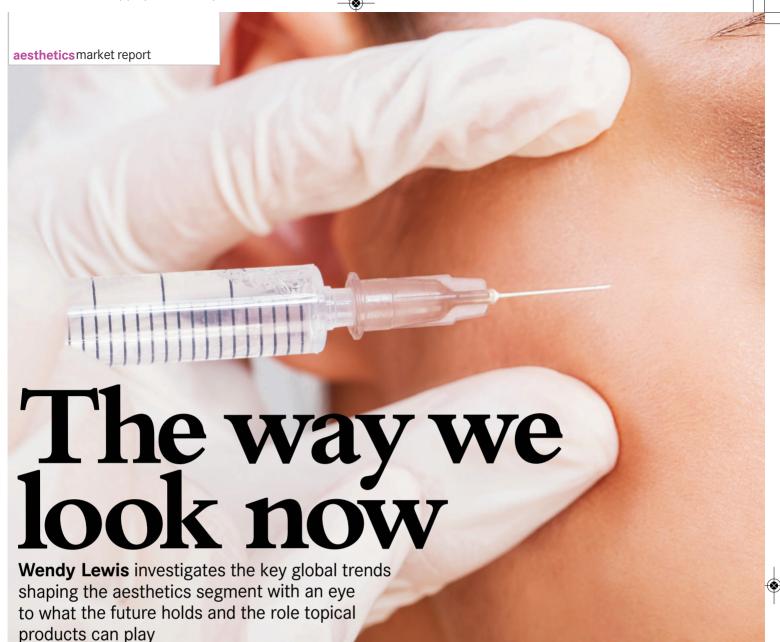
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Today's anti-ageing market is

expanding to cover a diverse range of concerns. Wrinkles are no longer considered the only sign of ageing. Age spots, pigmentation, uneven skin tone, dry skin, under eye circles, redness and hair thinning are now an integral part of the growing anti-ageing market. While older consumers and perimenopausal women remain the largest target, the market is getting younger. There is an increased demand for anti-ageing products among women in their 30s along with an uptick in millennials interested in preventing or delaying the ageing process, and younger men are also more engaged.

The constant demand for new and effective products is leading to exciting new innovations in natural and organic ingredients, anti-ageing hair care products, unique skin care formulations, topical healing products and scar remedies. For example, the buzzword in sun protection is infrared rays (IR) that penetrate deep into the skin, posing a new challenge for sun care formulators.

The global cosmetic skin care market will expand at a CAGR (compound annual growth rate) of 5.1% through 2024, to reach more than US\$200bn, according to

Transparency Market Research (TMR). Facial care is the overwhelming leader in the skin care segment, followed by body care, sun care and hand care.

Our insatiable appetite for looking good and staying youthful is fuelling a growing interest around the world in cosmetic procedures, from injections to lasers and cosmetic surgery. According to the *Analysis*, *Outlook And Market Trends In Cosmetic Medical & Surgical 2015-2020 Report* by IMCAS (International Master Course on Aging Science) in January 2016, Europe's market is growing at a rate of 6% per year, the US shows 7% per year growth, Latin America is nearly 9% and the Asia Pacific region has the highest growth of over 13%.

The two segments with the highest market share were shown to be injectables (botulinum toxins, fillers, fat grafts and platelet rich plasma or PRP) at 39% and energy-based devices (lasers, radiofrequency, ultrasound, cryolipolysis for skin resurfacing, skin tightening and fat reduction) at 29%. Body contouring systems were noted to have the highest growth rate among energy-based devices of 13.6% per year.

At-home products developed to mimic the results of clinical treatments are not new,

but the vast spectrum of options continues to expand. High-performance products cater towards consumer demands and the rising awareness of skin health. According to Kline & Co, the professional skin care market in the US alone is forecast to grow at a CAGR of nearly 5% through 2020.

ABOUT FACE

Facial rejuvenation treatments are by far the most popular clinical aesthetic treatments. The category includes everything from microdermabrasion and peels to deep resurfacing lasers, dermal fillers and Botox, all the way up to facial surgery and hair transplantation.

Over the past decade, skin resurfacing lasers have gone from ablative (deep) to non-ablative (less deep) and fractional, reflecting the overriding concerns of consumers for minimal to no downtime treatments so they can get back to their lives quickly. This global trend has generated a need for post-laser recovery products and treatments, and we are seeing a proliferation of science-based brands that incorporate the principles of wound healing and skin restoration.

