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Dr. Greg Gibson, Director of Research
**Greg
Gibson**
Design Institute of Technology



Georgia Institute of Technology
**Greg
Gibson**
Georgia Institute of Technology



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A woman with dark hair and glasses, wearing a pink top and a black cardigan, stands at a podium. She is holding a small object in her hand and appears to be speaking. A name tag is visible on her chest.

The podium is made of dark wood and features the "EMORY" logo in gold lettering. A microphone is positioned on the podium.

A man with glasses, wearing a light pink shirt, is seated at a table behind the speaker. He has his hand to his chin, listening intently.

A man with short hair, wearing a light blue button-down shirt, is seated at the table to the right of the first man. He is also listening attentively, with his hand near his chin.

In the foreground, the back of a woman with long blonde hair, wearing a white top, is visible. She is seated and looking towards the speaker.

Another woman with long brown hair, wearing a dark top, is seated in the foreground to the right, also looking towards the speaker.





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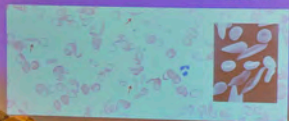


2012 Pediatric Research Roundtable
Presented by the Pediatric Research Roundtable
Presented by the Pediatric Research Roundtable
NIH NIAID

Sickle Cell Disease (SCD)

SCD afflicts ~1 in 5,000 children, and affects 90,000 Americans. SCD results from a point mutation in the beta globin gene leading to a defective hemoglobin molecule

Path NEJM 1994



Sickle Cell Disease & Bone Alterations

Children with Sickle cell disease (SCD) experience delayed skeletal maturation and over 70% of adult SCD patients exhibit osteopenia or osteoporosis



Osteoporosis

Because inflammation significantly perturbs bone turnover we have hypothesized that bone loss in SCD is a likely consequence of the development of the inflammatory state.







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Man in tan jacket, seen from behind, seated at the table.

Man in dark jacket, seen from behind, seated at the table.

Man in light blue shirt, seen from behind, seated at the table.



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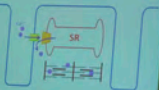






Calcium handling in cardiac myocytes

- Very little is known about the fundamental characteristics of the very young human ventricle
- Preoperative and postoperative management of pediatric cardiac patients is based mainly on data extrapolated from either adult heart patients or animal models
- Contractility of the heart depends on calcium movement that is critical for optimal cardiac function



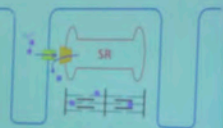
Calcium handling in cardiac myocytes

Preoperative and postoperative management of pediatric cardiac patients is based mainly on data extrapolated from either adult heart patients or animal models

Contractility of the heart depends on calcium movement that is critical for optimal cardiac function

Calcium handling in cardiac myocytes

- Very little is known about the fundamental characteristics of the very young human ventricle
- Preoperative and postoperative management of pediatric cardiac patients is based mainly on data extrapolated from either adult heart patients or animal models
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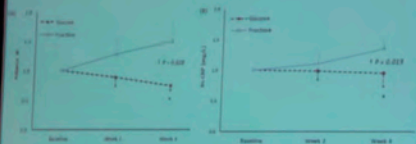
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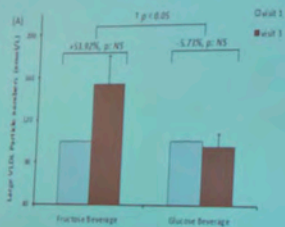
2011 Public Health Research Conference
Miriam Vos
Department of Public Health

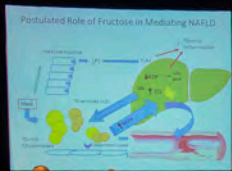
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Improved Adipose IR and CRP after Fructose Reduction



Fewer Large VLDL (fasting)





A female presenter in a white top is standing at a wooden podium on the right side of the stage, addressing the audience.

A male audience member is seated at a table on the right side of the room, looking towards the stage.

The foreground and middle ground are filled with the backs of many audience members seated at long wooden tables, attentively listening to the presentation. The room is well-lit with recessed ceiling lights and a large, colorful stained-glass skylight.





