

Skin, Collagen & Cosmetic Longevity

CHAPTER 4

What actually works – and why starting earlier changes the outcome

The skincare industry is one of the most effectively marketed categories in existence. It produces an almost unlimited supply of products, most of which do very little at the level that matters – and a small number of which do quite a lot. The challenge is not finding options. It is knowing which ones are worth the money and which ones are expensive moisturiser.

The more important reframe for women in this decade: the primary driver of visible skin change is not sun damage. It is estrogen. Collagen production, skin hydration, barrier function, and elasticity are all directly dependent on estrogen – and the decline that begins in the late 30s and accelerates through perimenopause produces changes that no topical product fully compensates for. This is not a pessimistic observation. It is a clarifying one, because it points toward the actual levers.

This chapter covers the biological drivers of skin change in this decade, what topicals have genuine cellular evidence, what the inside-out inputs are, where clinical treatments fit and in what order, and the prevention-versus-correction distinction that shapes the whole conversation.

Where Skin Change Tends to Show Up First

In this decade, skin changes often appear across multiple dimensions simultaneously – and many women notice them before they expect to.

Loss of Density & Bounce

Skin feels and looks thinner, less firm, less resilient.

Increased Dryness

Barrier function declines with estrogen, regardless of previous skin type.

Hair Thinning or Texture Changes

Estrogen and testosterone both affect hair follicle behaviour.

Slower Healing

Longer recovery from sun exposure, breakouts, or skin trauma.

Changes in Texture

Finer lines at rest, not just in expression, reflecting collagen loss.

Persistent Hyperpigmentation

Slower to resolve and more persistent than before.

What Is Actually Driving Skin Change — And It Is Not Mainly Sun

Sun damage accumulates over a lifetime and matters – SPF is not negotiable. But for women in their late 30s and 40s, the more significant and often faster driver of skin change is estrogen decline. Estrogen receptors are distributed throughout skin tissue. Estrogen stimulates collagen synthesis, maintains hydration through hyaluronic acid production, supports the skin barrier, and regulates the repair processes that keep skin looking resilient and even.

Research suggests that women lose roughly **30% of skin collagen in the first five years** following the onset of perimenopause – a faster rate of decline than the gradual sun-related loss that has been accumulating for decades.

This is why many women describe their skin changing noticeably in a relatively short window, even when their sun habits and skincare routines have not changed.

The Practical Implication

If you address only topicals and sun protection while leaving the hormonal driver unaddressed, you are managing a symptom rather than the cause. Women who address estrogen – through HRT where appropriate – often notice meaningful improvements in skin density and hydration alongside the other effects. This is not the primary reason to consider HRT, but it is a real and documented benefit.

On Sun Damage & Cumulative UV Exposure

Sun protection remains important throughout this decade and beyond. UV exposure degrades collagen, drives hyperpigmentation, and accelerates the surface-level changes that make skin look older. The point here is not that sun damage is irrelevant – it is that in this specific decade, hormonal change is often the more significant and faster driver, and it tends to be under-addressed relative to UV.

Most of the skincare industry is built around the sun-damage story because it sells products. The estrogen story points toward a different set of levers – some topical, some systemic, some clinical – that the category tends not to market.

The Topical Hierarchy — What Has Genuine Evidence

The vast majority of skincare products do not act at a level that meaningfully changes skin structure. They may hydrate, soothe, or protect – and some of those things have value – but they do not stimulate collagen production, reverse cell turnover decline, or repair the barrier changes that estrogen loss drives. A small number of compounds do. Those are the ones worth spending money on.

1

Retinoids

The most evidence-backed topical class in existence for skin aging. They stimulate cell turnover, increase collagen production, reduce fine lines, and address hyperpigmentation.

Hierarchy: Retinol → Retinaldehyde → Tretinoin (prescription-strength, most evidence, fastest results).

2

Vitamin C (L-Ascorbic Acid 10–20%)

A genuine second-tier active. A required co-factor for collagen synthesis – not just antioxidant protection, but structural. Look for opaque or airtight packaging with a low pH.

