Wellbeing International Foundation

Bank Once, Treat Many

The Repeatability and Biological Banking Advantage

Paper 08 in the CFT Advantage Series

WHITE PAPER

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Abstract

Most regenerative biologics operate on a transactional model: a patient presents for treatment, undergoes a single collection (blood draw, bone marrow aspirate, or fat harvest), receives a single preparation, and the encounter ends. Cell-Free Therapy (CFT) is structured differently. A single peripheral blood draw produces material for multiple infusions delivered over months or years from one prepared and characterised batch. The standard package is three infusions, three months apart, followed by further infusions as required. The argument of this paper is not primarily about cryopreservation, which is a settled clinical-practice technology with decades of precedent. It is about what becomes possible when one collection produces a stored, characterised supply that can be used for repeat infusions: comparability across infusions, a sustained patient-clinician relationship rather than a one-off transaction, a workflow advantage over approaches that require fresh material every time, and a biological snapshot of the patient at draw date. The paper sets out the workflow, contrasts it with platelet-rich plasma, bone-marrow aspirate concentrate, and adipose-derived approaches, and closes with a practical framework for physicians considering the model.

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1. Introduction: One Draw, Many Treatments

In most regenerative biologics, the unit of work is the single procedure. A patient sits for a venous draw, a bone-marrow aspirate, or a small fat harvest; the material is processed, sometimes activated, and injected; and the encounter ends. If the same patient needs more, the cycle starts

again. Each repeat means a new collection, a new preparation, a new operator, and a new product, with all the variability that implies.

Cell-Free Therapy is built around a different unit of work. A single peripheral blood draw, of approximately 150 mL, supplies material for multiple infusions delivered over months or years. The conditioning step, characterisation, and storage are performed once, in one GMP-controlled environment, and the resulting batch sits ready for the patient. Subsequent infusions are drawn from the same prepared material rather than manufactured fresh each time.

This paper examines what that change of unit makes possible. The argument is not, at its core, about cryopreservation: cryopreservation is a settled clinical-practice technology with decades of precedent in cord-blood banks, gamete banking, and embryonic and pluripotent stem-cell stocks (Pegg, 2002; Broxmeyer et al., 2011; Polge, Smith, and Parkes, 1949). The argument is about what becomes possible once one collection produces a stored, characterised supply that can be used for repeat infusions: comparability across infusions, an ongoing patient-clinician relationship rather than a one-off transaction, a workflow advantage over approaches that require fresh material every time, and a biological snapshot of the patient at the moment of draw.

The paper sets out the workflow, then takes those four advantages in turn, contrasts the model against three repeat-collection alternatives, and closes with a framework physicians can use when deciding whether the banking model is a fit for a given patient.

2. The Single-Draw Multi-Dose Workflow

The collection step is a routine venous draw of approximately 150 mL, substantially below the volume of a standard whole-blood donation. It can be performed in a clinic by a phlebotomist or trained clinician, takes minutes, and requires only normal hydration. The blood is then transported under temperature control to a GMP-controlled facility, where the cellular fraction is isolated and conditioned. This is not long-term cell expansion; the cells are stimulated under defined conditioning conditions to produce their secretory output, which is then recovered as the cell-free preparation.

From a single conditioning run, the laboratory produces a batch of characterised material. Some of that material is used for the patient's near-term infusions; the remainder is cryopreserved for later use. A patient who returns three months later for the second infusion of the standard package, or later for a further infusion as required, receives a thawed dose drawn from the same batch as their first.

The cryopreservation step itself is unremarkable in clinical terms. Cryopreservation of cellular and acellular biological material is a mature technology, originally established for spermatozoa and red cells in the mid-twentieth century (Polge, Smith, and Parkes, 1949), refined for embryos in the 1970s (Whittingham, Leibo, and Mazur, 1972, as a historical landmark), and now operating at scale in cord-blood banks worldwide. Long-term viability of cryopreserved cellular material has been documented in haematopoietic stem and progenitor cells stored for more than two decades

(Broxmeyer et al., 2011), and the underlying principles of cryoprotectant use, controlled-rate cooling, and long-term cryogenic storage are well established (Pegg, 2002). For the purposes of this paper, cryopreservation is enabling technology rather than the argument.

