Penn Medicine

THE CENTER FOR CELL THERAPY AND TRANSPLANT

The Three Pillars of Cell and Gene Therapy (CGT)

Robert Richards, MBA, MS
Corporate Director
March 27, 2024

Biography

20+ years in oncology

15 in private practice (Cherry Hill, NJ)

- IT Manager, Practice Administrator, COO, CIO (RCCA Corporate)

5+ with Penn Medicine

- Integration Executive
- Current Position: Administrative Director, Cell Therapy & Transplant (CTT)

Education

BS – Information Technology

MS – Business Intelligence (Data Analytics)

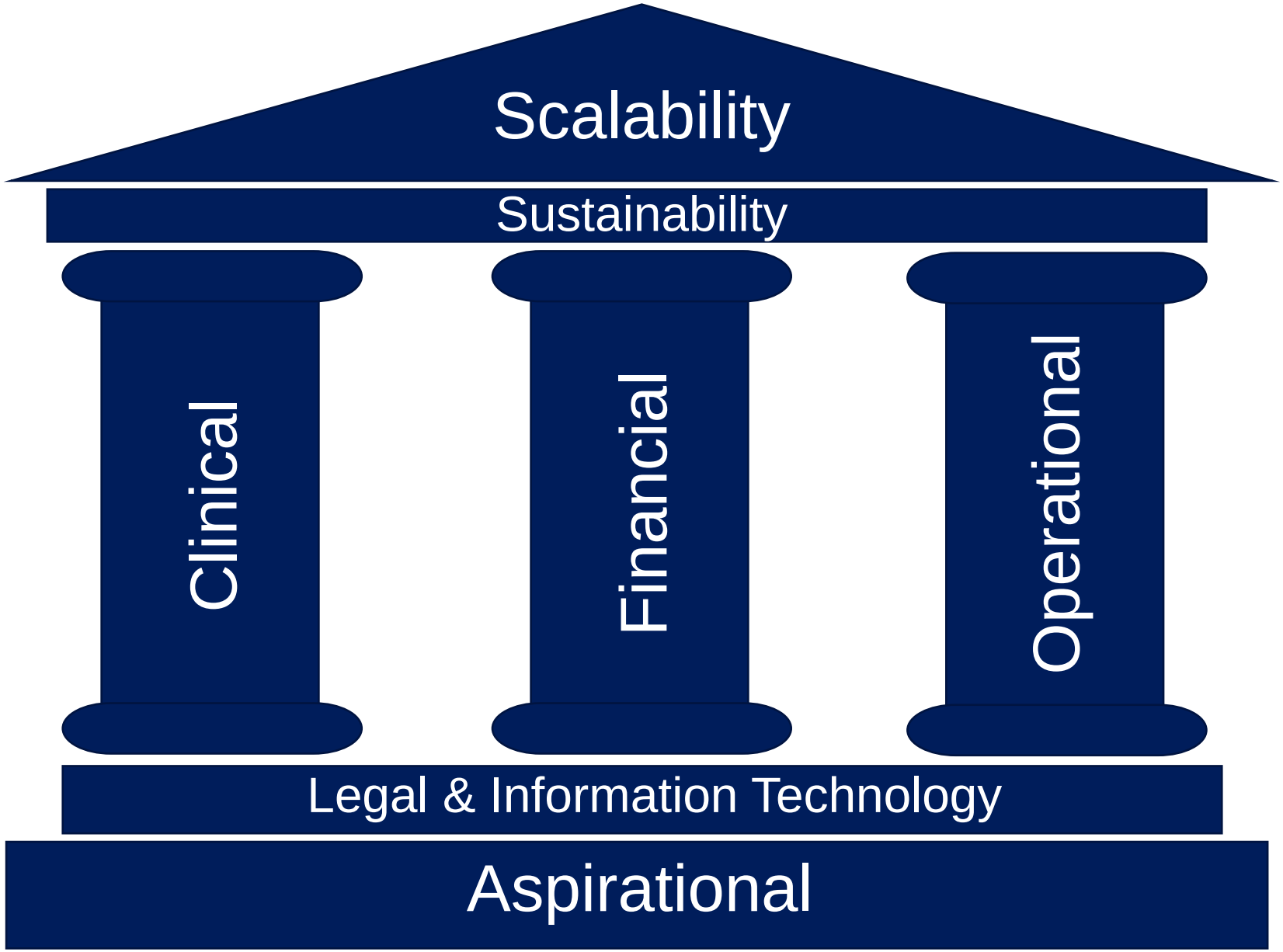
MBA

Committees/Consulting/Advisory Boards

Kite, Novartis, BMS, Iovance, Janssen, Legend, Cardinal, Vineti, Autolus, McKesson, Trinity Life Sciences, AdaptImmune, Allovir

Association of Community Cancer Centers – CAR T and Bi Specifics in the community setting

ASTCT (Admin SIG, Liaison to Cell Therapy Committee) rolled off in 2023


Scalability
Sustainability
Clinical
Financial
Operational
Legal & Information Technology
Aspirational

Clinical

Identification

Site of Care

Eligibility

Policies
&
Procedures

Process Maps

Scalability

Sustainability

Financial

Operational

Legal & Information Technology

Aspirational

PennPathways

400 Pathways

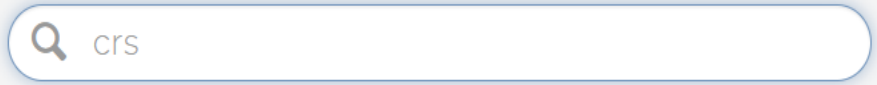
Mission: To facilitate the translation and integration of evidence into clinical practice for Penn Medicine clinicians and staff

Supported by the Penn Medicine Center for Evidence-based Practice (https://www.med.upenn.edu/CEP/).