3

Niacinamide

Strengthens the skin barrier, reduces the appearance of pores, and has good anti-inflammatory evidence. Well-tolerated, combinable with most actives, and available at low cost.

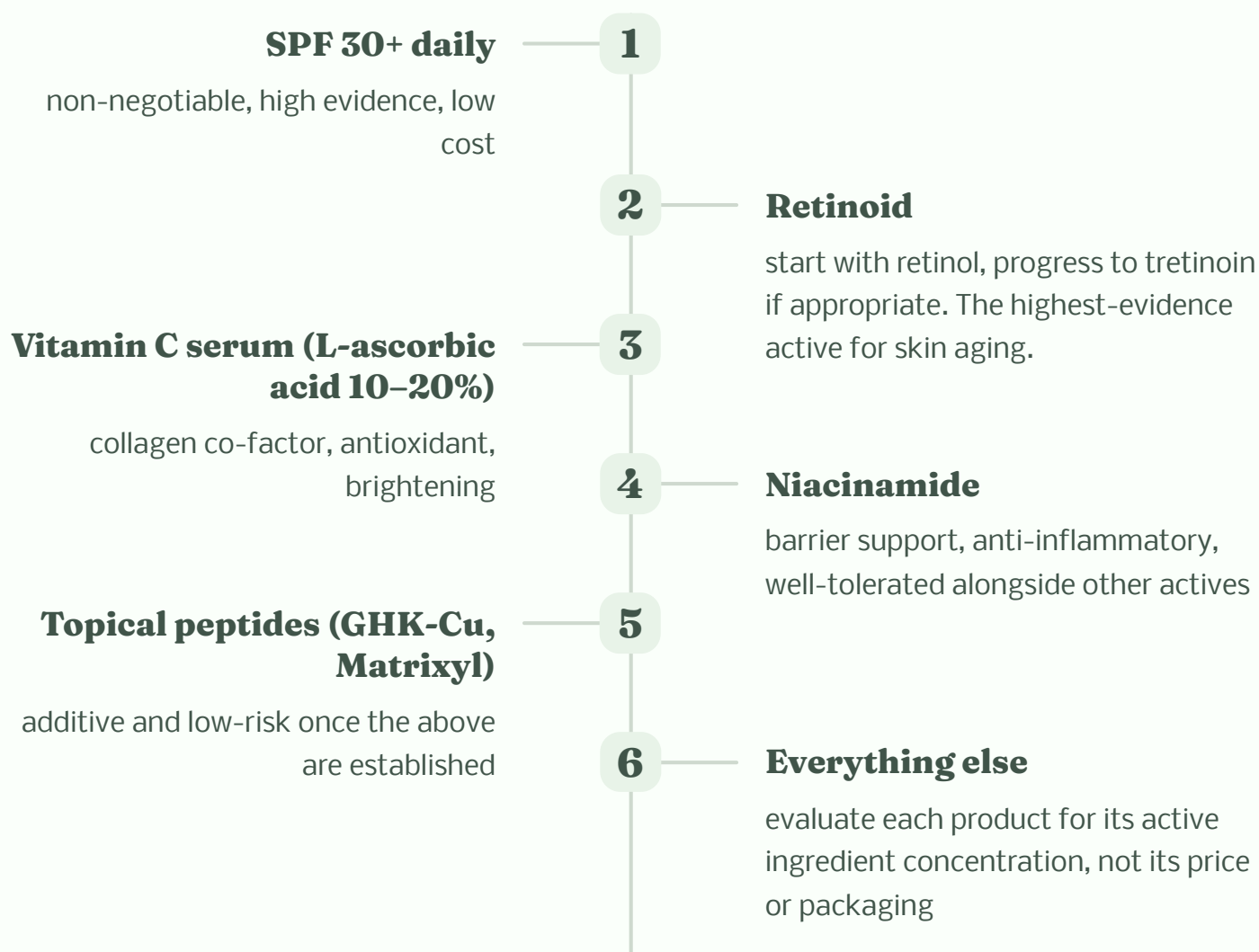
4

SPF Daily

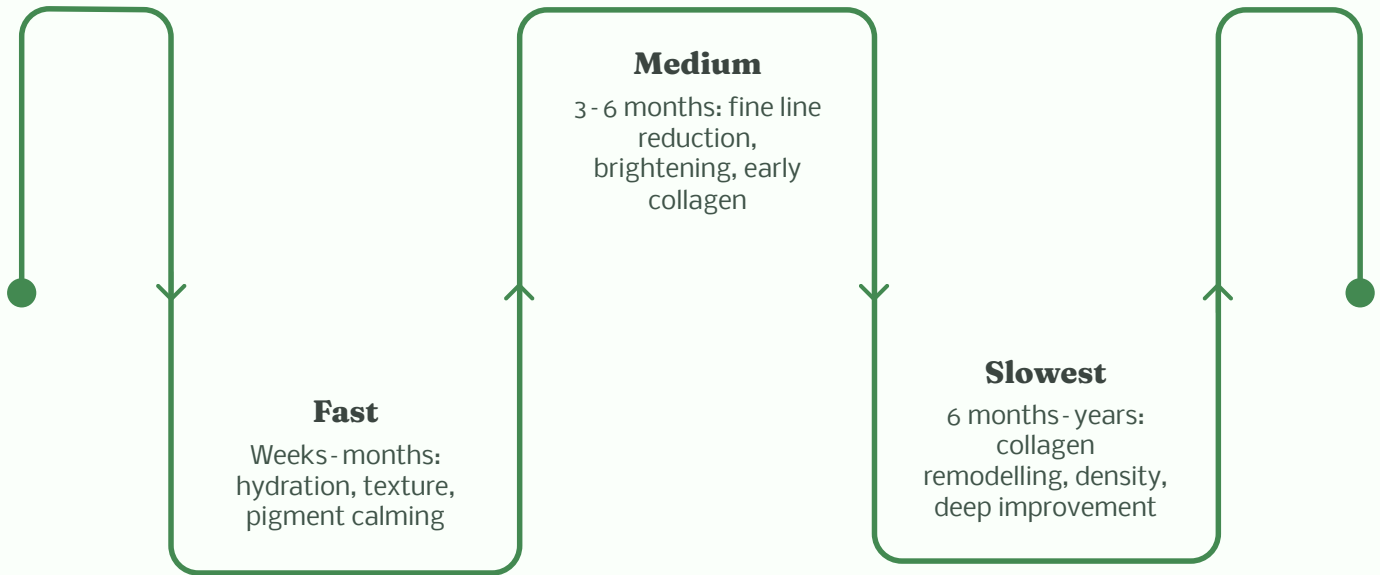
Use it daily, on any skin exposed to daylight. Mineral and chemical filters both work. The evidence for daily SPF in reducing visible aging accumulation is among the strongest in dermatology.

The Topical Priority Order — Where to Spend First

Once the evidence-backed actives are understood, the question becomes sequencing. Start here and build from this foundation.



What Changes Fastest vs. What Takes Longest



Understanding the timeline of results helps set realistic expectations and prevents abandoning effective routines too early.

Most Common Waste of Money — Skincare Edition

Expensive moisturisers without active ingredients

- hydration has value, but a £200 cream without retinoids or proven actives is not doing more than a good £20 one

Anti-aging products that list collagen as an ingredient

- topical collagen molecules are too large to penetrate skin; the claim is cosmetic, not functional

Serums with trendy ingredients at sub-therapeutic concentrations

- most "collagen-boosting" and "firming" products contain actives at doses too low to produce measurable effect

Multiple products doing the same job

- layering five different vitamin C products does not produce five times the effect

Starting with procedures before topicals are established

- RF microneedling on skin that is not being maintained topically produces diminishing returns

- ❑ What no topical can do: Replace the hormonal support that estrogen provides. Recreate deep structural volume or lift once significant bone and fat pad loss has occurred. Outwork consistent heavy UV exposure. Compensate for inconsistent use. Substitute for adequate protein and sleep – the raw materials for skin repair come from inside, not from what is applied externally.