Paul
Speaker


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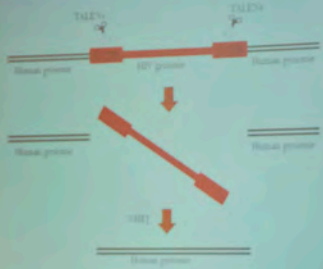


Paul
Speaker

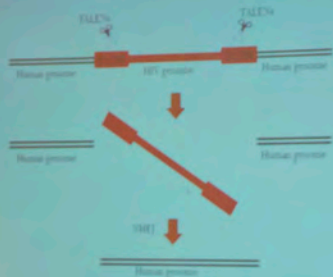
RY
SIL



Goal: HIV excision from human genome



Goal: HIV excision from human genome





Strategy 1: How to get the TALENs

- 1. Identify the target sequence
- 2. Design the TALEN DNA arms
- 3. Express the TALEN DNA arms and the FokI nuclease domain
- 4. Perform the TALEN-mediated genome editing

TALENs are composed of two DNA arms flanking a FokI nuclease domain



TALENs are composed of two DNA arms flanking a FokI nuclease domain























2013 Pediatric Research Network
Poster Award
1st Place
Basic Research
Awarded to: [Name]
Date: [Date]









2013 Pediatric Research Retreat
Poster Award
Presented to the author(s) of the poster presentation
that was judged to be the most outstanding poster presentation
at the Pediatric Research Retreat. The award is presented
to the author(s) of the poster presentation.
2nd Place

David
Ochoa
Senior Associate, Department of Pediatrics



2013 Pediatric Research Retreat
Poster Award
Honoring a Pediatric Researcher of International Distinction
Presenting a Research Poster at the Annual Meeting of the American Pediatric Society
2nd Place
Child Place

David
Okou









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Impact of Spatial Accessibility on Pediatric Asthma Health Outcomes

Children's Hospital of Atlanta
 Erin Genik, Dr. Nicholas Serhan, Dr. Julie Swann
 Georgia Institute of Technology School of Industrial and Systems Engineering

Research Question

Is there a statistically significant association between assigned asthma and specialist access to specialist care for pediatric asthma?

Background and Motivation

Approximately 10 million children in the United States have asthma. Asthma is a chronic respiratory condition characterized by airway inflammation and hyperactivity, which can lead to frequent hospitalizations and missed school days. Access to specialist care is critical for managing this condition effectively. However, many children live in areas with limited access to pediatric asthma specialists, leading to delayed diagnosis and treatment.

Methods & Statistical Counts

Variable	Count
Assigned Asthma	1,234
Specialist Access	567
Severe Outcomes	890



Methodology

Compute Geographic Access (Distance in Miles)

- Compute nearest specialist care per year per county based on asthma prevalence per age group and county population data.
- Determine the travel capacity for pediatric asthma appointments for each asthma specialist.
- Use GIS software to compute the distance from the centroid of each census tract to each asthma specialist office location.
- Use a distance-weighted assignment model to assign hospital appointments in each census tract to the nearest asthma specialist without violating capacity constraints and return the average distance traveled per census tract. Then calculate the average distance traveled by each patient.

Optimization Model

Objective: Minimize total assigned driving distance.

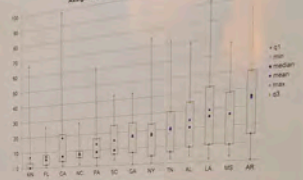
Constraints: Each patient is assigned to at least 1 doctor. No more patients are assigned than are in the system. Each doctor has a maximum number of total patients that can be assigned. Each patient has a maximum allowable driving distance. At least 80% of patients must be assigned to a doctor. There is a maximum completion for doctors in each county.

Logistic Regression to Determine Significance of Geographic Access in Estimating Severe Outcomes

- All variables are entered in the county level.
- Response: Severe Outcomes: ED visits and hospitalizations.
- Predictors:
 - Distance to nearest specialist care (miles).
 - County-level asthma prevalence.
 - County-level population.
 - County-level socioeconomic status.
 - County-level education level.
 - County-level income level.
 - County-level unemployment rate.
 - County-level poverty rate.
 - County-level median household income.
 - County-level high school graduation rate.
 - County-level population density.
 - County-level population growth rate.
 - County-level population change.
 - County-level population density.
 - County-level population growth rate.
 - County-level population change.