The clinically distinctive choice in the workflow is upstream of cryopreservation. It is the decision to perform the collection once, characterise once, and store as a single batch, rather than to repeat the collection for every infusion.

3. Repeatability and Comparability Across Infusions

When every infusion is manufactured fresh, every infusion is a new manufacturing event. Donor variation between draws, processing variation between batches, operator variation across collection days, and assay variation across release events all enter the system. For a patient receiving three or four interventions over a year, this means three or four nominally identical preparations that may, in practice, differ meaningfully in composition. Bioactive markers (growth-factor concentrations, cytokine profiles, EV characteristics) can shift from draw to draw.

When the entire treatment course is drawn from a single collection, one major source of manufacturing variation is reduced by design. The first infusion and the fourth infusion come from the same starting material, processed in the same conditioning run, characterised in one release event, and stored under one set of conditions. Differences in clinical response between infusions can then be attributed more confidently to patient or indication factors rather than to product variability.

This consistency has practical knock-on effects. It simplifies outcome attribution: if a patient improves, the clinician can reasonably ascribe the response to the bioactivity of the prepared batch rather than to manufacturing differences between sessions. It supports adaptive dosing: a strong response to dose one is a meaningful signal because dose two will carry a more directly comparable biological profile. And it produces cleaner data for any outcome-tracking work, including registry contributions and clinic-internal audit, by removing one source of confounding (Phinney and Pittenger, 2017; Vizoso et al., 2017).

4. The Biological Snapshot at Draw Date

There is a second, related advantage to the single-collection model: the preparation reflects the patient's biology at the time of the draw. When the same batch is used over months or years, every infusion carries the secretory output of the cells the patient supplied at the start of treatment. The preparation continues to reflect the biological state of the starting material collected at the original draw date, rather than a newly collected sample taken months or years later.

Cellular biology changes with age. Growth-factor and cytokine output, extracellular-vesicle cargo, and the secretome composition of stromal-lineage cells all shift across the adult lifespan (Stolzing et al., 2008; Gnecchi et al., 2008). For patients undergoing long treatment courses, or for patients

banking material against future need, the preparation captures a profile drawn from biology at the moment of collection rather than at the moment of infusion. This is a modest framing, not a longevity claim: this paper does not argue that banking reverses ageing, restores youthful function, or extends healthspan. The longevity argument is taken up separately in Paper 10 of this series. What the snapshot framing supports here is consistency: a stable starting material for the duration of a planned treatment course, reflecting one moment in the patient's biology rather than a moving target.

5. Ongoing Patient Relationship Versus One-Off Transaction

Most regenerative biologics fit naturally into a transactional clinical model. A patient presents with a complaint, a single procedure is scheduled and billed, and the encounter ends with a follow-up note. Repeat treatments, when needed, restart the cycle from the beginning.

The single-collection model fits a different shape of clinical engagement. The initial draw and characterisation establish a stored biological asset that the clinician and patient can return to over time. The standard package itself spans roughly six months across the initial three infusions; further infusions, as required, can extend the engagement well beyond that. Each infusion is a clinical contact point: an opportunity to reassess symptoms, adjust the broader care plan, and track response longitudinally.

From a clinic-operations perspective, this changes the centre of gravity of regenerative-medicine practice. Instead of a workflow built around single-event procedures, the practice supports a smaller number of patients in deeper, longer engagements. Material that is already collected and characterised lowers the friction for follow-up: there is no new venipuncture, no new preparation cycle, no new release-testing event. The patient can be brought back for an infusion when clinical reassessment indicates one, on a clinical timeline rather than a manufacturing timeline.

Cost is part of this picture, although this paper deliberately avoids specific dollar figures. In qualitative terms, repeat-collection approaches concentrate cost at every treatment session, because every session requires a new collection and a new manufacturing run. A single-collection, multi-dose model concentrates cost at the start of the course (collection, conditioning, characterisation, storage) and amortises that cost across the infusions that follow. The economic profile that results is closer to an investment-and-drawdown model than to a fee-per-event model. Specific pricing depends on jurisdiction, indication, and operator and is set outside the scope of this paper.

6. Comparison with Repeat-Collection Approaches

The clearest way to see the workflow advantage is by direct contrast. Three regenerative-medicine modalities that physicians routinely use as alternatives or comparators are platelet-rich plasma (PRP), bone-marrow aspirate concentrate (BMAC), and adipose-derived preparations. Each is treated below.

