**Supplemental file 1**

|  |  |
| --- | --- |
| Conditions treated | |
| Indication | **Number (and percentage) of clinics** |
| Orthopaedic/  musculoskeletal | 15 (60%) |
| Alopecia | 5 (20%) |
| Dermatological  (cosmetic) | 3 (12%) |
| Erectile dysfunction | 1 (4%) |
| Multiple sclerosis | 1 (4%) |
| TOTAL  (note that some clinics offered treatments for multiple conditions) | 25 |

**Supplemental file 2**

|  |  |
| --- | --- |
| Source of stem cells | |
| Tissue type | **Number (and percentage)** |
| Adipose | 11 (44%) |
| Bone marrow | 10 (40%) |
| Blood | 2 (8%) |
| Not specified | 2 (8%) |
| TOTAL  (note that some clinics used more than one source) | 25 |

**Supplemental file 3** - Stem cell clinics – general qualitative data.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Clinic  (& website) | Conditions | Type and source of stem cells | Administration technique | Cell number | Costs |
| Algocells  https://www.algocells.com/ | Rotator cuff tears, arthritis of the shoulder joint, thoracic outlet syndrome, labral tears or degeneration, rotator cuff tendonitis and tendinosis, AC joint separation, recurrent shoulder dislocations, and other orthopaedic conditions of hand, wrist, hip, knee, foot, ankle and spine | Mesenchymal stem cells (from bone marrow) | Injection into affected site, not further specified | No info | £7,000+ |
| Belvedere Clinic  https://belvedereclinic.co.uk/stem-cell-hair-restoration/ | "Early" hair loss, not further specified | Mesenchymal stem cells  (adipose-derived) | Injection, not further specified | No info | No info |
| HCA Healthcare at London Bridge Hospital  https://www.hcahealthcare.co.uk/our-services/treatments/stem-cell-treatment-for-ms | Multiple sclerosis | Haematopoietic stem cells  (from bone marrow) | Transplantation into bone marrow | No info | No info |
| HR Orthopaedics  https://www.hrorthopaedics.co.uk/hips/stem-cell-therapy/ | For hip & knee problems, not further specified | Mesenchymal stem cells (from bone marrow) | Injection with arthroscopy | No info | No info |
| International Andrology  https://london-andrology.co.uk/news/stem-cell-treatment-for-erectile-dysfunction/ | Erectile dysfunction | Mesenchymal stem cells (from blood, bone marrow and adipose-derived) | Not specified | No info | No info |
| London Bridge Plastic Surgery & Aesthetic Clinic  https://[www.lbps.co.uk/stem-cell-therapy/](http://www.lbps.co.uk/stem-cell-therapy/) | Anti-ageing skin care, wrinkle reducing filler, body shaping, alopecia areata, joint osteoarthritis | Mesenchymal stem cells (adipose-derived) | Injection subcutaneous or into affected site | No info | No info |
| London Spine Unit  https://www.londonspine.com/treatments/spinal-stem-cell-therapy/ | Variety of orthopaedic/musculoskeletal conditions | Not specified | Not specified | No info | No info |
| London Stem Cell Centre  https://londonstemcellcentre.com/ | Hip and knee conditions, not further specified | Mesenchymal stem cells (from blood/bone marrow) | Injection with arthroscopy | No info | No info |
| Manchester Hip Clinic, Spire Hospital  http://manchesterhipclinic.com/stem-cell-therapy/ | Variety of orthopaedic/musculoskeletal conditions | Mesenchymal stem cells (from bone marrow) | Injection with arthroscopy | No info | No info |