Results

Assigned Distance (per County) Summary by State



Regression Results for ED Visits per Child with Asthma

Variable	Parameter Estimate	Standard Error	z-Statistic	p-Value
Assigned Distance	0.0012	0.0003	3.87	<.0001
Population	0.0001	0.0001	1.12	.2612
Population Density	-0.0002	0.0001	-1.88	.0612
Population Growth	0.0001	0.0001	1.12	.2612
Population Change	0.0001	0.0001	1.12	.2612
Population Density	0.0001	0.0001	1.12	.2612
Population Growth	0.0001	0.0001	1.12	.2612
Population Change	0.0001	0.0001	1.12	.2612
Population Density	0.0001	0.0001	1.12	.2612
Population Growth	0.0001	0.0001	1.12	.2612
Population Change	0.0001	0.0001	1.12	.2612
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Population Growth	0.0001	0.0001	1.12	.2612
Population Change	0.0001	0.0001	1.12	.2612
Population Density	0.0001	0.0001	1.12	.2612
Population Growth	0.0001	0.0001	1.12	.2612
Population Change	0.0001	0.0001	1.12	.2612

- Distance is a significant predictor by itself.
- Distance has a higher impact on severe outcomes.
 - For younger children (Ages 5-14).
 - In areas where a greater percentage of the adult population has no more than a high school diploma.

Conclusions

Overall there are more factors and interactions that are significant when estimating ED visits than hospitalizations, and this also holds for the predictors interacting with geographic access.

- We expect improving geographic access to be significant when interventions to improve geographic access to specialist care have a focused on elementary and middle school children in areas where fewer of the adult population have a high school diploma.

This research is supported in part by the 2012 Georgia Tech IDeA-T & Children's Healthcare of Atlanta seed grant and by NSF CAREER grant CMMI-0954283.



METHODOLOGY

Phone Survey of patients who have been transferred to adult care over the last 3 years from hepatology and liver transplant was conducted from Jan 2011 to Jan 2012. Demographic information regarding their follow up with adult services was obtained and feedback was sought regarding teen clinic services and opportunities for improvement.

BACKGROUND

- Transitions from the pediatric to adult care is an area of intense investigation. Children with chronic illness are unable to maneuver the demands of the adult medical care, sustaining high morbidity and mortality.

RESULTS

- Total of 31 surveys conducted. 22 patients/parents of children who had received a liver transplant and 9 with end stage liver disease.
- Diagnosis varied across the group
- Majority of patients surveyed were female (70%)
- Mean age at the time of transfer was 19.8 years (18-21)
- Though majority of the patients were seen in clinic, 20% had their first contact with adult services through an ER visit.
- The single factor deemed as being critical to a smooth transition was education of the children.
- The majority (82%) felt that institution of peer support groups for the children with "letting go" by parents and providers would be helpful.
- Most of the patients 21/31 (68%) reported they did not run out of medications before being seen in the adult setting
- 6/31 (19%) reported running out of medication before being seen in the adult setting.
- Four patients were not taking their medications.
- Of the transplanted patients 19% are being evaluated for re-transplant.

easy transition. Perspectives and outcomes transferred from the liver transplant clinic.

Sona Chandra, Shannon Luskamanyi, Rose Kuntz MD and Hilda Ojeda MD

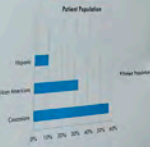
Patient diagnosis



Selection criteria for transition



Patient population



Medication status at the time of transfer



Liver enzyme levels



Medication supply sufficient before seen



Conclusion

Transitioning patients from pediatric to adult care is a complex process. This study highlights the challenges and opportunities for improvement in this process.

METHODS

Phone Survey of patients who have been transferred to adult care over the last 3 years from hepatology and liver transplant was conducted from Jan 2011 to Jan 2012. Demographic information regarding their follow up with adult services was obtained and feedback was sought regarding teen clinic services and opportunities for improvement.

BACKGROUND

Transitions from the pediatric to adult care is an area of intense investigation. Children with chronic illness are unable to maneuver the demands of the adult medical care, sustaining high morbidity and mortality.