For information, contact Emilia Flores (emilia.flores@pennmedicine.upenn.edu), Sarah D'Ambrosia sarah.d'ambrosia@pennmedicine.upenn.edu , or Nikhil Mull (nikhil.mull@pennmedicine.upenn.edu)

Have an idea for a pathway? Submit your request here https://bit.ly/CEPrequest

Access the PennPathways Reference Materials site here https://pathways.dorsata.com/client#/content_collections/78/view



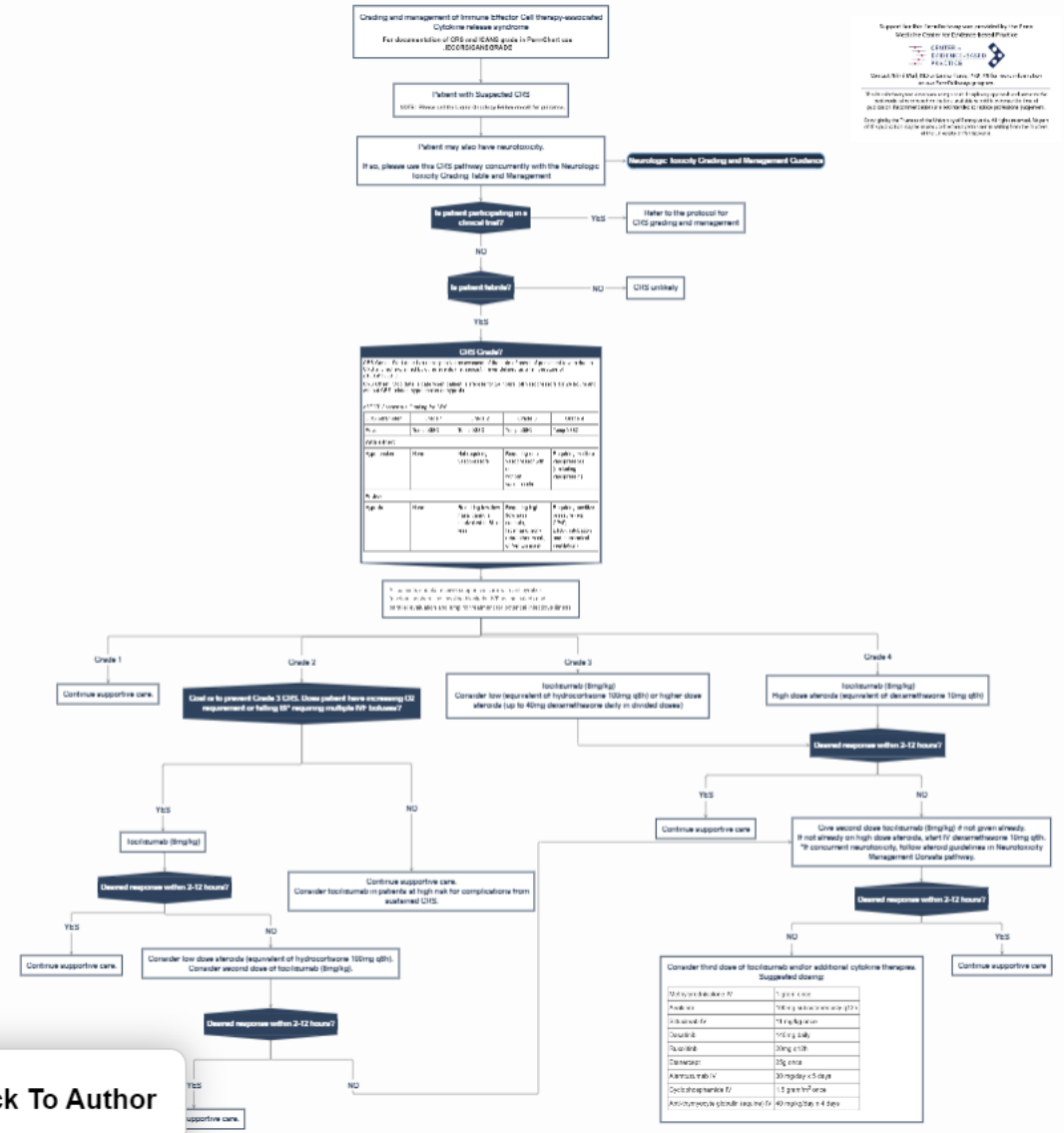
Location

All | HUP | HUP Cedar | PPMC | PAH | CCH | LGH | MCP

Department

All | ED | Pathology | Pharmacy

1. Grading and management of Immune Effector Cell therapy-associated Cytokine release syndrome
2. Neurologic Toxicity Grading and Management Guidance



FIT
Give Feedback To Author
Chat with Dorsata
Penn Medicine

For documentation of CRS and ICANS grade in PennChart use .IECCRSICANSGRADE

Immune Effector Cell-Associated Encephalopathy (ICE) scoring system

Total possible score = 10 points.