| Manchester Hip Surgeons (Manchester Knee Surgeons)  https://www.manchesterhipsurgeons.co.uk/stem-cell-like-therapy-hip-surgery-manchester-cheshire.html https://www.manchesterkneesurgeons.co.uk/stem-cell-like-therapy-knee-surgery-manchester-cheshire.html | Hip and knee conditions (incl. arthritis), not further specified | Adipose derived mesenchymal stem cells, mesenchymal stem cells | Injection, not further specified | No info | No info |
| Medica Stem Cells Pain Management Clinic  https://medicastemcells.com/ | Joint injuries, sports injury, managing symptoms of arthritis, osteoarthritis or any other degenerative condition of the joints, cosmetic applications | Mesenchymal stem cells (from bone marrow and adipose-derived) | Injection into affected site, not further specified | 3500 | No info |
| Olivier Amar (plastic surgeon)  https://olivieramar.co.uk/news/stem-cell-treatment-for-hair-loss-discover-the- revolutionary-one-off-treatment-for- thinning-hair-and-alopecia/ | Hair loss, not further specified | Mesenchymal stem cells (adipose-derived) | Not specified | No info | No info |
| Pall Mall Medical  https://www.pallmallmedical.co.uk/consultants-and-specialists/our-consultants-and-specialists/regenerative-medicine | Variety of orthopaedic/musculoskeletal conditions | Mesenchymal stem cells (from bone marrow) | Injection with or without arthroscopy | No info | £6195- 7795 |
| Rejuvence Clinic  https://www.rejuvenceclinic.co.uk/ | Wrinkles, scars, joint issues (not further specified), hair loss (not further specified) | Mesenchymal stem cells  (adipose derived) | Injection, not further specified | No info | £995- 1250 |
| Spire Cambridge Lea Hospital  https://www.spirehealthcare.com/spire-cambridge-lea-hospital/treatments/a- z/stem-cell-therapy/ | Damaged joint tissues and structures, possibly arthritis and cartilage regeneration in the knees and hip | Mesenchymal stem cells (source not specified) | Injection into affected site with arthroscopy | No info | No info |
| The Harley Street Hospital  https://theharleystreethospital.co.uk/regenerative-and-stem-cell-service/ | Osteoarthritis, joint and spine pain from worn discs and ligaments | Mesenchymal stem cells (adipose-derived) | Injection, not further specified | No info | No info |
| The Manchester Stem Cell Centre  https://www.manchesterstemcellcentre.co.uk/regenerate/stem-cell-therapy/ | Arthritis (not further specified) | Mesenchymal stem cells (from blood, bone marrow  and adipose-derived) | Injection with arthroscopy | No info | No info |
| The Regenerative Clinic  https://www.theregenerativeclinic.co.uk/ | Osteoarthritis of the joints, rotator cuff tears, cartilage tears in the knee, lower back pain, tennis elbow, plantar fasciitis, tendon tears | Mesenchymal stem cells (adipose-derived): "Lipogems" | Injection into affected site, not further specified | 5000 | No info |
| Westminster Clinic  https://www.westminsterclinic.co.uk/hair-transplant-studies/stemvita/ | Hair loss (alopecia areata, frontal fibrosing alopecia), Lyme disease, joint arthritis | Mesenchymal stem cells (adipose-derived) | Not specified | No info | No info |

