leads others to judge them inaccurately or unfairly. A total of 88% of respondents with rosacea said that they would make changes to their appearance to improve first impressions, compared to only 71% among those without rosacea. Many patients with rosacea said that the first thing they would do is to reduce the redness of their skin (19%) or reduce the bumps and blemishes (13%). Conversely, only 3% and 9%, respectively, of those without rosacea said that they would reduce the redness of their skin or the bumps/blemishes to improve first impressions. Survey respondents with rosacea were more amenable to lifestyle changes and to spending more money (>\$5,800 versus \$4,195) than were those without rosacea to improve their skin (Figure 1).<sup>9</sup>

**Figure 1. Items Survey Participants Are Willing to Give Up for 1 Year in Exchange for Smooth, Clear Skin<sup>9</sup>**



Survey questions targeting only women with rosacea revealed that patients are often unaware of what rosacea is and delay seeking treatment. Indeed, 54% reported waiting at least 7 months after symptom onset before seeking medical help, and the mean time from symptom onset to diagnosis was 12.9 months (median, 6 months). One half of survey respondents did not know what rosacea was at the time of diagnosis, and 25% of respondents claimed to have had their rosacea misdiagnosed. When asked to use one word to describe how rosacea made them feel most of the time, respondents used the following: 37% said embarrassed/insecure/self-conscious/uncomfortable; 11% said frustrated/irritated/exasperated/aggravated/ annoyed/upset/angry; and 10% said ugly.<sup>9</sup>

Overall, the survey results indicate that rosacea negatively influences self-perception and the first impressions of others, regardless of the observer's own appearance. Women with rosacea are perceived by themselves and others as less physically, socially, and professionally attractive and successful than those without rosacea.

## PRESENTATION AND DIAGNOSIS

Given the psychological impact and biases caused by rosacea, as well as the possibility of severe sequelae such as ocular complications and rhinophyma, accurate diagnosis and appropriate treatment are warranted for all patients. Even when patients present for another complaint, be it dermatologic or otherwise, physicians should be capable of recognizing rosacea. Doing so requires familiarity with the disease's signs, symptoms, and triggers, and, essentially, its appearance.

### Etiology

The etiology of rosacea is unknown; however, multiple factors contributing to the condition have been identified. These include vasculature, climatic exposures (temperature), dermal matrix degeneration, chemicals and ingested agents (foods, alcohol, medications), pilosebaceous unit abnormalities, microbial organisms, ferritin expression, reactive oxygen species, increased neoangiogenesis, and dysfunction of antimicrobial peptides.<sup>10</sup>

### Signs and Symptoms

The signs and symptoms of rosacea are varied in appearance and severity. Patients may present complaining of flushing, itching, and sensitive skin, persistent redness, inflammatory papules and pustules, edema, or dry flaking skin.<sup>11,12</sup> The eyes are affected in more than 50% of patients. Ocular symptoms range from mild dryness and irritation to blepharitis and conjunctivitis to sight-threatening keratitis, although this last manifestation is rare.<sup>12</sup> Because of the variability in presentation, rosacea is divided into four subtypes: erythematotelangiectatic, papulopustular, phymatous, and ocular. Of these, erythematotelangiectatic (persistent central facial erythema) is the most common (Figure 2).<sup>12</sup>

Periodic rosacea flares may be associated with a wide range of triggers (Table 3 on page 2).<sup>11</sup> Cosmetics, retinoids, corticosteroids, and other topical agents, as well as tobacco, niacin, and nitroglycerin, may induce rosacea flares. Spicy foods, chocolate, and dairy products, too, are associated with rosacea flares, as are changes in weather and temperature, hormonal changes, and stress and anxiety.<sup>11</sup>

**Figure 2. Erythematotelangiectatic Rosacea<sup>12</sup>**



### Diagnosis

The diagnosis of rosacea is clinical. There are no laboratory tests, although biopsy may be needed to exclude other possible causes of symptoms. When making a diagnosis, physicians should understand and be capable of recognizing the differences between rosacea and acne, as the two conditions often look similar, particularly when pustules or papules are present (Figure 3 on page 2).<sup>10,13</sup>

Despite any superficial similarities, rosacea and acne are fundamentally different conditions. Rosacea is an inflammatory disease with a usual onset between 30 and 50 years of age. The characteristic symptoms of rosacea—eg, flushing and telangiectasia—are absent in patients with acne. Acne, unlike rosacea, typically begins in adolescence. Acne is caused by follicular epidermal hyperproliferation, obstruction of the hair follicles, infiltration by *Propionibacterium acnes*, and inflammation, leading to the characteristic comedones.<sup>13</sup>