"Basically, skin ageing is the result of increased breakdown of collagen and





elastin combined with a decrease in the ability of the body to repair itself. A good skin regimen is going to address both of these issues," says San Antonio, Texas-based dermatologist Vivian Bucay. "Newcomers include Alastin Skin Nectar and Alastin Restorative Skin Complex, which contain a patent-pending technology called TriHex, shown to enhance extracellular matrix

recycling. Think of it as clearing out damaged collagen and elastin to create an optimal environment for natural skin regeneration through the production of healthy collagen and elastin. I have patients use Skin Nectar for two to six weeks prior to laser resurfacing and chemical peels, and continue for a few weeks post procedure before switching to Alastin Restorative Skin Complex for maintenance. Extracellular matrix optimisation is truly a new paradigm in the approach to professional skin care."

Skin needling, also called microneedling therapy, collagen induction therapy (CIT) and

percutaneous collagen induction (PCI), is a minimally-invasive procedure that involves the use of a device that contains fine needles. The needles are used to create a controlled skin injury that triggers the body to fill these microscopic wounds by producing new collagen and elastin. The clinical results are improvements in skin texture and firmness, as well as reduction in scars, pore size and stretch marks. Similarly there is a plethora of hand-held pens and stampers sold direct to consumers as standalone products, and incorporated into an active skin care regimen for home use. Fractional radiofrequency devices are used to treat acne scars, pigmentation, fine lines, skin laxity, rosacea and enlarged pores.

More recently, radiofrequency energy is being delivered with a needle into the deeper layers of the skin for more profound benefits. This new crop of devices, including Infini from Lutronic and Fractora from InMode, for example, use needles to improve the skin by adding trauma and energy that stimulate new collagen. There is a trend towards applying topical medications and solutions post microneedling treatments when the microscopic channels in the skin are open, so that the topical agents can penetrate well. Skinceuticals is one such global skin care brand that has conducted joint studies with dermatologists that demonstrated the efficacy of its antioxidant serums post laser procedures.

Many practitioners are now combining topical growth factors with energy-based treatments to enhance the rejuvenating results of both therapies.

According to Lincolnshire, Illinois-based dermatologist at Advanced Dermatology Amy Taub, one of the newcomers to watch among professional skin care technologies is DefenAge. "DefenAge stands out in the

saturated growth of the anti-ageing industry due to its focus on molecular specificity, as the science behind the skin care is to stimulate stem cells that live in the hair follicles. DefenAge products turn on the stem cell (your body's own wound healing process) resulting in the creation of proteins from a young cell."

Another category that bridges the gap between non-invasive injections and invasive surgery is suture suspension lifts. Silhouette Instalift from Sinclair Pharma was recently introduced as a non-surgical procedure that lifts sagging tissue of the mid-face without surgical intervention. According to Chicago-based Plastic Surgeon Julius Few of The Few Institute: "Silhouette Instalift fills an important void. We are seeing that when we stack Silhouette Instalift with other non-surgical solutions, we can accomplish a surgery-like result in well-selected patients. It delivers an immediate result with outcomes getting better over a three-month time span with results lasting 18 months."

The Silhouette Instalift appeal is that it can be used safely in patients of all skin tones and of all ages, and takes about 30 minutes to perform.

Combination procedures using minimally invasive techniques are the new norm. The 'liquid facelift' is a trend that has certainly gained traction.

"By filling the areas around the temples and the tear trough [the sunken area under the eyes], and replacing lost volume in the cheeks, nasolabial folds [nose-mouth lines] and lips we can get close to the rejuvenating effects of a surgical facelift in some cases," says New York City-based plastic surgeon Bryan Forley. If there is sagging around the jawline and neck, he will add a skin tightening treatment with radiofrequency or ultrasound energy-based devices. "Ultherapy, which uses ultrasound waves, is my go-to choice for skin firming on the upper face, mid-face and neck down to the décolleté," he says.

Fillers are not just for the face any more. Radiesse (Merz Aesthetics) has the distinction of being the first injectable filler that gained FDA approval in the US to plump ageing, volume-depleted hands. This dermal filler improves the appearance of hands while stimulating the skin's own natural collagen to deliver long-lasting results. Ellanse (Sinclair Pharma) is another long-lasting tissue-stimulating option for hand rejuvenation that is used extensively in Europe and the Middle East, and which is eyeing the US market next.

Due to the rise of tattoo artists and the acceptance of tattoos of all kinds across an expanded range of age groups, the market



ASTIN

for tattoo removal treatments is showing steady growth. The new picosecond technology currently available in clinics worldwide has changed the way tattoos can be removed by offering a faster treatment time and fewer sessions.