**Supplemental file 4** - Other direct-to-consumer portrayal

|  |  |  |  |
| --- | --- | --- | --- |
| Name of clinic | Was treatment effectiveness claimed? | Other marketing, including exaggerated language used and claims not covered by other variables | Links to where data was gathered from, if not from website in table 1 (applies to table 1-4) |
| Algocells | No | Patients "(..) prefer our stem cell treatments and platelet-rich plasma therapy over a risky operation", testimonials advertised, video linked claiming "Ferrari team driver Martin Fuentes chooses Regenexx over meniscus surgery", "Key benefit: Avoiding surgery", “current problem with regenerative orthopaedic studies is that the power of evidence is mostly not the strongest" |  |
| Belvedere Clinic | No | "This is a brand new procedure that delivers clinically proven results, time after time." "This is the latest and most advanced hair restoration treatment in the  world today for early stage hair loss." | n/a |
| HCA Healthcare at London Bridge Hospital | No | Clinic has "accumulated enough convincing clinical data to suggest that HSCT may have a sustained benefit in halting the progression of MS and in some  cases reversing disability." | n/a |
| HR Orthopaedics | No, but "early results of this procedure are very encouraging in this group of patients with early degenerative change" | "Unfortunately, biological therapies are not an established treatment when advanced arthritis is present. Once there is full thickness loss of cartilage in the joint, the results of biological therapies are not predictable and it may be better to consider more established treatments such as hip or knee joint replacement surgery." | n/a |
| International Andrology | No, "stem cell therapy is still experimental" | n/a | n/a |
| London Bridge Plastic Surgery & Aesthetic Clinic | Expect "improvement of skin texture" and "thickness of  subcutaneous collagen improves" | Testimonials and Trustpilot score shown on website | n/a |
| London Spine Unit | No | n/a | n/a |
| London Stem Cell Centre | No, "relatively new procedure" | n/a | n/a |
| Manchester Hip Clinic, Spire  Hospital | No | "Stem Cell therapy is a relatively new procedure, however, extensive work has been carried out in both animal and human clinical studies" | n/a |
| Manchester Hip Surgeons (Manchester Knee Surgeons) | No | Patient testimonials and links to doctor rating websites offered under "clinical outcomes" tab | n/a |
| Medica Stem Cells Pain Management Clinic | No | Testimonials advertised | https://medicastemcells.com/blog/ https://medicastemcells.com/testimonials/ |
| Olivier Amar (plastic surgeon) | Claimed that "All patients saw an average of 23 per cent additional hair growth with up to 53 per cent increase in the number of hairs within six months." in clinical trial, could not be verified | "Kerastem has successfully completed the STYLE Trial, a randomized double blind, placebo-controlled Phase 2 clinical trial for the US FDA and the Phase 3 trial is in design. The Kerastem treatment is also CE approved in Europe and is approved by the Korean and Chinese regulators.", "Reverse hair loss" | n/a |
| Pall Mall Medical | "Patients usually demonstrate a rapid and progressive improvement in pain and function by 3-  6 months" | "Don’t wait to feel great!" "Our private hospital is one of few places in the UK offering regenerative therapy with stem cells - a new and rapidly expanding branch of medicine made famous by celebrity users such as actors John Cleese, Charlie Sheen and sports stars including Cristiano Ronaldo, Luis Suarez, Rafael Nadal and  martial arts commentator Joe Rogan." | n/a |
| Rejuvence Clinic | No | n/a | n/a |
| Spire Cambridge Lea Hospital | No | n/a | n/a |
| The Harley Street Hospital | No | n/a | n/a |
| The Manchester Stem Cell Centre | No | "Our evidence based biological treatments will help potentially treat your condition and avoid major surgery" "We successfully manage and treat (…)" Patient testimonials offered on website. | n/a |
| The Regenerative Clinic | Effectiveness not guaranteed | Lipogems are FDA approved | https://www.theregenerativeclinic.co.uk/evidence/one-year-knee-outcome-vas-and-oks-results-of-patients-treated-with-lipogem-treatment-at-the-regenerative- clinic-uk/ https://www.theregenerativeclinic.co.uk/frequently-asked-questions/ https://www.theregenerativeclinic.co.uk/clinical-evidence/ |
| Westminster Clinic | No | "StemVita is a professional, reputable stem cell treatment protocol, backed by science, dedicated to pursuing the highest standards of stem cell research" "Where StemVita is different, is that their protocols ensure a documented quantity of living stem cells. Other clinics who are claiming to offer stem cell treatments, use what is known as a “blind protocol.”" | n/a |

