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Decentralized Manufacturing and the Accessibility of Cell & Gene Therapies

Effective decentralization of cell and gene therapeutics will reduce time to treatment, increase viability and reduce overall costs

Cell and gene therapies hold tremendous promise in revolutionizing healthcare by offering potential cures for a wide range of diseases. However, broadscale adoption has been just out of reach, hampered by a number of development and operational challenges. ProPharma's decentralization solution seeks to develop a systematic approach to establishing less costly, fully functional and licensed (FACT) point of care facilities with the ability to deliver cell-based therapies locally.

the high-degree of complexity of cell and gene therapy manufacturing requires significant process control, demanding logistics (cold chain), subject knowledge and careful decision making, all of which has driven the current resource- and cost-intensive centralized model.

Even with proven safety and efficacy, providers must resolve:

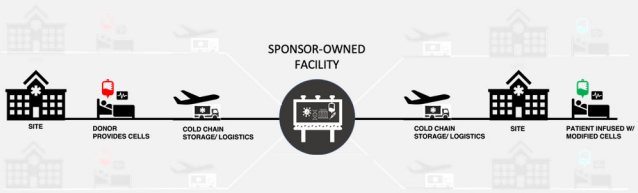
1. Managing the significant regulatory hurdles involved with cell and gene therapy treatments including treatment application, appropriate reporting, follow up and signal identification.
2. GxP requirements, product release specifications and assurance that the treatment supplied meets regulatory requirements to treat patients.
3. Raw material logistics, scalable manufacturing, and reimbursement management
4. Post treatment monitoring

Our solution

Transform patient access to cell and gene therapies with decentralized manufacturing.

From...

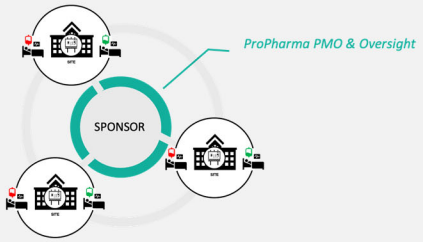
Centralized manufacturing facility, significant cold chain costs and protracted turn-around



➢ Hospital collects material, goes to centralized sponsor for treatment and then shipped back

To...

Decentralized site-based manufacturing, limited cold chain and faster turn-around



➢ Sponsor reviews patient need and authorizes treatment at site

Context

Persons diagnosed with life threatening diseases which are now treatable with cell and gene therapies often need to wait for a significant amount of time for treatment due to protracted turn-around time. From our perspective, to drive broader access and uptake, we need to solve for the following:

1. How to evolve our healthcare systems to treat patients who can benefit from cell and gene therapies at point of care facilities while maintaining or improving the safety, quality, compliance, and efficacy of the individualized treatments to create an on-demand service which puts the patient first.
2. Cell and gene therapies are extraordinarily complex individualized treatments which require a high degree of process understanding and careful decision making resulting in a highly educated labor-intensive process to achieve successful results.
3. Management of the significant regulatory hurdles involved with cell and gene therapy treatments including treatment application, appropriate reporting, follow up and signal identification.
4. GxP processing, release, and assurance that the treatment supplied meets regulatory requirements to treat patients.
5. Raw material logistics, costing and reimbursement challenges with unproven treatments.

"Getting there from here starts with having the result in mind."

1. Define what success looks like. The end is a fully functional licensed compliant (FACT) point of care facility with the ability and capability to manufacture treatments. ProPharma offers full regulatory planning to ensure that the site can legally treat patients with products produced at their site. ProPharma also offers Business development planning to ensure that the right funding is available when it is needed to achieve phase appropriate milestones.

2. Building cell and gene therapy treatment labs at research hospitals and treatment centers. This includes an applicable supply chain to ensure the components including viruses, media and patient starting materials are handled in a GXP compliant and controlled way. Architectural firms will supply architectural, mechanical, electrical, plumbing layouts but they need a concept to work with to be able to design the proper air and product flow systems and to select and place the best suitable equipment to ensure both personnel and patient product safety. ProPharma works with multiple hospitals and research institutions to develop qualified spaces for effective cell and gene manufacturing.

3. Designing and building the facility is a major step, after which the equipment commissioning, qualification, process validation is required to run a 1271 cell and gene facility which intends treat patients. All these steps are part of a regulatory filing needed to gain a license to run. Process validation is a challenge with orphan diseases and thus small patient sets. Therefore, a matrix-based small sample set approach allows bracketing of the patients' samples to prove with a high degree of assurance that the process will meet pre-determined specifications in a no size fits all environment.

4. Developing safe and effective treatments requires extensive education, training, documentation, process development, studies, data, and analysis to demonstrate control. ProPharma facilitates proper development by implementing IT data control, supplying a study framework for development, identifying staff requirements, and performing staffing / de-staffing as needed to achieve goals. Building the algorithms to properly isolate the variability as well as the causal factors helps clinicians spend more time perfecting treatments and less time troubleshooting. ProPharma's approved platform creates an environment that allows facilities to concentrate on the patient.

5. Auditing and inspection readiness support. All raw material suppliers require auditing, and the site will need to be inspected prior to approval. ProPharma's industry leading team of auditors and compliance professionals will help ensure that the product being provided to patients has been properly controlled and certified throughout the manufacture process and that the necessary GMP licenses are in place. ProPharma provides QP certification services for decentralized c**ell and gene therapies and can function as Quality Assurance cockpit, reducing the effort at both hospital and sponsor.**

Once built, ProPharma's advice-build-operate RCO model collaborates with health care provider's to effectively leverage the platform. Our Cell & Gene Therapy Center of Excellence specifically helps tailor the right solution for sites, drive regulatory success and oversee multi-site operations.

	ADVISE & BUILD	OPERATE	
regulatory sciences	• Regulatory Strategy, Roadmap • Therapy Development • CMC	• Pre-Approval Audits • Promotional Material Review • Medical Writing / Filing	• Post Authorization Commitments • License Renewal • Regulatory Intelligence
clinical research solutions	• Early Phase Trial Development • Clinical Trial Reimbursement • Clinical Science	• Site Training • eTMF & CTMS Support • Develop Processes / Procedures	• Conduct Studies / Clinical Trials • Medical Affairs • Qualified Person
pharmacovigilance	• Hospital Exemption • PV Auditing • Safety Plan Development	• Individual Case Study Reporting • Medical Monitoring Program • Global Literature Screening	• ICSR Processing / Reporting, QPPV • Aggregate Reporting • Signal Management
quality & compliance	• Business Plan, Basis of Design • Risk Assessment, Management • Quality Management Plan	• Project Management • Equipment selection, Qualification • Process and Cleaning Validation	• Supplier / Gxp Audits • Process Improvement • Qualified Person, Material Import
medical information	• Clinical Trial MI Management • Adverse Event Planning • Global 24/7 Contact Center plan	• Standard Document Creation • Clinical Trail Emergency Unblinding • Create MI structure and content	• Global 24/7 Contact center • Translation Services • Custom Response and Content
R&D technology	• Clinical Technology Connectivity • Data & Technology Road Map • Clinical Systems Selection	• Project Management • Lab and Clinical Systems Implementation, CSV	• Workflow Optimization • Data management • System Change Controls