In addition to acne, the differential diagnosis of rosacea should include seborrheic dermatitis, contact dermatitis, photodermatitis, sunburn, and other dermatologic conditions, as well as systemic diseases such as polycythemia vera, mastocytosis, superior vena cava syndrome, carcinoid syndrome, systemic lupus erythematosus, dermatomyositis, and mixed connective tissue disease.<sup>10</sup>

## TREATMENT STRATEGIES

Rosacea treatment includes patient education, lifestyle modification, skin care regimens, topical therapy, and systemic pharmacologic therapy. Multiple treatments with favorable safety profiles that substantially reduce rosacea lesions are available. Although a fully validated rosacea-specific quality-of-life instrument such as the RosaQoL is not yet available, preliminary evidence indicates that improving the symptoms of rosacea does correlate with an improvement in patients' quality of life.<sup>3,5</sup>

**Figure 3. Acne and Rosacea<sup>10,13</sup>**



Mild acne characterized by erythematous papules and pustules

Pustular rosacea

Used with permission.

Used with permission.

Source: James.<sup>13</sup>

Source: Banasikowska.<sup>10</sup>

## Patient Education

As shown in the Galderma Laboratories survey, patients often are unaware of their rosacea symptoms, and only half of patients are familiar with rosacea at the time of diagnosis. Education is essential.

The development of rosacea is, at least in part, attributable to genetics. However, patients must also understand that diet, exercise, sun exposure—that is, multiple lifestyle factors—may trigger rosacea flares (Table 3).<sup>11</sup> Clinicians should help patients determine which factors may contribute to their flares and offer advice on how to better manage these factors. For example, if outdoor exercise is associated with flares, they can suggest that patients exercise only indoors. (Patient education materials are available from the NRS at [www.rosacea.org](http://www.rosacea.org).)

**Table 3. Factors That May Trigger Rosacea Flares<sup>11</sup>**

Category	Factors
<b>Topical agents</b>	• Cosmetics, corticosteroids, retinoids
<b>Drugs</b>	• Tobacco, niacin, nitroglycerin or other vasodilators
<b>Food</b>	• Spicy, chocolate, dairy
<b>Emotional factors</b>	• Stress, anxiety, depression
<b>Temperature changes</b>	
<b>Other factors</b>	• Exercise, hormonal changes, caffeine withdrawal

## Skin Care Regimen

The first step in treatment is the initiation of a skin care regimen. In my practice, skin care begins with a gentle exfoliant such as glycolic acid or another nonsoap-based cleanser. Patients are also advised to use a broad-spectrum (protection from ultraviolet [UV] A and UVB radiation), mineral-based sunblock. These are sunblocks that contain zinc oxide or titanium dioxide.

The next component is the introduction of a therapeutic agent. I initiate treatment with topical metronidazole 1% gel, a long-standing, US Food and Drug Administration (FDA)-approved therapy for the inflammatory lesions of rosacea.<sup>8</sup> In clinical trials, metronidazole 1% gel, as compared to vehicle, was associated with a mean reduction of 51% in the number of inflammatory lesions after 10 weeks of treatment.<sup>14</sup> It is reported to be non-inferior to azelaic acid 15%, which is also FDA approved for rosacea.<sup>15</sup> However, metronidazole 1% gel requires once-daily application, whereas azelaic acid 15% requires twice-daily application. Metronidazole 1% gel is associated with nasopharyngitis, upper respiratory tract infections and headache. Local burning, skin irritation, dryness and transient redness have been reported, and, rarely, so has metallic taste, numbness or paresthesia of the extremities, nausea and peripheral neuropathy.<sup>14,16</sup>

## Systemic Therapy

Oral doxycycline given in subantimicrobial (non-bactericidal) doses is the newest prescription treatment for rosacea, and it is the only oral medication approved by the FDA for the treatment of the

inflammatory lesions of rosacea. A 40-mg formulation (30-mg immediate release and 10-mg delayed release) was compared with placebo in two phase III randomized, double-blind trials.<sup>17</sup> In the trials, 269 patients with moderate to severe rosacea (10 to 40 papules and pustules and 2 or fewer nodules) were randomized to doxycycline and 268 patients to placebo.

The studies' primary end point was the mean change from baseline in total inflammatory lesions (papules + pustules + nodules) after 16 weeks of treatment. In the first study, there was a mean decrease of 11.8 lesions and, in the second study, a mean decrease of 9.5 lesions with active treatment. The decreases with placebo in the two studies were 5.9 and 4.3, respectively. In both trials, the results were statistically significant at  $P < 0.001$ . The most common doxycycline-related adverse events (pooled results) were nasopharyngitis (4.8%), diarrhea (4.4%), headache (4.4%), upper respiratory tract infection (3.3%), hypertension (2.9%), and sinusitis (2.6%).<sup>17</sup>

