GET SMART:
INVESTIGATING AI'S ROLE IN PLASTIC SURGERY AND DERMATOLOGY

Wendy Lewis speaks to some top doctors to share how they are using AI tools in their practices and how they are not... yet

IN 2023, I WROTE 'MY LOVE AFFAIR WITH ChatGPT' in the July/August issue of PRIME. Fast forward to Q2 2024, and artificial or 'augmented intelligence' has grown by leaps and bounds across all fields. It now dominates the way we work and communicate, whether we like it or not. It's like a runaway train and there is no stopping it now.

AI has made a significant difference in our day-to-day lives. In particular, AI is changing the way doctors diagnose diseases, plan surgeries, choose medications, boost in-clinic productivity (and profits), promote their practices, and more.

How much of an impact is AI having on aesthetics and dermatology? I asked ChatGPT4 to weigh in (see *panel below right*).

This answer, which was generated in under 10 seconds, reflects some of what I have heard from so many physicians in various parts of the U.S. and abroad.

AI in action: simplifying presentations, patient intakes

'I've been playing around with generative AI, a category of AI that enables you to create new experiences with text, images, videos, and audio,' says New York City-based dermatologist Jane Yoo, MD. She uses Canva to create marketing material, handouts, and newsletters.

Dr. Yoo also uses AI to help with upcoming podium presentations. 'Microsoft Copilot in Word can write, edit, summarise, and PowerPoint can help create presentations based on prompts, but they are very basic and are not sophisticated enough to have the technical detail that is needed,' she says.

Dr. Yoo is currently working with the American Academy of Dermatology (AAD) on a pilot programme with an app called the Suki AI Assistant, which uses AI, natural language processing, and machine learning to help physicians create clinically accurate medical notes and complete administrative tasks, such as retrieving patient information from the electronic medical record (EMR) system using their voice. 'The programme makes up some information during the patient interaction and transposes it to the electronic medical record,' she explains. 'It is not perfect as there are some major hiccups—including AI hallucinations, and I am worried about the privacy/HIPPA issues involved.' In case you are not up to speed, AI hallucinations are incorrect or misleading results that AI generates.

AI in action: maximising efficiency, cutting costs

Dr. Jessica Wu, a dermatologist in Los Angeles, is the Founder of RESIDEN, which uses technology including AI to improve efficiencies.

Dr. Wu sees 25 to 30 patients a day. 'Before AI, sometimes we'd run out of products; other times, we'd have products worth thousands of dollars sitting unused on our shelves, some of it expiring.' She recalls, 'This was aggravating because toxin and filler are expensive, not to mention laser and device consumables.'

But that was then. Managing inventory is one of the features of her practices' proprietary Residen technology. 'Using automated sensors, our system continually tracks inventory,' she explains. 'Taking this data, along with numerous other data points, the system then uses a type of AI called prescriptive analytics to determine what products to order and how much.'

Since implementing this system, inventory is in line with patient needs, she says. 'We only have on hand what we need in the short term,' she says. 'It's much more accurate than staff eyeballing and guesstimating what to order. It removes human error and also identifies missed shipments and theft.'

AI also allowed Dr. Wu to reduce her rent costs. 'I recently built out a new office and decided I only needed a very small waiting room. Instead, I fit in another procedure room,' she says.

'Although my new office is 800 square feet larger, my new waiting room is less than a quarter of the size of my previous one.' AI tech continually scans her schedule and adjusts it according to patient and doctor data. 'Patients don't need to wait, so [there's] no more need for a large waiting room that isn't generating income,' she ▷

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WENDY LEWIS is Founder/President of Wendy Lewis & Co Ltd, Global Aesthetics Consultancy since 1997, author of 13 books, and frequent presenter on the international stage. Her first textbook, Aesthetic Clinic Marketing in the Digital Age (CRC Press) will debut a second edition in 2023.

email: wl@wendylewisco.com

Question posed to ChatGPT-4:

'How much of an impact is AI having on aesthetics and dermatology?'

'AI is significantly impacting both aesthetics and dermatology, offering innovative solutions and enhancing both fields.