MAKING STRIDES IN HAIR HEALTH

Therapeutic hair treatments are experiencing a tremendous growth spurt with more specialist products that formerly required a prescription being marketed through physicians' clinics, direct to consumers online and through retailers. The women's hair loss sector offers opportunities for marketers to capitalise on consumer awareness of age-related diffuse hair thinning, as well as hair health.

For example, the hair health supplement category is experiencing new entries from Nutrafol and Qilib Hair Regrowth (both from Galderma), as well as major direct-to-consumer campaigns promoting Viviscal and Keranique. More aesthetic clinics are now incorporating hair supplements and products to stimulate regrowth, as well as to control dandruff, itching, flaking and damage into their retail vertical due to patient demand. According to Kline Group, the most thriving professional hair care trends include scalp care for hair loss and thinning, and bond multipliers for thickening, such as the Olaplex system.

Low level laser therapy has been shown to stimulate and energise the cells within the hair follicle to produce thicker, healthier hair. LED-enabled products with price points between \$30 and \$3,000 have expanded this category among the masses by offering clinical treatments with the convenience of at-home use. Most recently, iRESTORE Hair Growth System received FDA approval for a home version of its light-based technology in the form of a



helmet that the consumer wears. Capillus Laser Cap for Hair Regrowth now offers three versions, priced from \$799-\$3,000 based on the amount of scalp coverage provided.

Hair restoration therapies are going more mainstream with streamlined alternatives to traditional methods including scalp reduction and FUE (follicular unit extraction). The expansion of modified and automated systems, such as NeoGraft and SmartGraft, can be found in clinics predominantly catering to men. The holy grail of hair restoration lies in precision and reproducible results, as can be achieved through the first and only ARTAS Robotic System from Restoration Robotics.

Another emerging category includes novel hair implantation systems that use both human and synthetic strands. For example, Biofibre Hair Implant from Italy uses Biocompatible Artificial Hair to add volume and conceal thinning areas for male and female alopecia. This concept opens up a novel solution for people who do not have enough of their own natural hair to undergo more conventional hair restoration procedures. It should be noted that the implantation of synthetic hair to date has not been accepted by the US FDA.

The final frontier in hair growth may ultimately lie in harnessing the power of stem cells. One of the most interesting new developments in this area is Kerastem Hair Therapy, which is CE-marked and currently undergoing a multi-centre clinical trial in the US. The system uses the patient's own naturally-derived stem and regenerative cells (from their fat) to treat female and male early stage hair loss.

BODY SHAPING

Most image-conscious women are, with the myriad options on offer, now absolutely glowing, well-treated and preserved, so now they have moved on to the body. No matter how good your face looks, if your arms and décolletage show age spots, sun damage and wrinkles, it presents an obvious disconnect.

Fat reduction remains the holy grail of medical aesthetics and casts the widest net among both female and male consumers. According to a report from Research and Markets, Global Non-Invasive Fat Reduction Market 2016-2020, the category is expected to grow at a CAGR of 26.6%. Advances in non-invasive fat reduction technologies include transdermal-focused ultrasound, low-level lasers, high-intensity focused ultrasound, monopolar radiofrequency and cryolipolysis. These technologies have led the way from traditional liposuction to non-invasive options to meet consumer demands. In particular, cryolipolysis offers the benefits of freezing fat from trouble

BEAUTY FROM WITHIN

As an adjunct to the skin care category, the medical aesthetics industry is incorporating more ingestible products into a skin health regimen, often incorporating food-based ingredients. This trend dovetails with the greening of skin care and beauty, and an overall consumer interest in wellness. The global nutraceuticals market is growing faster than the overall skin care market.

Some of the leading causes of disease and the ageing process are inflammation and nutritional deficiencies. We are seeing buy-in from clinics offering IV drips infused with vitamins and minerals

delivered directly to the cells as a complement to oral supplements and a healthy diet. Each IV treatment can be customised with select ingredients that target the individual's needs. This model of transporting nutrients is gaining traction among 'young Hollywood' and in upscale

clinics for millennials through to menopause.

Newcomer Aethern Advanced Nutrition Skin Beauty Program from Barcelona's Biorganic Pharma entered the market with an innovative nutritional collagen-based formula created with 14 special ingredients in one drinkable 25ml dose that is equivalent to taking 25 vitamin tablets. The system is being sold exclusively to clinics and medical spas.



spots women and men are seeking, including chest, waist, abdomen in men, plus upper arms, bra fat and thighs for women. Non-invasive fat reduction treatments may involve a series of procedures and often a combination of technologies, which adds to the overall cost for the consumer and the profit for the clinic.

The injectable drug Kybella (Allergan) has received a ton of attention for reducing submental fullness, better known as chin fat. Until recently, liposuction was the only option available to reduce a double chin, and it required an incision and some recovery. Kybella is a synthetic form of deoxycholic acid, a naturally occurring molecule that breaks down fat. After a series of injections — as little as two and as many as six — fat is dissolved.