6a. Platelet-Rich Plasma

PRP is autologous, broadly available, and prepared at the point of care. Its premise is to concentrate the platelet-derived growth factors released on activation (Andia and Maffulli, 2013). For the workflow question this paper addresses, PRP carries one structural property: each treatment requires a new venipuncture and a new on-site preparation. A patient receiving three PRP sessions across six months undergoes three draws, three preparation cycles, and three independent products. Platelet concentration, leukocyte content, activation method, and the resulting growth-factor profile vary across sessions, both because of donor biology on the day and because of preparation-protocol differences across operators and devices (Andia and Maffulli, 2013; Filardo et al., 2015).

There is no PRP equivalent of cell banking. PRP is, by design, freshly prepared. That is appropriate to its use case but it removes the single-collection multi-dose option from the table.

6b. Bone-Marrow Aspirate Concentrate

BMAC is more invasive than PRP. A clinician aspirates 50-100 mL of bone marrow from the iliac crest under local or sedation anaesthesia (Hernigou et al., 2005). The procedure is uncomfortable, carries small risks of infection and post-procedure pain, requires trained personnel and appropriate equipment, and limits how often it can reasonably be repeated. Repeat aspirations within short timeframes are uncommon in routine practice, in part because of the morbidity of the procedure; specific spacing varies with indication, operator, and the patient's tolerance.

There is also no established multi-dose bank-and-thaw model for BMAC at the point of care. Where banking is performed, it is typically of isolated mesenchymal stromal cells in research or specialist contexts, not as part of a standard outpatient workflow. Repeat treatments mean repeat aspirations, with all the morbidity that implies.

6c. Adipose Tissue Harvesting

Adipose-derived preparations require a small surgical procedure: tumescent infiltration, micro-incisions, and lipoaspiration of subcutaneous fat. The intervention is less invasive than a bone-marrow aspirate but is still a surgical event with recovery time, infection risk, and operator-skill dependence. As with BMAC, repeat harvests are infrequent in standard practice, and the workflow is not built around a bank-and-thaw multi-dose model.

Across these three categories, the structural property is the same: every treatment is a fresh collection. CFT's single-draw multi-dose workflow is structurally different. It produces a stored biological asset that can be drawn on for a planned course of infusions and for further infusions as required.

7. Standard Protocol: Three Infusions, Three Months Apart, Then As Required

The standard CFT package, as described to patients and physician partners, has three components. First, the initial collection: a single 150 mL peripheral venous draw, performed in clinic and transported to a GMP-controlled facility for conditioning and characterisation. The output is a banked, characterised batch of material in cryogenic storage. Second, an initial infusion course: three infusions, delivered approximately three months apart, drawn from the banked batch. Third, ongoing access: further infusions as required, drawn from the same batch while material remains, on a clinical timeline determined by the patient's response and indication.

The three-month spacing in the standard package is a protocol-design choice rather than a claim about a specific underlying signalling timescale. It is intended to give the clinician a planned interval for reassessment between infusions: enough time to evaluate symptomatic response, to review any outcome measures the practice tracks, and to confirm that a further infusion is the appropriate next step before drawing it from the banked batch. Different indications and individual patients may move on different timelines, and the as-required component of the package is designed to accommodate that. The interval is not a hard biological boundary; it is a default cadence that supports clinical reassessment and longitudinal care.

The yield from a single collection (the number of clinically useful doses that can be prepared from one 150 mL draw) is determined by the patient's biology at the time of collection, the conditioning protocol, and the infusion specification. The point relevant to this paper is that the yield is sufficient, in standard practice, to support the initial three-infusion course plus one or more further infusions as required from a single draw.

The repeatability advantage described here is a workflow and comparability advantage; it should not be read as evidence of superior clinical efficacy in the absence of head-to-head trials.

What this paper does not claim

This paper does not claim that CFT, or any banked biological preparation, treats, prevents, cures, or mitigates any specific disease. It does not claim that cells stored at a younger age reverse ageing, restore youthful function, or extend healthspan; the longevity argument is taken up separately in Paper 10 of this series. The cryopreservation discussion in Section 2 is illustrative of established clinical-practice technology, not a proprietary CFT mechanism. Specific yields per draw, dose volumes, and pricing depend on indication, jurisdiction, and operator and are set outside the scope of this paper.