In aesthetics, AI is being used for facial recognition and analysis to suggest personalised beauty and skincare routines. By analysing thousands of skin-related datasets, AI can recommend products or treatments tailored to individual skin types and conditions. Furthermore, AI-driven tools can simulate makeup or hair styles, allowing clients to visualise changes before they commit.

In dermatology, AI is transforming the way skin conditions are diagnosed and treated. AI algorithms, trained on vast datasets of dermatological images, can assist in identifying skin cancers, psoriasis, eczema, and other skin disorders, often with accuracy comparable to dermatologists. This can lead to early detection of skin cancers and other conditions, potentially improving outcomes. AI also supports telemedicine by enabling remote diagnosis and monitoring, which is particularly beneficial for patients in underserved regions.

The integration of AI in these fields is ongoing, and as the technology advances, its impact is likely to become more profound, aiding in research, developing personalised treatments, and improving patient care.'

THE AI INVASION

What started out in November 2022 with ChatGPT (now up to the ChatGPT4 version) has morphed into a plethora of others, each with its nuances and features. I dabble with them all for different applications, but ChatGPT4 and Claude 3 are my preferred choices at the time of this printing.

Note: All of these have free and paid versions to tap into :

- **ChatGPT (OpenAI)**
- **ChatSonic.pro (Writesonic)**
- **Claude.ai (Anthrop/ic)**
- **Google Gemini (formerly Bard)**
- **Microsoft Copilot (formerly Bing Chat)**
- **Perplexity.ai (Aravind Srinivas, Denis Yarats, Johnny Ho, Andy Konwinski) - self-proclaimed as the 'world's first answer engine.'**

▷ says. 'Our Residen system also detects if/when a doctor will be late and how late, and this information is sent to patients and is automated, so it doesn't require a staff member to call each patient. Again, lessening the need for a large waiting room that doesn't generate income.'

In addition, Dr. Wu uses AI to perform more rote tasks, which frees up staff to do more valuable activities. 'For example, our system checks patients in, then directs patients where to go and which type of room to seat them in.' There's no need for a receptionist, which is a big cost savings,' Dr. Wu says.

This is all true, adds Jason Pozner, MD, plastic surgeon and founder of Sanctuary Medical Aesthetic Center with practices in Boca Raton and Fort Lauderdale, FL.

'We look at AI today as having the potential to significantly improve the way we practice. We don't see it as a threat, but more like a tool to save time, improve efficacy, and help us to take better care of patients and produce superior outcomes,' he says. For example, AI helps doctors make evidence-based decisions based on hard data, he says. 'There is no doubt that AI will continue to be used in all facets of medicine and surgery. It is here to stay, so we need to embrace it while proceeding with a dose of caution.'

The Holy Grail: integrating AI in EMR and PM software

Karol Gutowski, MD, a Chicago based plastic surgeon who also manages a thriving Medspa brand, Afresh Medspa, isn't all-in on AI yet. 'Right now, AI seems to be a buzzword that is being used to describe predictive technology,' he says.

He has experimented with ChatGPT, Bard, Microsoft Copilot, Microsoft AI, and Claude for general plastic surgery questions. 'The answers were very general without the specifics that I can include myself,' he says.