Category	Event Descriptions
Orientation (4 points)	Year Month City Hospital
Naming (3 points)	Ability to name 3 objects (eg, point to clock, pen, button)
Following commands (1 point)	Ability to follow simple commands (eg, "Show me 2 fingers" or "Close your eyes and stick out your tongue")
Writing (1 point)	Ability to write a standard sentence (eg, "Our national bird is the bald eagle")
Attention (1 point)	Ability to count backwards from 100 by 10

ASCT Consensus Grading of ICANS:
Immune Effector Cell Associated Neurotoxicity Syndrome*

Neurotoxicity Domain	Grade 1	Grade 2	Grade 3	Grade 4
ICE score	7-9	3-6	0-2	0 (patient is unarousable and unable to perform ICE)
Depressed level of consciousness†	Awakens spontaneously	Awakens to voice	Awakens only to tactile stimulus	Patient is unarousable or requires vigorous or repetitive tactile stimuli to arouse, stupor or coma
Seizure	N/A	N/A	Any clinical seizure focal or generalized that resolves rapidly or nonconvulsive seizure on EEG that resolve with intervention	Life threatening prolonged seizure (>5 min); or Repetitive clinical or electrical seizures without return to baseline in between
Motor findings‡	N/A	N/A	N/A	Deep focal motor weakness such as hemiparesis or paraparesis
Elevated ICP**/cerebral edema	N/A	N/A	Focal/local edema on neuroimaging§	Diffuse cerebral edema on neuroimaging, decerebrate or decorticate posturing; or cranial nerve VI palsy; or papilledema; or Cushing's triad

*ICANS grade is determined by the most severe event (ICE score, level of consciousness, seizure, motor findings, raised ICP/cerebral edema) not attributable to any other cause; for example, a patient with an ICE score of 3 who has a generalized seizure is classified as grade 3 ICANS.

†Depressed level of consciousness should be attributable to no other cause (eg, no sedating medication).

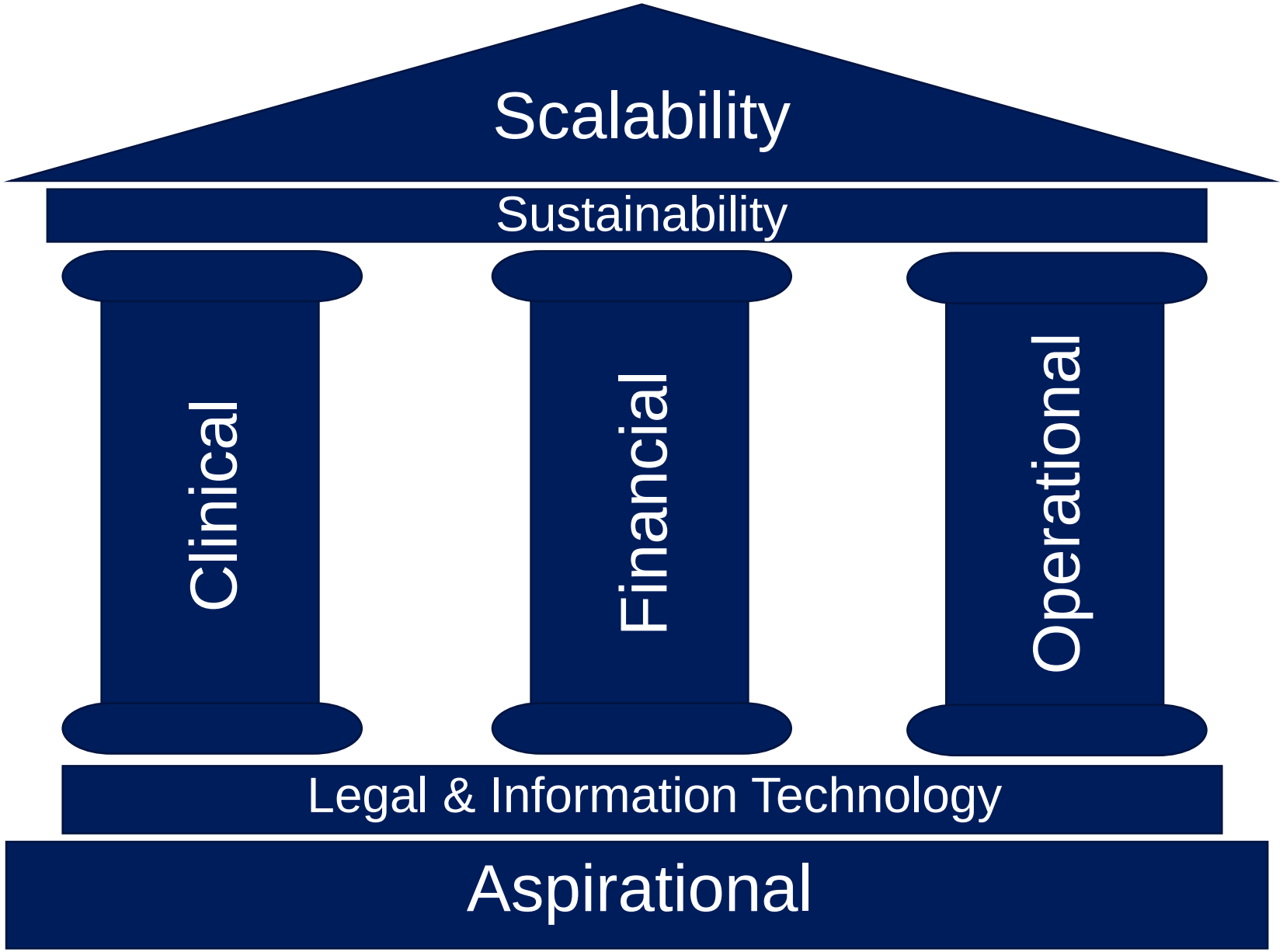
‡Tremors and myoclonus associated with immune effector cell therapies may be graded according to CTCAE V5.0, but they do not influence ICANS grading.

