Topics of Discussion

1. Obstacles for rare disease registries
2. Description of Barth syndrome
3. Overview of Global Rare Diseases Registry (GRDR)
Hurdles for Rare Disease Registries

- Clinically heterogeneous group of ~ 6,500 disorders
- Cumulative public health burden substantial
- Insufficient # of patients for clinical & translational research
- Most have no medical therapy
- Most lack ICD code
- Geographic spread major impediment to:
  - clinical understanding, treatment, community, clinical trials
About Barth Syndrome (BTHS)

- Rare, X-linked, multi-system disorder with metabolic basis

- Cardinal characteristics:
  - Cardiomyopathy, neutropenia, muscle weakness, growth delay, exercise intolerance, cardiolipin abnormalities, 3-Methylglutaconic Aciduria Type II

- 157 known living cases worldwide, suspect many undiagnosed
BTHS Individuals in the US
BTHS Individuals Globally
Barth Registry & Repository History

- Started in 2006
- Curated data based on medical records
- Principal Investigator at an academic institution
- Costly ~ 11% of total annual expenses for BSF
- Several publications
- Desire to change some aspects of existing model
Barth Registry & Repository Transition

- Different landscape six years later
- Explored many possible models
- Considerations: ownership, cost, IRB, platform
- Trends: patient-entered data, independent IRB
Key Questions

- Who owns it legally?
- Where will it reside?
- Who is the champion (PI)?
- Which IRB is involved?
- How much does it cost (dollars and human)?
- Is it convenient (information in/out)?
- Is it able to attract research?
- How flexible is it?
- What are the political concerns?
Global Rare Diseases Registry  
GRDR

- NIH sponsored program spearheaded by ORDR
- BSF accepted into pilot program, one of 30 groups
- BSF owns data, provides de-identified data to GRDR
- GRDR provides infrastructure through Patient Crossroads
- Created economies of scale to ease funding hurdle
- BSF obtained an independent IRB with staff member as PI
- Eventual linkage to biospecimens and biorepositories
1. Patients provide health information & test results using common data elements (CDEs)

2. A Global Unique Patient ID (GUID) assigned; patient data mapped to CDEs

3. Patient data linked to biospecimens via the GUID interfacing with RD-HUB

4. GRDR aggregates de-identified patient clinical information & biospecimen data

5. De-identified registry data available to researchers for biomedical studies & clinical trials

6. Researchers identify potential study participants; submit contact request to original registry owner

7. Registry owners notify identified participants. Interested participants are directed to study PI
Submitting Data to GRDR

- Biospecimens
- Genetic Test Results
- Participants & Family Information
- Clinical Findings
- Medical Images/Uploaded Files
- De-identified Information
- GRDR
  - Cross diseases analyses by researchers
Access to GRDR Data

1. Apply for Access & Sign Terms of Condition
2. Applications Reviewed & Approved
3. Data Upload
4. Results & Publications are Reported
Developed CDEs to be used by any patient registry & for GRDR

Developed GRDR website to disseminate registry best practices & resources

Developed library of medical questions for patient reporting

Developed informed consent template for participation in patient registries

Developed open source patient registry template for the rare disease community
Established searchable database for Biorepositories-Biospecimens: RD-HUB

15 organizations with existing registries; 15 organizations with no registries

30 organizations selected to participate based on review score

Adopted the Global Unique Identifiers (GUID) developed for the National Database for Autism Research (NDAR)
Organizations With No Registry

- ARPKD/CHF Alliance
- **Barth Syndrome Foundation**
- Cornelia de Lange Syndrome Foundation
- Cutaneous Lymphoma Foundation
- Fibrous Dysplasia Foundation
- Foundation for Sarcoidosis Research
- International FOP Association
- International WAGR Syndrome Association
- Lymphangiomatosis & Gorham's Disease Alliance
- NephCure Foundation
- PCD (Primary Ciliary Dyskinesia) Foundation
- PSC Partners Seeking a Cure
- Rare Tumor Committee, Children's Oncology Group
- STOP Foodborn Illness
- VHL Family Alliance, and associated diseases HLRCC and BHD
Organizations With Registries

- Al Azher University
- Alport Syndrome Treatments and Outcomes
- Coalition for Usher Syndrome Research
- Foundation Fighting Blindness
- Hypoparathyroidism Association, Inc.
- Intracranial Hypertension Research Foundation
- Lymphatic Research Foundation
- Rare Cancer Genetics Registry (RCGR)
- The North American Malignant Hyperthermia Registry of the Malignant Hyperthermia Association of the United States
- Nevus Outreach
- Pachyonychia Congenita Project
- RASopathies Network USA
- National Registry of Genetically Triggered Thoracic Aortic Aneurysms and Cardiovascular Conditions (GenTAC) Registry
- The SADS Foundation
- University of Rochester Medical Center - National Registry of Myotonic Dystrophy and Facioscapulohumeral Muscular Dystrophy Patients and Family Members
Clinical Value of GRDR

- Integrating patient-reported & clinical data from multiple sources into single repository
- Stimulating new research on the causes, treatments, & consequences of disorders
- Accelerating knowledge discovery & health of patients with rare diseases
Scientific Value of GRDR

Using open-science model for distribution of GRDR resources

Enhancing creative data mining within & across disorders

Leading new scientific insights into rare diseases
Recent GRDR, RD-HUB Related Publications


Expected Outcomes

- Accelerated research for Barth syndrome & other rare diseases
  - Recruit new researchers
  - Speed the work of existing researchers with new data
- New frontier of cross-disease research
- Increased participant engagement
- Injected new possibilities for orphan disease research
- Giving hope to families affected by Barth syndrome
“I believe my participation in research will lead to treatments for Barth syndrome. If Barth syndrome claims my life before that time, I know I have done something that will help others even after I am gone.” ~ Michael Bowen 12/7/1986 - 12/9/2009
Thank you!

For more information go to:
barthsyndrome.org
grdr.info