'AI models can help in interpreting medical images, and lab results, but I am not aware of any AI that is integrated in
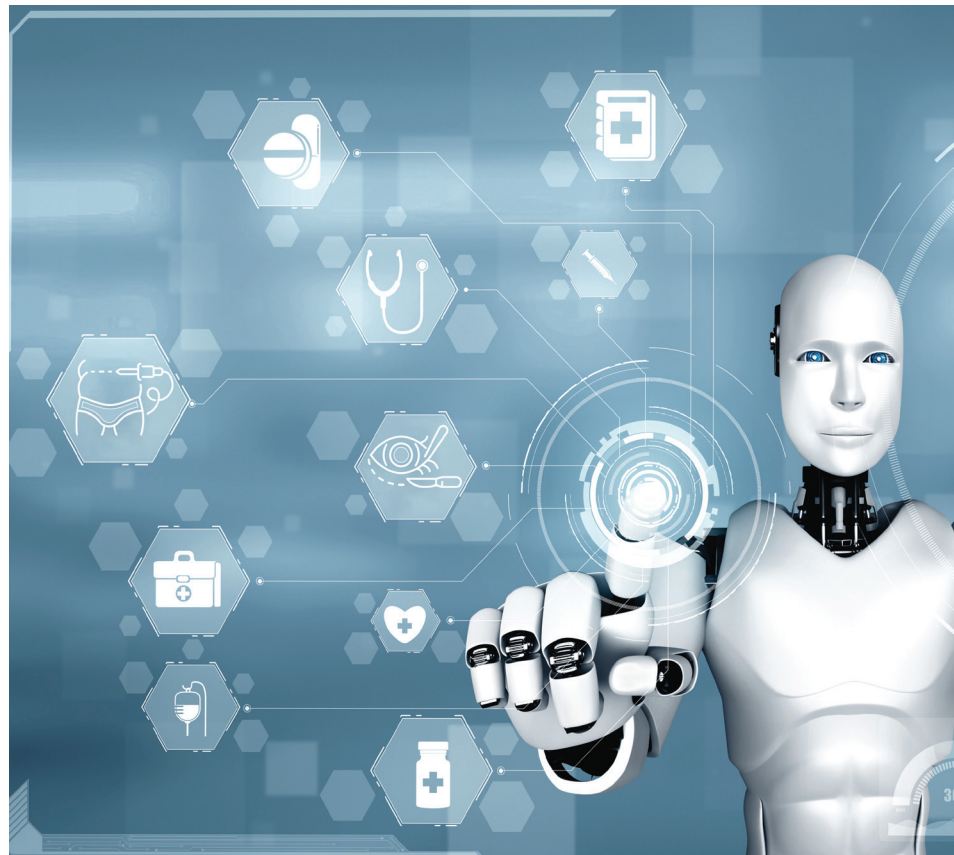
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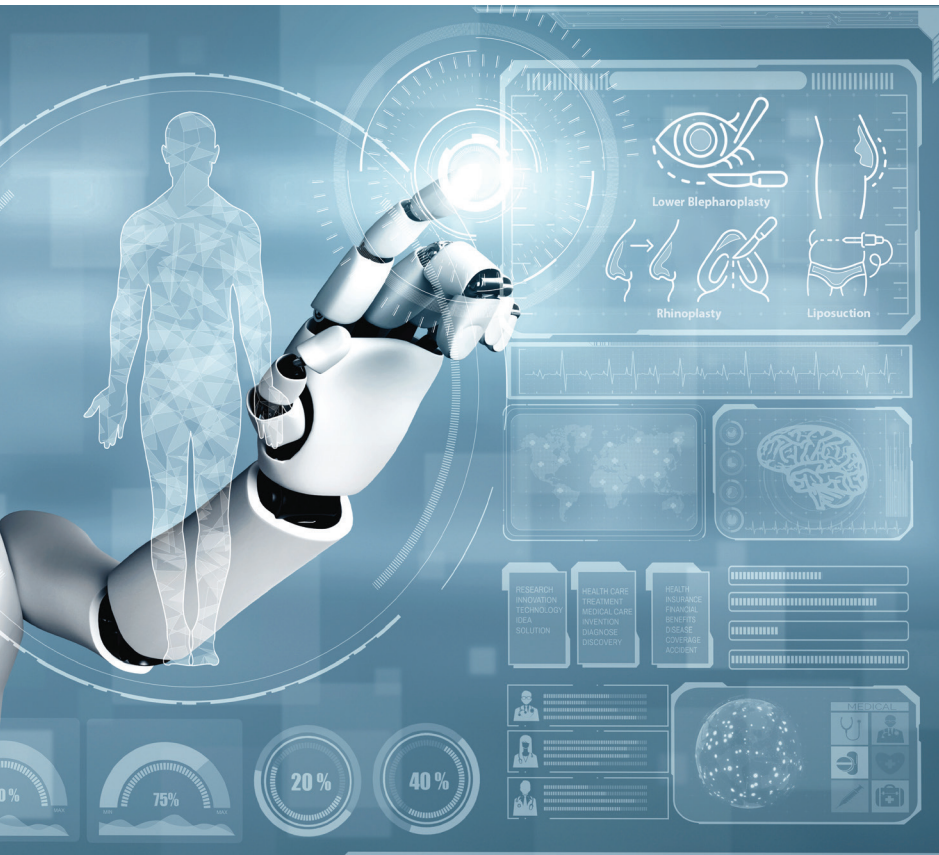electronic medical record (EMR). If that happens, it would be a game changer,' he says.