What Works From the Inside Out

Skin is built from the inside. The structural inputs that collagen synthesis requires – protein, vitamin C, specific amino acids – come from diet and supplementation, not from what is applied topically. This layer is cheaper and more foundational than most women prioritise, particularly relative to the amount spent on external products.

Collagen Peptide Supplementation

Hydrolysed collagen peptides at **2.5-10g daily** have shown improvements in skin elasticity, hydration, and the appearance of fine lines in multiple randomised controlled trials. The mechanism is not that you are adding collagen directly – hydrolysed peptides are absorbed as amino acids and signal fibroblasts to increase collagen production. The effect is real, modest, and additive to what topicals and nutrition provide.

Protein Adequacy

Collagen is a protein, and collagen synthesis requires adequate protein intake. Women who are under-eating protein – common in this demographic – are limiting collagen production at the most fundamental level. Addressing the dietary baseline costs nothing and produces benefits across multiple systems simultaneously.

Vitamin C is worth mentioning twice. As a topical it is a collagen co-factor applied externally. As a dietary or supplemental input it is a required co-factor for collagen synthesis systemically. Both matter. Most women in this demographic are not deficient, but consistent adequate intake – from diet, or from a modest supplement – supports the whole picture.

Inside-Out Inputs — In Order of Evidence

01

Protein adequacy – 1.6- 2.2g/kg daily. The structural prerequisite for collagen synthesis. Address this before adding supplements.

02

Hydrolysed collagen peptides – 2.5-10g daily. Multiple RCTs showing improvements in skin elasticity and hydration.

03

Vitamin C – Consistent dietary intake or modest supplementation – required co-factor for collagen synthesis.

04

Omega-3s (EPA/DHA) – Anti-inflammatory effects support barrier function and skin quality. Evidence modest but consistent.

05

Hydration – Adequate water intake supports skin hydration from within – basic but frequently overlooked relative to expensive topicals.

Peptides — From Topical to Injectable

Peptides are short chains of amino acids that signal specific cellular responses. In skin, the most relevant signals are fibroblast activation – the cells responsible for collagen and elastin production – and tissue repair. The evidence varies considerably across the peptide category, from reasonably well-studied topicals to frontier injectables with limited human data.



TOPICAL – EVIDENCE-BASED

GHK-Cu (Copper Peptide)

The most studied topical peptide for skin. It activates fibroblasts, supports wound healing, and has evidence for hair follicle stimulation. Available in topical serums and a reasonable addition once the retinoid/vitamin C/SPF foundation is established.



TOPICAL – EVIDENCE-BASED

Matrixyl (Palmitoyl Tripeptide-1 & Tetrapeptide-7)

Has evidence for collagen synthesis stimulation and is widely available in over-the-counter products. Meaningful evidence, no provider required, additive rather than transformative.



INJECTABLE – FRONTIER

BPC-157 & Epithalon

BPC-157 has extensive animal research on tissue repair but limited human trial data. Epithalon has been studied primarily in older Russian research and is frontier by any standard. Require provider involvement; regulatory landscape for compounded injectables is still developing.



FRONTIER – WATCH THIS SPACE

Exosomes

The most discussed frontier treatment in aesthetic medicine currently. Derived from stem cells, they carry growth factors and signalling molecules that may support tissue regeneration. Early research is promising. Long-term data is sparse. Cost is high. A space to watch and approach carefully, not a proven first-line intervention.

- ❑ **On exosome regulation:** The regulatory status of exosome products varies by country and is actively evolving. In the US, injectable exosome preparations have been subject to FDA scrutiny. Quality, sourcing, and provider expertise matter significantly more than in established treatment categories. Ask directly about the product source and regulatory status before proceeding.