§Intracranial hemorrhage with or without associated edema is not considered a neurotoxicity feature and is excluded from ICANS grading. It may be graded according to CTCAE V5.0.

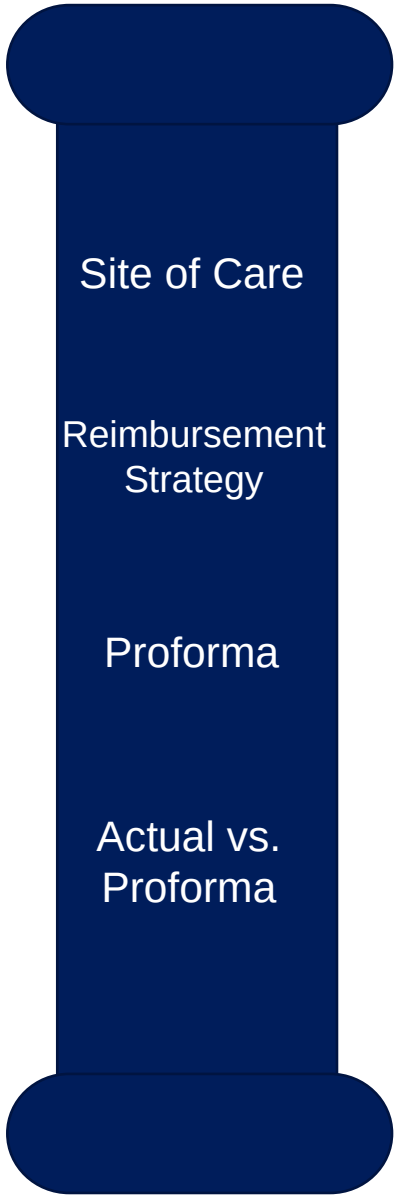
**Normal ICP may often be 8-25 cm H2O, with some normal individuals having up to 30 (or higher). Many confounding factors complicate what normal ICP is, including position (upright much higher), ability to relax, etc. Therefore increased ICP will be determined by clinical parameters. J Neurosonhalmol. 2014 Sep;34(3):279-89.