Unless AI can integrate with EMR or practice management software, the information transfer gap is a problem, he says. Other ethical concerns remain as well: 'Is AI HIPPA compliant? If AI is given real patient information, will the AI platform capture it, store it, and use it elsewhere?'

His bottom line? 'AI is not a substitute for human interaction, but rather it is a tool to improve efficiency for the patient's benefit.'

Gregory A. Buford, MD, a plastic surgeon in Denver and Lone Tree, CO, is a self-proclaimed newbie when it comes to using AI. He has found AI to be a good jumping-off point for writing papers and presentations. 'At this point, I am finding it extremely useful as more of an adjunct versus a replacement for blood, sweat, and tears and the normal creative process,' he says. 'I am using it in a number of ways to either begin my thought process on a topic — source the topic and go from there — or often to refine a process that I have already started.'

But it's 'writer beware' as essays completely generated by AI have a very distinct look, tone, and feel and literally scream that they have been written by a bot. 'As an assistant to my own creativity, they often allow me to often go in directions to which I had not ventured and to build more layers and depth upon my initial foundations.' He uses ChatGPT and Claude, and often goes back and forth between the two to effectively evaluate and compare their differing voice, inflections, and direction.

Dr. Gutowski agrees, noting that AI may appear to be a

questions combined with incomplete reference verification has the potential to result in misinformation and unnecessary concern among parents of children with AD,' they conclude. 'A clinician's awareness of ChatGPT's answers can be instrumental in guiding parental counselling by dissuading unnecessary restrictive diets and providing parents with reliable, evidence-based online resources such as the Society of Pediatric Dermatology patient handout, the AAD, and the National Eczema Association.'

He uses AI to help draft letters and has shown his staff how they can use it to help them draft letters of medical necessity. 'We stress that it can only be a draft and explain that it is prone to errors, so every word must be checked carefully,' he says. 'Still, it can be timesaving and helps to ensure that all the pieces of the puzzle are present.'

His current go-to is also ChatGPT-4. 'I will say that Perplexity.ai is quickly becoming my favourite as it does much more with real-time web integration, which I think is the future.' Dr. Lio is also looking forward to experimenting more with Google Gemini and rumour has it that Apple is working on a big AI announcement as well.

Indeed, according to numerous tech experts, the iPhone 16 family will include generative AI, both locally and in the cloud, and this will be introduced at Apple's upcoming Worldwide Developer Conference that takes place in June 2024. Stay tuned because this could be a game changer for the whole category.

timesaver when writing articles or papers for journals, or clinical studies, but most reputable medical journals will not accept AI-derived manuscripts. 'I suppose an author could use AI to start with a template but not sure if that will save time or not,' he says. 'AI may have the potential to compose some aspects of a research grant, but many researchers probably know their subject matter better than AI so would still need to review the content.'

Uses in dermatology

Peter Lio, MD, a clinical assistant professor of dermatology and pediatrics at Northwestern University Feinberg School of Medicine and a partner at Medical Dermatology Associates of Chicago, has published several papers on the role that AI may play in dermatology.

In one study that appears in the August 2023 issue of Pediatric Dermatology, Dr. Lio and colleagues looked at the potential effect of AI on anxiety levels in parents of children with atopic dermatitis (AD). For the study, researchers compared the answers to commonly asked questions in AD from ChatGPT-3.5 and the most updated version of Google. When the apps were asked, 'Why can't my child stop itching? What should I do?' ChatGPT responses recommended seeing a healthcare professional. By contrast, Google provided a 'snippet answer.' When asked, 'Will my child grow out of eczema? Are there any serious consequences to long-term eczema treatment?' ChatGPT provided a more medically complex, detailed answer compared to Google, which could induce parental anxiety. 'We worry that the ease of asking ChatGPT medical

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How AI is influencing consumer expectations

AI is also revolutionising consumer experiences, changing the way people engage with aesthetic services, treatments, and bespoke recommendations.