Importantly, doxycycline dosages greater than the once-daily 40-mg anti-inflammatory dose used in clinical studies do not appear to offer any advantages in terms of efficacy but are associated with less favorable safety profiles, as well as the emergence of antimicrobial-resistant pathogens.<sup>18</sup> The once-daily 40-mg dose was compared with a once-daily 100-mg dose in a randomized, double-blind 16-week trial of 91 patients with rosacea also treated with metronidazole 1% gel.<sup>18</sup> The two doses produced comparable reductions in total lesion count (−12.5 with 40 mg versus −12.2 with 100 mg,  $P = 0.83$ ). However, there were a total of 32 adverse events, 26 of which occurred in the 100-mg group (Table 4). Overall, the study found comparable efficacy between low- and high-dose doxycycline and a substantially better safety profile with the low-dose therapy.<sup>17</sup>

**Table 4. Ten Most Common Adverse Events With 40- and 100-mg Doses of Doxycycline<sup>18</sup>**

Adverse Event, n	40 mg	100 mg
Abdominal pain	0	1
Abdominal pain upper	0	1
Diarrhea	0	2
Esophageal pain	0	2
Headache	2	3
Influenza	0	3
Nausea	0	8
Nasopharyngitis	3	2
Urticaria	1	2
Vomiting	0	2
<b>Total</b>	<b>6</b>	<b>26</b>

Adapted from Del Rosso JQ et al. *J Drugs Dermatol.* 2008;7:573-576.

## Combination and Other Therapies

In my practice, I recommend combining oral and topical therapies, as this may produce the best patient outcomes. A recent clinical trial reported that a combination of doxycycline 40 mg plus metronidazole 1% gel produced greater reductions in inflammatory lesion counts than placebo plus metronidazole 1% gel within 4 weeks of initiating treatment, an improvement that was continued to week 12.<sup>19</sup> Similar results have been reported with combinations of oral doxycycline and other formulations of metronidazole.<sup>20</sup> Preliminary comparisons of azelaic acid 15% plus doxycycline and metronidazole 1% gel plus doxycycline suggest comparable efficacy.<sup>2</sup> Overall, combination therapy appears to be well tolerated.

For patients who cannot tolerate these treatments or who do not respond, intense pulse light (IPL) therapy is an option. IPL therapy has been shown to reduce redness and flushing and to improve skin texture, with minimal and transitory complications.<sup>21</sup>

## DISCUSSION AND CONCLUSIONS

Although a fully validated rosacea-specific quality-of-life instrument is still needed, preliminary evidence indicates that when treatment is effective, patients' quality of life is improved.<sup>3</sup> The RosaQoL instrument, one such rosacea-specific instrument, in preliminary studies was found to be a reliable measure of quality of life in patients with rosacea, but greater validation is required. The introduction of such a tool to clinical practice could help clinicians better determine disease burden for individual patients,

assess which disease aspects are most important to patients (eg, symptoms or emotional consequences of symptoms), track responsiveness to therapies, and determine if therapy improves both symptoms and quality of life.<sup>5</sup> Overall, a rosacea-specific quality-of-life instrument could help clinicians tailor therapy to the individual needs of patients.

Rosacea, like other dermatologic diseases, can induce psychologic distress of varying severity. In addition to adversely affecting patients' self-perception, the results of the Galderma Laboratories survey indicate that the presence of rosacea also adversely biases the perception of others. In the survey, women with rosacea were perceived as introverted, unhealthy, lonely, and perhaps even incompetent. Women with rosacea were more often considered to be professionally and personally unsuccessful.

Rosacea is a chronic but treatable and manageable disease. Simple lifestyle modifications can help prevent or reduce the severity of rosacea flares, and a variety of safe and effective FDA-approved medications are available. Combinations of topical and oral therapies appear to be safe and to produce the best patient outcomes.

Given the possible pathologic complications of undiagnosed and uncontrolled rosacea, as well as the potential psychologic distress and biased perceptions and judgments to which patients with rosacea are victim, physicians have a responsibility to recognize and treat rosacea. This requires that physicians always look at and treat the whole patient, not only a patient's presenting complaints and interests.