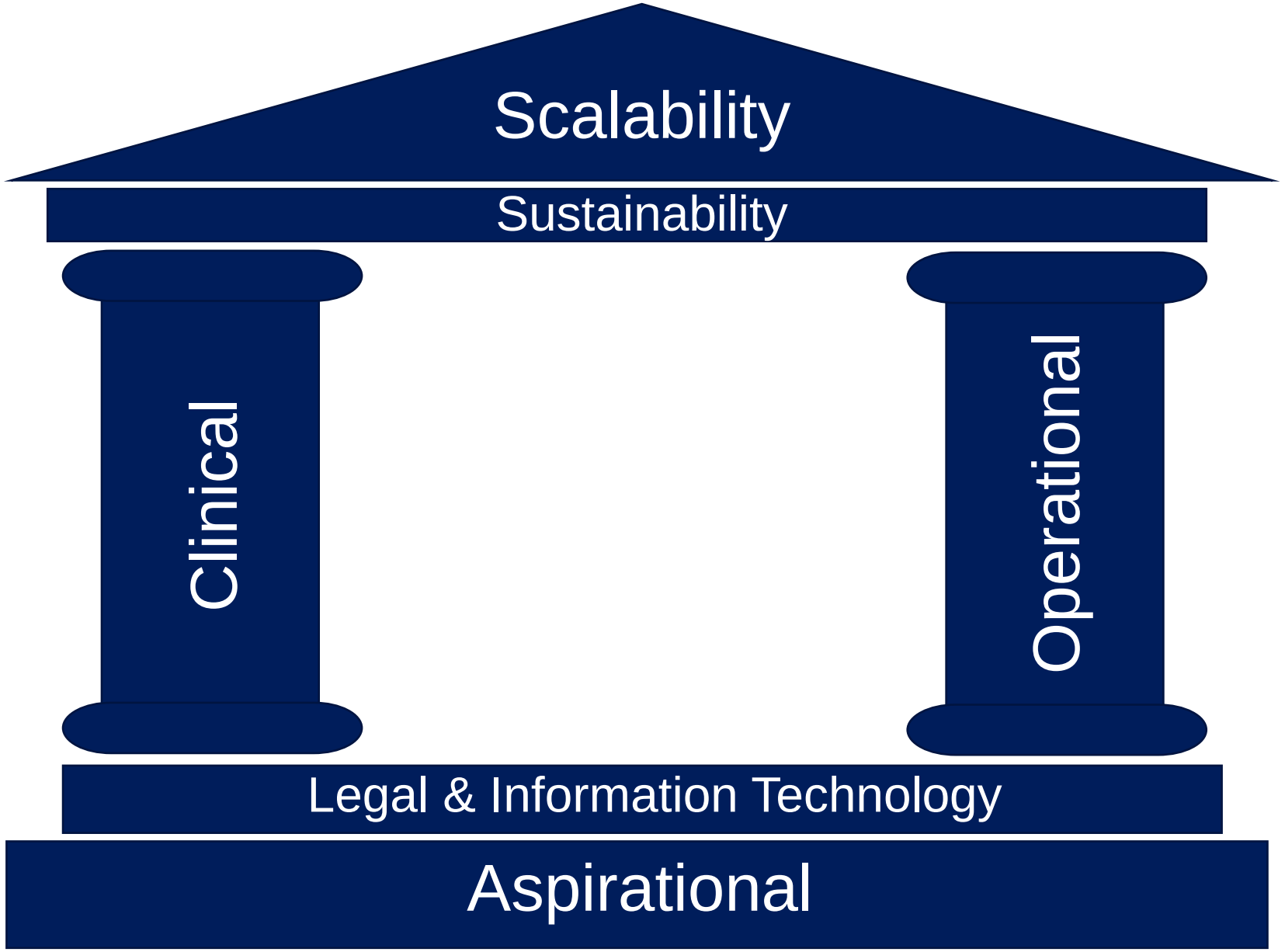
ICANS Grade	Toxicity Management Guidelines If patient experiencing concurrent CRS, follow CRS management guidelines in parallel
Grade 1	Close monitoring for worsening signs or symptoms (minimum q4h neuro checks)
With Grade 2 or higher: • Institute seizure and fall precautions; consider anti-seizure prophylaxis • Consider MRI, LP, EEG, fundoscopic exam and neurology consult • Keep platelet count > 30,000/uL; keep fibrinogen > 150mg/dl; keep INR <1.5	
Grade 2	• Consider IV administration of dexamethasone 10mg x 2 doses, then reassess. If persistence of Grade 2, continue dexamethasone 10mg q 12h until resolution, then stop

Give Feedback To Author
Chat with Dorsata
Penn Medicine


Scalability
Sustainability
Clinical
Financial
Operational
Legal & Information Technology
Aspirational