RESULTS

- Total of 31 surveys conducted, 22 patients/parents of children who had received a liver transplant and 9 with end stage liver disease.
- Diagnosis varied across the group
- Majority of patients surveyed were female (70%)
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- Though majority of the patients were seen in clinic, 20% had their first contact with adult services through an ER visit.
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- The majority (82%) felt that institution of peer support groups for the children with "letting go" by parents and providers would be helpful.
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- 6/31 (19%) reported running out of medication before being seen in the adult setting.
- Four patients were not taking their medications.
- Of the transplanted patients 19% are being evaluated for re-transplant.

Transition: Perspectives and outcomes from the liver transplant clinic.

Patient diagnosis

Transferred patients by diagnosis



Reasons for transfer to adults

Number of patients by reason



Transfer to adult care

Number of patients by transfer method



Patient population

Patient Population



Medication status at the time of transfer

Chart Title



Time interval until seen in adult care

Chart Title



Liver enzyme levels

Chart Title



Medication supply sufficient before first visit

Chart Title



Discussion
Transitioning from pediatric to adult care is a complex process. This study highlights the challenges faced by patients and their families. Key findings include the need for better education and support for children, the importance of medication management, and the need for improved communication between pediatric and adult care teams. Future research should focus on developing standardized protocols for patient transitions and providing more resources for families.

Living up: not an easy transition. Perspectives and outcomes of patients transferred from the liver transplant clinic.

Sara Choudhry, M.D., M.P.H., M.A.S.P.H., M.P.A., M.P.H.
Sara Choudhry, M.D., M.P.H., M.A.S.P.H., M.P.H.

METHODOLOGY

Phone Survey of patients who have been transferred to adult care over the last 3 years from hepatology and liver transplant was conducted from Jan 2011 to Jan 2012. Demographic information was obtained and feedback was sought regarding their clinic services and opportunities for improvement.

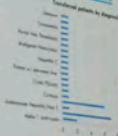
BACKGROUND

- Transitions from the pediatric to adult care is and area of intense investigation. Children with chronic illness are unable to keep up the demands of the adult medical care, sustaining high morbidity and mortality.

RESULTS

- Total of 31 surveys conducted. 22 patients/parents of children who had received a liver transplant and 9 with end stage liver disease.
- Diagnosis varied across the group.
- Majority of patients surveyed were female (70%).
- Mean age at the time of transfer was 14.8 years (14-21).
- Though majority of the patients were seen in clinic, 20% had their first contact with adult services through an ER visit.
- The single factor deemed as being critical to a smooth transition was education of the children.
- The majority (82%) felt that institution of peer support groups for the children with "letting go" by parents and providers would be helpful.
- Most of the patients 21/31 (68%) reported they did not run out of medications before being seen in the adult setting.
- 6/31 (19%) reported running out of medication before being seen in the adult setting.
- Four patients were not taking their medications.
- Of the transferred patients 19% are being evaluated to re-transplant.

Patient diagnosis



Reasons provided during transfer



Number of visits per year



Time spent in clinic



Patient population



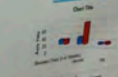
Medication status at the time of transfer



Medication status sufficient before the out



Liver enzyme levels





Quantitative Analysis of Phase-Contrast Magnetic Resonance in Pediatric Patients with Chiari Malformation

Felix Pan, Rohit Ramchandani, Joshua Chern, Nilesh Desai, John Cashless

Background

Chiari malformation (CM) is a congenital anomaly of the skull base in which the posterior arch of the atlas (C1) is abnormally low, allowing the cerebellum and brainstem to descend into the spinal canal. This can lead to compression of the brainstem and spinal cord, resulting in neurological symptoms. The gold standard for diagnosis is MRI. However, MRI is often limited by motion artifacts and poor resolution of the posterior arch of the atlas. Phase-contrast MRI (PCMR) is a non-invasive technique that can provide quantitative measurements of CSF flow. This study aims to evaluate the utility of PCMR in the diagnosis and management of CM.