Topokine Therapeutics, a clinical-stage biotechnology company that was acquired by Allergan, has a first-in-class topical agent in late-stage development for the treatment of steatoblepharon, also known as undereye bags. Applied to the lower eyelids once nightly, XAF5 penetrates the skin and acts on fat cells to shrink undereye bags. According to dermatologist and clinical researcher Jeffrey Dover of Skincare Physicians in Chestnut Hill, Massachusetts: "Topokine is developing an exciting new topical agent for the non-surgical treatment of eye bags. This novel approach may revolutionise the non-surgical treatment of eye ageing."

Neothetics LIPO-202 is currently being investigated for the reduction of localised fat deposits under the chin (submental fat). So far, LIPO-202 has been used in the abdominal area and may offer a non-invasive approach to localised fat reduction.

It is interesting to note that the next target for market leader Zeltiq Coolsculpting technology is going from freezing fat to targeting cellulite and potentially to a solution for acne by destroying oil glands.

BEYOND KEGELS

Vaginal health is another hot topic in the realm of medical aesthetics, with a wide range of energy-based systems focused on women's key concerns, including vaginal dryness, pain during intercourse, laxity and stress urinary incontinence, most often brought on by childbirth and menopause. There is an unmet need for topical agents to complement these treatments, the most common being performed with CO₂, radiofrequency and Erbium:Yag wavelengths. Treatments for external, as well as internal improvements are now



growing in popularity around the world, with the US leading the way.

"It's the inevitable confluence of advances in laser technology and an everexpanding market. Women are living longer and want to enjoy this time, and now we have treatments that are minimally invasive, with no downtime, that actually work," says Dr Jessie Cheung, a dermatologist in Illinois. "It probably started with Viagra and the gradual diminution in the stigma associated with sexual dysfunction. The social taboo has been shattered and we are more open about discussing these inevitable events in women's lives." Dr Cheung offers the Sciton diVa hybridresurfacing laser for vaginal rejuvenation. "I use the diVa system in conjunction with platelet-rich plasma therapy in the vaginal canal and injected as the 'O-Shot', and offer bio-identical hormone replacement. These complementary treatments are a home-run," she says.

Plumping deflated labia with fat, fillers and platelet rich plasma (PRP) has given way to the 'O-Shot' procedure that has been picking up steam in clinics around the world.

Vaginal rejuvenation is going mainstream. Apex from InControl Medical is a medical device that inflates inside the vagina to strengthen the pelvic floor muscles to stop stress urinary incontinence. The female personal care device for at-home vaginal rejuvenation called vSculpt uses light therapy with gentle heat to rev-up vaginal tissue into increasing the natural production of collagen and elastin. It also improves sensation and hydration.

BEAUTY TECH

The market for at-home beauty devices continues to deliver with sales increasing by 11.5% in 2015 to reach nearly \$2bn at the manufacturers' level, according to Kline Group's Beauty Devices: Global Market Analysis and Opportunities report. Home devices continually offer higher levels of efficacy, with technology such as DNA testing and wearable skin monitors potentially adding new levels of technical certainty and self-assessment. LED technology, including wearable mask devices, has become a mainstay in this growing category.

Beauty apps have been a hot trend in the market for the past few years. These tend to target millennial consumers who live on their mobile devices, but that reach has been greatly expanding with more sophisticated offerings that appeal to a wider range of consumers. One to watch is a new launch from ModiFace of a live video simulation technology that shows how skin care products will look on a consumer's own skin. Created by dermatologists, this unique face and skin mapping technology facilitates details of the skin to be analysed and shown as life-like visualisations.

Scientific innovations and technological advancements are generating excitement in the aesthetic beauty segment. It appears that the future potential of regenerative medicine is looming large, and it is only in its infancy.

THE BOYS' CLUB

Men have come full circle from cringing at the idea of anything more than washing their face and shaving to 'bro-tox' and fillers, freezing their chin and belly fat with Coolsculpting, hair restoration and scar-reducing lasers.

According to Washington DC dermatologist Terrence Keaney: "The male population has been largely ignored until recently. Physicians and the aesthetics industry have focused on the low hanging fruit, the female face. That trend is shifting, with men representing about 10% of the aesthetics market and that number is growing. Botox (Allergan) has been a gateway to attracting male

patients and Kybella [results pictured below] will only add to that growth.

"The male jawline is an important masculine facial feature. I often equate the male jawline to the female lips in terms of their importance to the respective gender," he says.