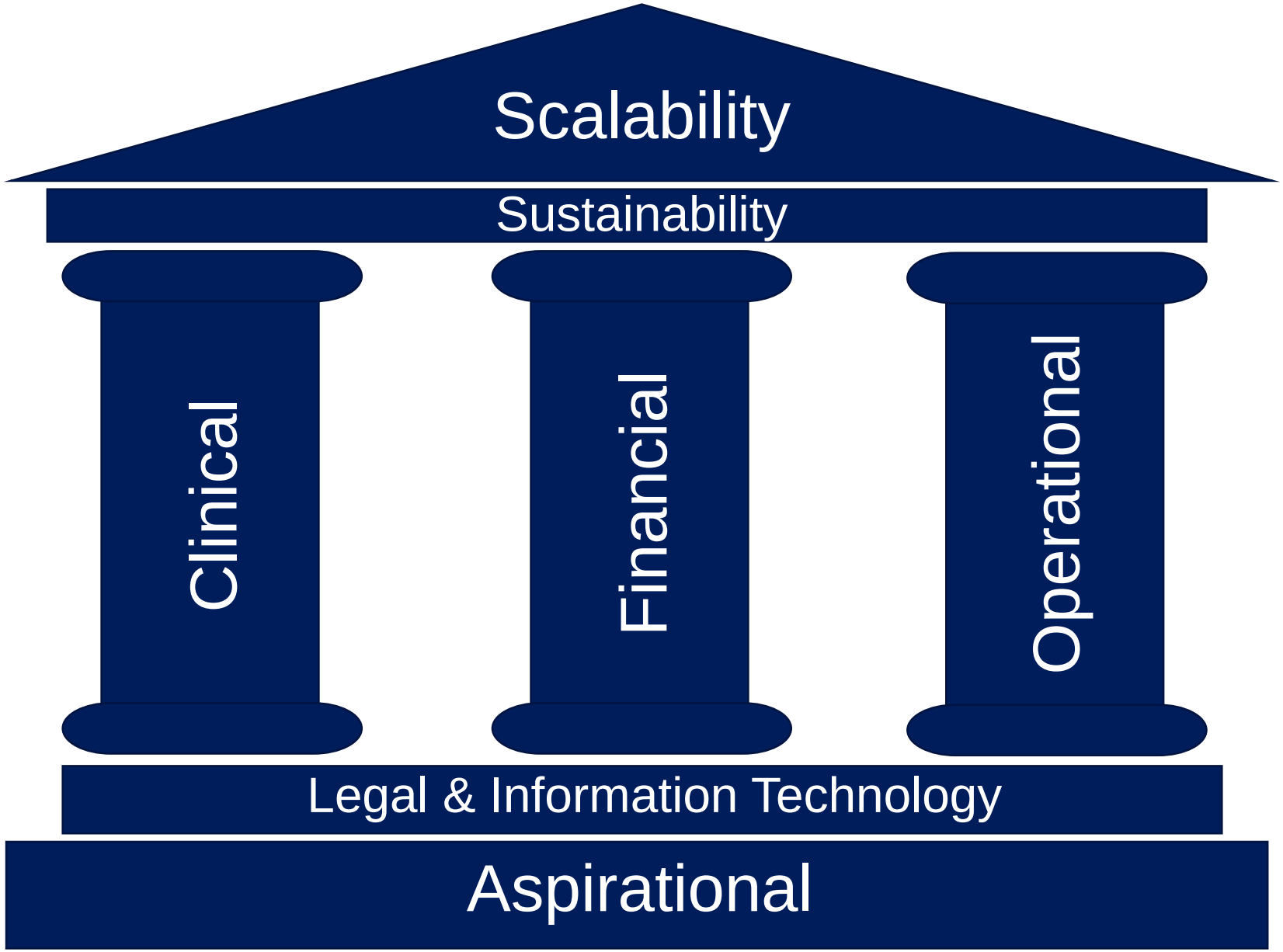
Financial


Site of Care
Reimbursement Strategy
Proforma
Actual vs. Proforma

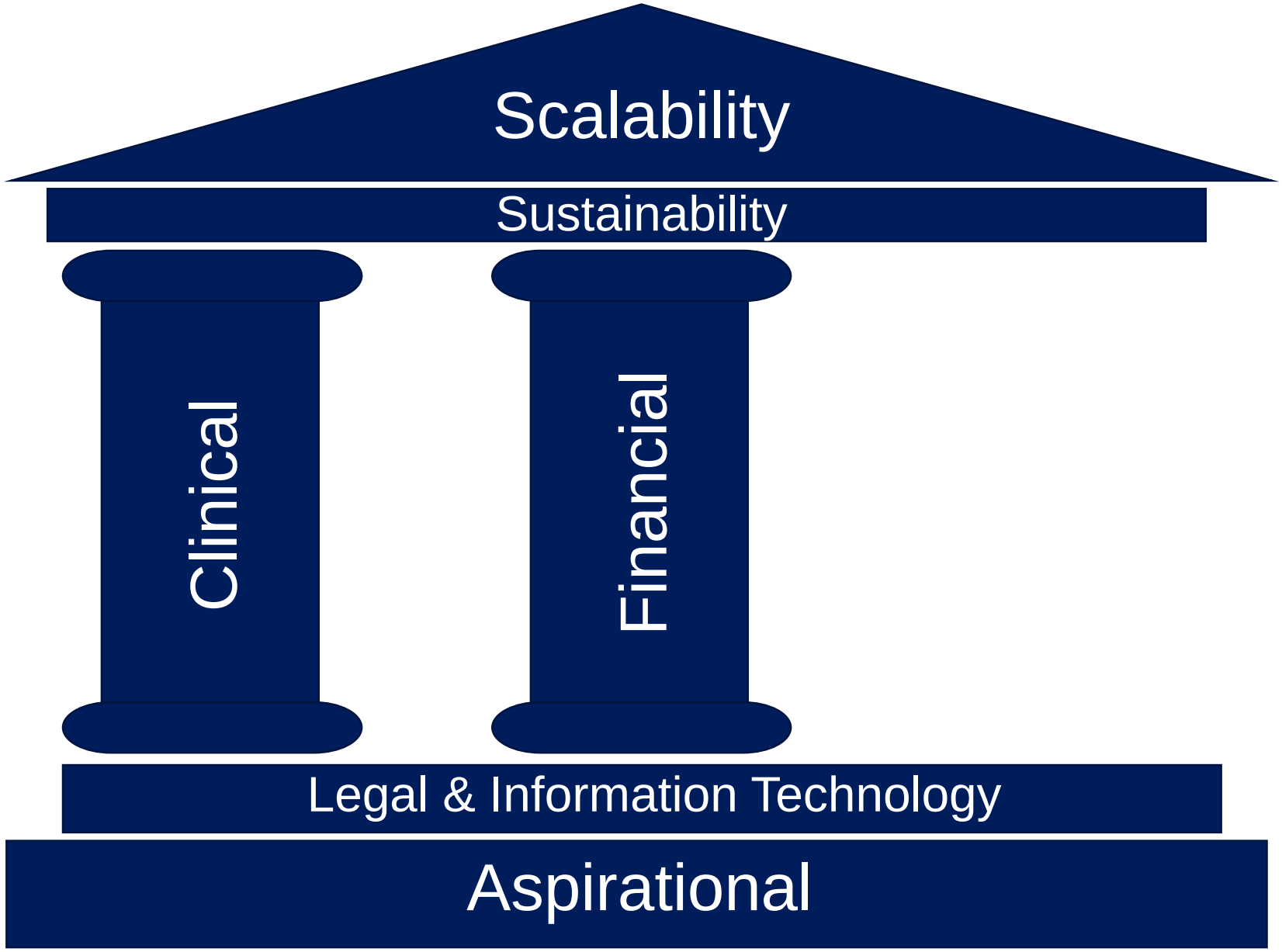

Scalability
Sustainability
Clinical
Operational
Legal & Information Technology
Aspirational

Financial Considerations

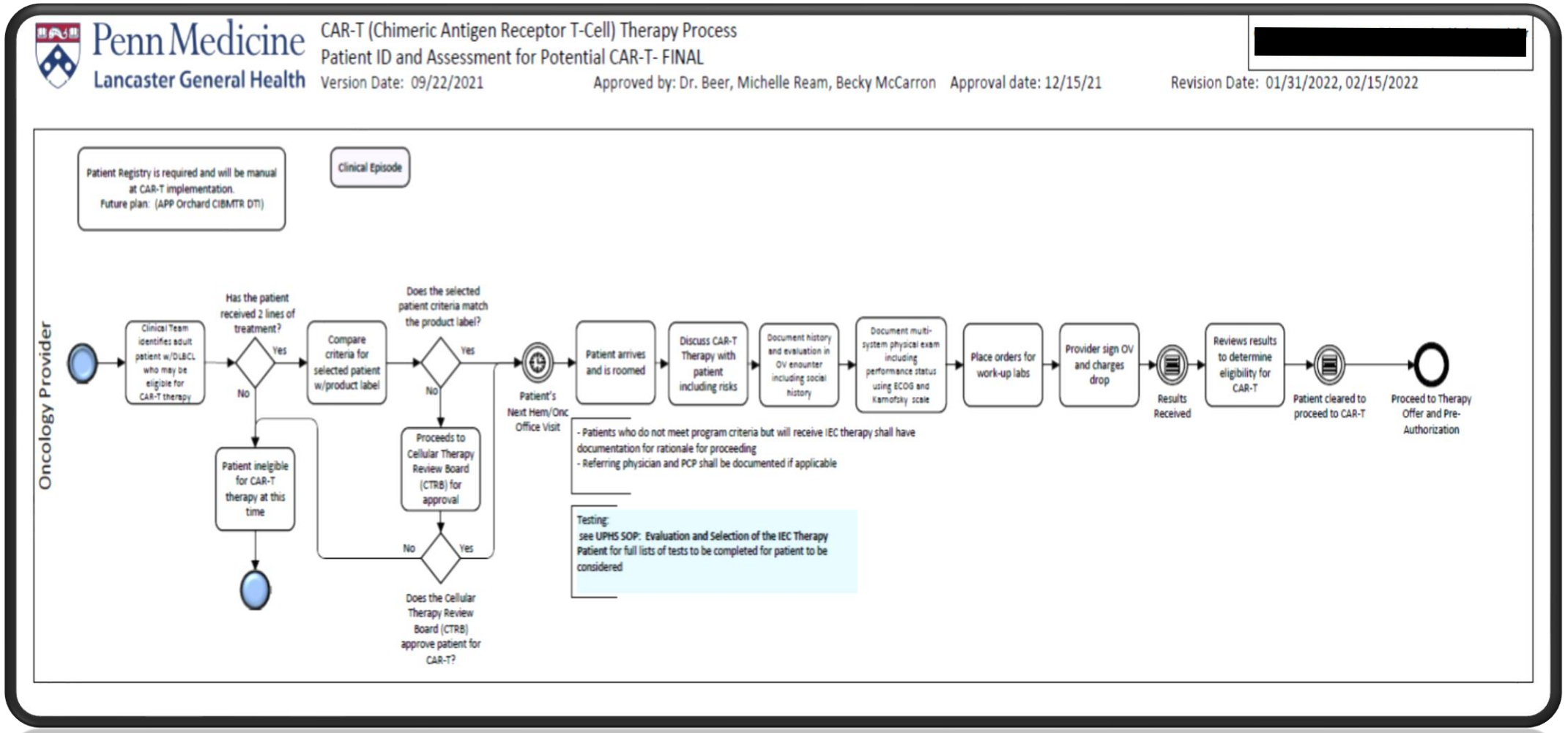
- IP and/or OP?
- 340b?
- Payer mix
- Proforma
  - Indirect/Direct costs against reimbursements
  - Proforma review post launch of therapy (Proforma vs. actual)
- Treatment selection
  - CAR T vs. Bispecifics
- Apheresis/Stem Cell/Cryopreservation costs (CAR T)?
  - Some companies are paying 3rd party vendors to collect