Methods

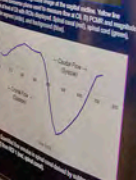
PCMR was performed on 10 pediatric patients with CM. The study included 5 patients with CM type I and 5 patients with CM type II. The patients were divided into two groups: those with a syrinx and those without a syrinx. The PCMR was performed at the C6 level. The maximum cranial flow (CF) and the duration of cranial-directed flow (CDF) were measured. The results were compared between the two groups.

Results

The maximum cranial flow (CF) was significantly lower in patients with a syrinx (1,381.055 ml/s vs. 2,198.51 ml/s, $p=0.01$). The duration of cranial-directed flow (CDF) was also significantly lower in patients with a syrinx (364.00 s vs. 441.43 s, $p=0.02$). The foramen magnum (FM) area was significantly larger in patients with a syrinx (490.50 s vs. 389.44 s, $p=0.02$). Therefore, an attenuated and prolonged cranial flow seems to be characteristic of Chiari malformation patients who present with a syrinx.

Conclusion

PCMR analysis of the foramen magnum at C6 showed a significant reduction in maximum cranial CSF flow and an increased duration of cranial flow in Chiari malformation patients with a syrinx. Quantitative measures may be helpful in patients with a syrinx. Complex and subjective conditions such as Chiari malformation. Future analysis of PCMR will concentrate on how differences in flow increase to improved response to surgery.



Results

PCMR analysis showed that the maximum cranial flow value at C6 was significantly lower in those patients that presented with a syrinx (1,381.055 ml/s vs. 2,198.51 ml/s, $p=0.01$). Figure 4. A small, but non-significant decrease in flow was observed at the foramen magnum (2,074.0.91 ml/s vs. 2,101.1.50 ml/s, $p=0.19$). These results may indicate a decrease in flow in response to decreased volume of the subarchoid space.

It was also observed that the duration of cranial-directed flow increased significantly in patients with a syrinx at C6 (364.00 s vs. 441.43 s, $p=0.02$) and the foramen magnum (490.50 s vs. 389.44 s, $p=0.02$). Figure 4. Therefore, an attenuated and prolonged cranial flow seems to be characteristic of Chiari malformation patients who present with a syrinx.

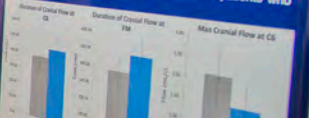


Figure 4. Duration of cranial directed flow at C6, at the foramen magnum, and maximum cranial directed flow at C6 in patients with a syrinx (n=9) and those without a syrinx (n=9).

Conclusion

PCMR analysis of the foramen magnum at C6 showed a significant reduction in maximum cranial CSF flow and an increased duration of cranial flow in Chiari malformation patients with a syrinx. Quantitative measures may be helpful in patients with a syrinx. Complex and subjective conditions such as Chiari malformation. Future analysis of PCMR will concentrate on how differences in flow increase to improved response to surgery.

Quantitative Analysis of Phase-Contrast Magnetic Resonance in Pediatric Patients with Chiari Malformation

Aph Pin, Robb Blumenthal, Joshua Chern, Nilesh Desai, John Oshinski

Introduction
 Chiari malformation (CM) is a congenital anomaly of the posterior fossa. It is characterized by a downward displacement of the cerebellum and brainstem through the foramen magnum. This displacement can lead to a variety of clinical symptoms, including headaches, neck pain, and neurological deficits. The pathophysiology of CM is complex and involves a combination of genetic and environmental factors. The degree of malformation can vary from mild to severe, and the clinical presentation can be highly variable. The purpose of this study was to evaluate the relationship between the degree of malformation and the duration of cranial-directed flow in patients with CM.

Methods
 A retrospective analysis of 100 patients with CM was performed. All patients underwent phase-contrast MRI of the cervical spine. The maximum cranial flow velocity was measured at the foramen magnum and the foramen magnum was measured. The duration of cranial-directed flow was also measured. The relationship between the degree of malformation and the duration of cranial-directed flow was evaluated using Pearson's correlation coefficient.

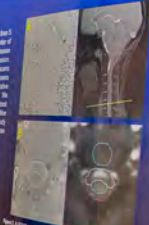


Figure 1. Axial MRI images of the cervical spine. Yellow and red circles indicate the location of the foramen magnum and the foramen magnum, respectively.