## References

- National Rosacea Society. Rosacea riddle now threatens more than 16 million Americans. <http://www.rosacea.org/press/archive/20100401.php>. Accessed September 14, 2010.
- Del Rosso JQ, Bruce S, Jarratt M, Menter A, Staedtler G. Efficacy of topical azelaic acid (AzA) gel 15% plus oral doxycycline 40 mg versus metronidazole gel 1% plus oral doxycycline 40 mg in mild-to-moderate papulopustular rosacea. *J Drugs Dermatol.* 2010;9:607-613.
- Aksoy B, Altaykan-Hapa A, Egemen D, Karagöz F, Atakan N. The impact of rosacea on quality of life: Effects of demographic and clinical characteristics and various treatment modalities. *Br J Dermatol.* 2010;163:719-725.
- Fleischer A, Suephy C. The face and mind evaluation study: An examination of the efficacy of rosacea treatment using physician ratings and patients' self-reported quality of life. *J Drugs Dermatol.* 2005;4:585-590.
- Nicholson K, Abramova L, Chren MM, Yeung J, Chon SY, Chen SC. A pilot quality-of-life instrument for acne rosacea. *J Am Acad Dermatol.* 2007;57:213-221.
- Ludwig MWB, da Silva Oliveira M, Mullar MC, Duarte de Moraes JF. Quality of life and site of the lesion in dermatological patients. *An Bras Dermatol.* 2009;84:143-150.
- Mallon E, Newton JN, Klassen A, Stewart-Brown SL, Ryan TJ, Finlay AY. The quality of life in acne: A comparison with general medical conditions using generic questionnaires. *Br J Dermatol.* 1999;140:672-676.
- van Zuuren EJ, Gupta AK, Gover MD, Graber M, Hollis S. Systematic review of rosacea treatments. *J Am Acad Dermatol.* 2007;56:107-115.
- National Rosacea Society. Rosacea Sufferers Section, National Rosacea First Impressions Survey. Kelton Research; December 2009.
- Banasikowska AK. Rosacea. <http://emedicine.medscape.com/article/1071429-overview>. Accessed September 13, 2010.
- Scheinfield N, Berk T. A review of the diagnosis and treatment of rosacea. *Postgrad Med.* 2010;122:139-143. [http://www.postgradmed.com/index.php?free=pgm\\_01\\_2010?article=2107&ex=2107](http://www.postgradmed.com/index.php?free=pgm_01_2010?article=2107&ex=2107). Accessed September 22, 2010.
- Powell FC. Rosacea. *N Engl J Med.* 2005;352:793-803.
- James WD. Acne. *N Engl J Med.* 2005;352:1463-1472.
- Metrogel 1%® (metronidazole 1% gel) full prescribing information. <http://www.metrogel.com/HCP/PrescribingInformation.aspx>. Accessed September 20, 2010.
- Wolf JE Jr, Kerrouche N, Arsonnaud S. Efficacy and safety of once-daily metronidazole 1% gel compared with twice-daily azelaic acid 15% gel in the treatment of rosacea. *Cutis.* 2006;77(4 suppl):3-11.
- Beutner KR, Lemke S, Calvarese B. A look at the safety of metronidazole 1% gel: Cumulative irritation, contact sensitization, phototoxicity, and photoallergy potential. *Cutis.* 2006;77(4 suppl):12-17.
- Del Rosso JQ, Webster GF, Jackson M, et al. Two randomized phase III clinical trials evaluating anti-inflammatory dose doxycycline (40-mg doxycycline, USP capsules) administered once daily for treatment of rosacea. *J Am Acad Dermatol.* 2007;56:791-802.
- Del Rosso JQ, Schlessinger J, Werschler P. Comparison of anti-inflammatory dose doxycycline versus doxycycline 100 mg in the treatment of rosacea. *J Drugs Dermatol.* 2008;7:573-576.
- Fowler JF Jr. Combined effect of anti-inflammatory dose doxycycline (40-mg doxycycline, usp monohydrate controlled-release capsules) and metronidazole topical gel 1% in the treatment of rosacea. *J Drugs Dermatol.* 2007;6:641-645.
- Sanchez J, Somolinos AL, Almodovar PI, Webster G, Bradshaw M, Powala C. A randomized, double-blind, placebo-controlled trial of the combined effect of doxycycline hyclate 20-mg tablets and metronidazole 0.75% topical lotion in the treatment of rosacea. *J Am Acad Dermatol.* 2005;53:791-797.
- Kautz G, Kautz I. Management of rosacea with intense pulsed light (IPL) systems and laser. *Med Laser Application.* 2008;23:65-70.

This supplement was produced by International Medical News Group, a division of Elsevier Medical Information, LLC. Neither the editor of SKIN & ALLERGY NEWS, the Editorial Advisory Board, nor the reporting staff contributed to its content. The opinions expressed in this supplement are those of the faculty and do not necessarily reflect the views of the supporter or of the Publisher.

Copyright © 2011 Elsevier Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form, by any means, without prior written permission of the Publisher.

Elsevier Inc. will not assume responsibility for damages, loss, or claims of any kind arising from or related to the information contained in this publication, including any claims related to the products, drugs, or services mentioned herein. The opinions expressed in this supplement do not necessarily reflect the views of the Publisher.

This article was funded by Galderma Laboratories, L.P.

Editorial support provided by Josh Paul.

Faculty Disclosure: **Dr Luftman** has received funding for clinical grants from and is a consultant for Galderma Laboratories, L.P.