**Supplemental file 5** - Transparency data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of clinic | Was outcome data provided? | Number of patients treated | Were clinical trials linked? | Was curative potential of the procedure claimed? |
| Algocells | Yes, based on self- reported data | Not provided | No, but claim that confidence in regenerative orthopaedic is "based on sound knowledge, research, training and experience" | Not mentioned |
| Belvedere Clinic | No | Not provided | No | Not mentioned |
| HCA Healthcare at London Bridge Hospital | No | Not provided | No | Possibly: 70% chance of stability, if successful patients may become MS  drug free after 3 months |
| HR Orthopaedics | No | Not provided | No | No, "to potentially delay the need for joint replacement surgery" |
| International Andrology | No | Not provided | No | If successful, "permanent symptomatic ED treatment" |
| London Bridge Plastic Surgery & Aesthetic Clinic | No | Not provided | No | Not mentioned, but possible results are presented under "What to expect?" |
| London Spine Unit | No | Not provided | No, clinical trials are mentioned but not named or linked | No, but described as regenerative medicine |
| London Stem Cell Centre | No | Not provided | No | Not mentioned |
| Manchester Hip Clinic, Spire  Hospital | No | Not provided | No | Not mentioned |
| Manchester Hip Surgeons (Manchester Knee Surgeons) | No | Not provided | No, "There is a general lack of data about the long-term effects of stem cell-like therapy as it is a newer procedure and represents a newer form of treatment." | Not mentioned |
| Medica Stem Cells Pain Management Clinic | No | 3500 | Yes, but not specific to the conditions procedures are offered for | Not guaranteed, multiple treatments may be needed |
| Olivier Amar (plastic surgeon) | No | Not provided | Yes, but only a phase II clinical trial was finished | In patients without other medical conditions results "expected" to be permanent |
| Pall Mall Medical | No | Not provided | No | Not mentioned |
| Rejuvence Clinic | No | Not provided | No | Not mentioned |
| Spire Cambridge Lea Hospital | No | Not provided | No | Not mentioned |
| The Harley Street Hospital | No | Not provided | No | Not mentioned |
| The Manchester Stem Cell Centre | No | Not provided | No, results of some clinical studies mentioned but not named or linked | Not mentioned |
| The Regenerative Clinic | Success rate >80%, based on self reported data | 5000 | Yes, but insufficient to support their treatments | Pain reduction 3- and 6-months post-injection but not maintained at 12-month mark. No claim it cures from pain |
| Westminster Clinic | No | Not provided | No, but claim that "It is an evidence-based treatment that are proven to benefit patients, using both peer reviewed studies and in house protocols to ensure a consistent quality product." | Not mentioned |

**Supplemental file 6** - Safety data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of Clinic(s) and Location(s) | Risks, including claim that procedure has no risk and side effects | Were contraindications or eligibility requirements mentioned? | Was it recommended that the treatment is discussed with a GP or was a referral required? | Was access to patient records required? |
| Algocells | Not mentioned | No | Not mentioned | Yes, MRI required |
| Belvedere Clinic | Not mentioned | No | Not mentioned | Not mentioned |
| HCA Healthcare at London Bridge Hospital | Not mentioned | Yes, patients must be aged 18-65 and disease modifying drugs must have not worked after 6 months | Not mentioned, but referral by consultant neurologist or GP required | Not mentioned |
| HR Orthopaedics | Not mentioned | No | Not mentioned | Not mentioned |
| International Andrology | Not mentioned | No | Not mentioned | Not mentioned |
| London Bridge Plastic Surgery & Aesthetic Clinic | Not mentioned | No | Not mentioned | Not mentioned |
| London Spine Unit | Not mentioned | No | Not mentioned | Not mentioned |
| London Stem Cell Centre | Risks "same as those for routine hip or knee arthroscopy operations" and risk of infection | No | Referral from GP or practitioner required | Not mentioned |
| Manchester Hip Clinic, Spire  Hospital | Not mentioned | No | Not mentioned | Not mentioned |
| Manchester Hip Surgeons (Manchester Knee Surgeons) | "Generally safe procedure with minimal complications", risk of infection, immune reaction and general anaesthesia | No | Not mentioned | Not mentioned |
| Medica Stem Cells Pain Management Clinic | Risk of infection and mild pain but also claim that "Safe procedures with No risk of rejection and No communicable disease transmission" | No | Not mentioned | Not mentioned |
| Olivier Amar (plastic surgeon) | Not mentioned | No | Not mentioned | Not mentioned |
| Pall Mall Medical | Risk of infection and risk same for routine hip or knee arthroscopy | No | Not mentioned | Not mentioned |
| Rejuvence Clinic | Not mentioned | No | Not mentioned | Not mentioned |
| Spire Cambridge Lea Hospital | Risks are "same as those for routine hip or knee arthroscopy operations", "theoretical risk for infection" | No | Not mentioned | Not mentioned |
| The Harley Street Hospital | Not mentioned | No | Not mentioned | Not mentioned |
| The Manchester Stem Cell Centre | Risks "same as those for routine hip or knee arthroscopy operations" and risk of infection. No risk of rejection due to use of own cells | No | Not mentioned | Not mentioned |
| The Regenerative Clinic | No serious side effects reported | Steroid injections in last 3 months | Not mentioned, no referral required | Not mentioned |
| Westminster Clinic | Not mentioned | No | Not mentioned | Not mentioned |