Scalability
Sustainability
Clinical
Financial
Operational
Legal & Information Technology
Aspirational

Operational



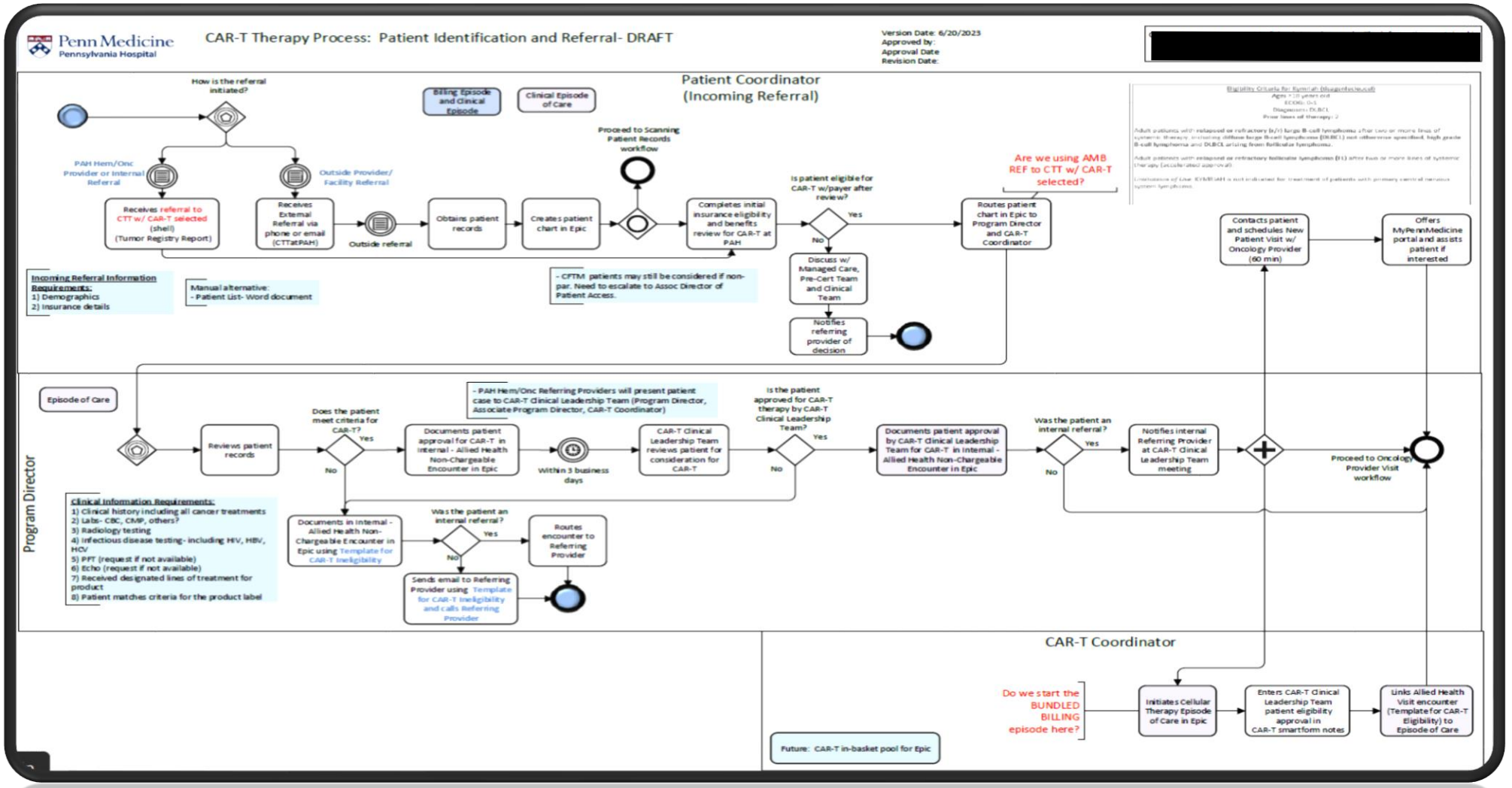
Operational Process Map – Lancaster General Hospital



1 / 26

Pages!

Operational Process Map – Pennsylvania Hospital



1 / 36

Pages!

Developed CTT educational modules

Currently 33 educational videos on CAR T cell therapies.

Future plans to add BMT and benign hem gene therapies modules.

Housed on OncoLink

Final Thoughts

- Who are the champions of each pillar?
- Training and education are key elements in success/failure
- Go visual!
- Be open to different reimbursement models
- As the marketplace changes, you should review/revisit your strategy
  - —Ex. Pharm price increases
- Consider this process a risk mitigation strategy
- Consider a “High Dollar” committee
- Consider non-Oncology

Penn Medicine