Steven R. Feldman, MD, PhD, a professor of dermatology, pathology and social sciences and health policy at Wake Forest University School of Medicine in Winston-Salem, NC, works with Perfect Corp to do research studies validating their AI tool, which assesses facial characteristics. As such he is on the front lines of AI in beauty.

In one study, Dr. Feldman and colleagues compared Perfect Corp's AI Skin technology to both physician assessments and a high-end, standard imaging device and found that AI Skin had a good correlation with assessments done by a physician and the clinical imaging system with dedicated hardware and camera.

'In these studies, we've documented the severity of patients' acne, pores, spots, wrinkles, and a host of other characteristics,' he says. 'The AI tool lets us use a simple iPad to rapidly assess patients before and after dermatological treatments.'

Perfect AI is 'low cost, superfast (just seconds to capture the image and get the data), and forgiving of different lighting conditions,' he says.

Boston-based plastic surgeon Samuel Lin, MD, an associate professor of surgery at Harvard Medical School, uses AI to manage patient expectations.

'Visual filters that patients may use on themselves before surgery can affect their expectations for surgery, and our group has studied the degree of effect as well as taken ▷

▷ this into consideration during patient counseling,' he tells *PRIME*.

'In addition, we have used ChatGPT in our efforts to develop code being used to analyse large patient datasets in research efforts to study best surgical practices and lowering complications.'

In the future, Dr. Lin anticipates using AI as a medical scribe in clinic visits, using Otter's powerful speech-to-text capabilities to lower the burden of surgeons to make records of patient visits. 'We anticipate using AI in the future to help facilitate diagnosis and treatment planning, and surgical simulation for resident training as well.'

'The integration of AI into our practice is not meant to replace the expertise of a plastic surgeon,' he says. 'The first step to adoption is understanding the capabilities of each open-source AI platform and how it can add to your practice without sacrificing patient experience or patient safety,' Dr. Lin explains. 'When utilised correctly, AI can make certain aspects of plastic surgery more efficient.'

He and his colleagues, Drs. Vikas Bommineni, Daniela Lee, and Massoud Sharif, were the recipients of the Dean's Innovation Awards sponsored by the Harvard Medical School Dean's Office, for their paper, 'The 900 images project: Minimising post-scar sequelae via image generation for patients with diverse skin tones.'

Dr. Lin also suggests outlining the areas where AI could help and setting standardised techniques with associated training for the team. 'In addition, full transparency with the provider team as well as with patients regarding how AI is being used is essential,' he says. 'Disclosures on AI use help maintain trust in the physician-patient relationship and among the healthcare group.'

What's coming next with AI?

AI continues to make tremendous advances that can help improve efficiency and productivity in ways we may not have even thought about yet.

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to read CT scans, identify skin lesions, and provide medical diagnoses, the low-hanging fruit is in improving physician efficiency, and de-tethering clinicians from the computer. This should be embraced by the healthcare industry now,' write Anthony M. DiGiorgio, DO, of the University of California-San Francisco, and Jess M. Ehrenfeld, MD, MPH and Medical College of Wisconsin in Wauwatosa, WI.

What's more, they note that AI that improves physician workflow should require less regulatory oversight than algorithms that make diagnoses, recommend treatments, or impact clinical decision-making—a bonus.

AI could seamlessly integrate to provide predictive text for physician notes too, they suggest. As this takes place, the AI could start filling out orders, selecting ICD codes, and gathering pertinent clinical history. 'Instead of clicking through endless reams of clinical documentation, a physician could have an AI-generated relevant patient history that can be quickly verified with the patient,' they write.

Dr. Wu says current AI applications are just the tip of the iceberg. 'Right now, most medicine is using AI as a tool to address current conditions or to treat those who are already symptomatic, but those at the forefront will be using AI on currently healthy people who have earlier or more severe signs of ageing, sun damage, or sagging,' she predicts. 'AI may be able to identify and track markers and predict who's going to have earlier or more severe signs of ageing, sun damage, hair loss, sagging breasts and suggest interventions earlier,' she tells *PRIME*. She believes AI will also take on a bigger role in diagnostics by analysing digital images instead of glass slides for the pathology of skin biopsies.

One thing is clear: AI is here to stay and as Kara Swisher notes in her new book *Burn Book—A Tech Love Story*, 'We are the crash test dummies of the digital age.'

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