8. Implications for Physicians

For physicians considering whether the banking model is a fit for a given patient, a few practical considerations follow from the discussion above.

Match the model to the clinical timeline. Where the indication suggests a course of treatments rather than a single intervention (broad musculoskeletal recovery, a longer rehabilitation arc, or

any setting where comparable infusions over months are expected), the single-draw multi-dose workflow is structurally better matched than repeat-collection approaches. Where a single intervention is genuinely sufficient, the banking premise carries less of its value.

Frame the initial visit as a banking event, not a single treatment. Patients who arrive expecting a one-and-done procedure are sometimes surprised by the sequence. The first infusion is delivered in close proximity to the collection, but the value of the model only fully emerges over the second and third infusions and any further infusions that follow. Setting expectations accordingly at the outset improves engagement and reduces drop-off between infusions.

Use the consistency advantage in clinical reasoning. When response to a first infusion is encouraging, a more directly comparable biological profile is being delivered at the second; when it is muted, the signal is more reliably about patient or indication factors than about manufacturing variation. This kind of attribution is harder to make confidently when every session is a fresh manufacturing event.

Treat the banked material as a clinical asset of the patient. The batch is the patient's own biology, processed and stored on their behalf. Communications about its composition, characterisation, and remaining yield should reflect that. Decisions about further infusions should be made in clinical conversation with the patient rather than as routine transactional events.

9. Limitations and Open Questions

Several limitations merit explicit acknowledgement. The first is the limit on yield: a single 150 mL draw is sufficient for the standard three-infusion package and a number of as-required infusions, but it is not an unlimited supply. For patients on long, intensive treatment arcs, a second collection at a later date may be appropriate. That second collection is its own banking event; the resulting batch carries the biology of the new draw rather than the original.

The second is the absence of definitive head-to-head comparative trials between single-collection multi-dose CFT and repeat-collection PRP, BMAC, or adipose-derived approaches. Pre-clinical and observational data support the broader case for cell-derived secretome biology (Vizoso et al., 2017; Phinney and Pittenger, 2017), and the workflow argument here is structural rather than dependent on a comparative clinical trial. Until such trials exist, the comparative case rests on the differences in workflow, manufacturing variability, and patient burden described above rather than on settled comparative-efficacy data.

The third concerns characterisation drift over time. Long-term cryogenic storage is well established, but assays and characterisation expectations evolve. Material banked today may be released against one set of characterisation specifications and used several years later under tightened expectations. Internal release-record practices and ongoing characterisation work are designed to manage this; the broader field's standardisation efforts (Théry et al., 2018; Welsh et al., 2024) support consistency across laboratories.

The fourth is regulatory. Banked autologous biological material occupies a regulatory category that varies by jurisdiction. The specifics of long-term storage, retrieval, and re-administration are handled within applicable national and regional frameworks; physicians considering the model should ensure their own workflow aligns with the regulatory position in their jurisdiction.

10. Conclusion

Bank once, treat many is a structural change in the unit of work. Every regenerative biologic that requires fresh material at every session imports the variability of the collection event into the patient's treatment course. CFT's single-draw multi-dose model performs the collection once, the conditioning once, the characterisation once, and the storage once. Subsequent infusions are drawn from that prepared batch.

The advantages this delivers are not exotic. They are the ordinary advantages of doing something carefully once and using the result several times: comparability across infusions, reduced patient burden, lower session-to-session variability, a stable signal for outcome attribution, and a clinical engagement that fits a course of treatment rather than a one-off transaction. Cryopreservation makes the storage step possible, but it is the upstream choice (collect once, characterise once, plan a course) that carries the argument.

For physicians and patients, the practical question is whether the indication and the planned arc of care fit that shape. Where the answer is yes, the banking model offers a clinically and operationally distinct alternative to fresh-every-time approaches. Where the answer is no, the model carries less of its value, and a single-event biologic may serve the patient adequately. The decision is clinical, and the framework here is intended to make it easier to take.

11. References

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Disclaimer: Individual results vary. Cell-Free Therapy is not intended to diagnose, treat, cure, or prevent any disease. The information in this paper is provided for educational purposes and does not constitute medical advice. CFT supports the body's normal biological function through autologous, cell-free biological preparations.

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