Clinical Treatments — Ranked by Evidence

The clinical landscape for skin has expanded considerably in the last decade. The most important frame for understanding it: the goal of starting in the 35 - 45 window is not correction – it is **maintenance and prevention**. Starting collagen-support treatments before significant loss has occurred produces meaningfully better outcomes than attempting to recover what has already gone.

Treatment	Evidence	What It Does	Tier	Best For
RF Microneedling (Morpheus8, Potenza)	Good – multiple RCTs	Heat + micro-injury triggers collagen remodelling at depth. One of the most evidence-backed treatments available.	[O]	Skin laxity, texture, collagen maintenance
Sculptra (poly-L-lactic acid)	Good – long track record	Biostimulator: stimulates collagen over months rather than replacing volume. Results build gradually.	[O]	Volume loss, skin quality improvement over time
Botox / neurotoxins	Excellent for expression lines	Relaxes muscle to prevent deepening of dynamic lines. Works best as prevention, not correction.	[O]	Forehead, crow's feet, frown lines
Hyaluronic acid filler	Good – widely studied	Adds volume and hydration. Risk of overuse is real – less is almost always more.	[O]	Targeted volume loss; use conservatively

Clinical Treatments — Ranked by Evidence (cont.)

Treatment	Evidence	What It Does	Tier	Best For
Laser resurfacing (CO ₂ , Fraxel)	Good for texture + pigmentation	Surface remodelling and pigmentation. Downtime required. Produces real results when used appropriately.	[O]	Texture, hyperpigmentation, fine lines
PRP (platelet-rich plasma)	Mixed – variable outcomes	Autologous growth factors from your own blood. Evidence is inconsistent; results vary with technique.	[O]/[FR]	Hair loss, post-procedure recovery
Exosome therapy	Early – promising, limited	Growth factor signalling for tissue repair and regeneration. Regulatory status varies.	[FR]	Post-procedure recovery; regeneration

How to Evaluate a Medspa or Aesthetics Provider

Knowing what to look for – and what to avoid – in a provider consultation is as important as knowing which treatments work.

● Green Flags

1 Recommends starting with skin quality (topicals, possibly HRT) before layering procedures. Does not open with a filler treatment plan.

2 Talks about biostimulators and prevention in the context of your age and skin state, not just correction of existing concerns.

3 Conservative with filler. A good practitioner will use less than you might expect and explain why.

● Red Flags

1 Opens the consultation with an extensive filler plan for a woman in her 40s with mild-to-moderate changes.

2 Cannot explain the mechanism of action of the treatments they recommend, or cannot distinguish between what has strong evidence and what is emerging.

3 Upsells aggressively or presents a package of multiple procedures without a clear rationale for the sequence.

What Women Often Do Too Early — Skin Edition

Starting with injectables before topicals are established — procedures on poorly maintained skin produce diminishing returns

Significant filler before bone structure and volume loss have actually occurred — adds bulk where structure is not yet the problem

Expensive skincare without confirmed active ingredients — packaging and price are not reliable proxies for efficacy

Chasing frontier treatments (exosomes, growth factor serums) before retinoid and SPF are consistent habits

Waiting until correction is needed rather than starting prevention in the 38–45 window when the returns are highest

The Hierarchy — And Why the Window Is Now

The hierarchy in this chapter is worth repeating clearly:

1

Go Deeper

Layer clinical treatments (RF microneedling, biostimulators) on top of a maintained base

2

Address the Hormonal Driver

Consider HRT if appropriate – works systemically at the source

3

Inside-Out Foundation

Protein adequacy + collagen peptides – structural inputs from the inside out

4

Best First Money Spent

Daily SPF + a retinoid you can tolerate + a basic moisturiser with barrier support

Each step produces meaningfully better outcomes when the steps before it are already in place.

The women who look most like themselves at 55 are almost universally the ones who treated skin maintenance as a sustained practice in their 40s — not a series of corrective procedures later. The window for the easiest version of this is now.

Go Deeper

This chapter connects to several others in the guide. Follow these threads to build the full picture.