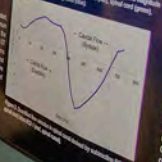


Figure 2. Duration of cranial-directed flow at C6 in patients with a syrinx (n=27) and those without a syrinx (n=73).

Results
 PCMR analysis showed that the maximum cranial flow velocity was significantly lower in those patients that presented with a syrinx (1.38±0.55 ml/s) when compared to those without a syrinx (2.18±0.53 ml/s, p=0.01). Figure 4. A small, but non-significant decrease in flow was observed at the foramen magnum (2.07±0.53 ml/s vs. 2.13±1.50 ml/s, p=0.19). These results may indicate a compensation in flow in response to decreased volume of subarachnoid space.

It was also observed that the duration of cranial-directed flow increased significantly in patients with a syrinx at C6 (364.00 ± 441.43 s, p=0.05) and the foramen magnum (490.50 s vs. 369.44 s, p=0.02). Figure 4. Therefore, an attenuated and prolonged cranial flow seems to be characteristic of Chiari malformation patients with a syrinx.

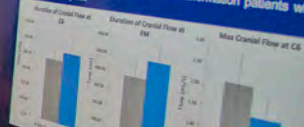


Figure 4. Duration of cranial-directed flow at C6, all flow Barrows arrangement, and maximum cranial-directed flow at C6 in patients with a syrinx (n=27) and those without a syrinx (n=73).

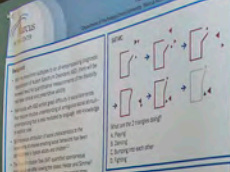
Conclusion
 PCMR analysis of the transverse plane at C6 showed a significant reduction in maximum cranial CSF flow and an increased duration of cranial flow in Chiari malformation patients with a syrinx. Quantitative flow analysis may be helpful in analysis of an inherently complex and subjective condition as Chiari malformation. Future analysis of PCMR will concentrate on flow differences in flow basins to improved response to surgery.





Quantifying social-communicative function in ASD via a structured Social Attribution Task

Rebecca Berger-Caceres^{1,2}, Warren Jones^{1,2}, Ami Klin^{1,2}
¹Department of Psychology, ²University of Maryland School of Medicine



MEAS
 - All SAT-MC was administered to 100 high-functioning ASD participants with IQ above 70
 - Inverse logistic 'baseline' administered in ASD Group

Participants

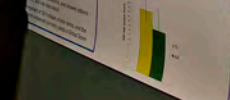
	ASD	TD	F	p-value
Age	10.8	10.2	0.001	0.001
Verbal IQ	100.0	100.0	0.001	0.001
Nonverbal IQ	95.0	100.0	0.001	0.001
ADOS-C	10.0	0.0	0.001	0.001

Global Functioning in ASD Group

Measure	ASD	TD	F	p-value
SAT-MC Global Score	10.0	10.0	0.001	0.001
SAT-MC Verbal	10.0	10.0	0.001	0.001
SAT-MC Nonverbal	10.0	10.0	0.001	0.001
SAT-MC Daily Living Skills	10.0	10.0	0.001	0.001

Global Functioning in TD Group

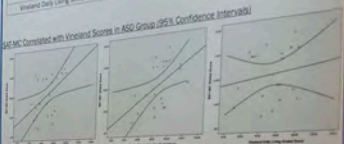
Measure	ASD	TD	F	p-value
SAT-MC Global Score	10.0	10.0	0.001	0.001
SAT-MC Verbal	10.0	10.0	0.001	0.001
SAT-MC Nonverbal	10.0	10.0	0.001	0.001
SAT-MC Daily Living Skills	10.0	10.0	0.001	0.001



Pearson Correlations with SAT-MC Global Score

	TD	ASD
Age	0.389**	0.618*
Verbal IQ	0.188	0.235
Inward Socialization	-	0.482*
Inward Communication	-	0.684*
Inward Daily Living Skills	-	0.138

- Significant positive correlation between Global Score and Age in both groups indicates that SAT-MC taps a developmental process
- No correlation between Global Score and Verbal IQ indicates independence of social attribution from verbal ability



- SAT-MC Global Score was significantly correlated with scores in both the Socialization and Communication domains of the Vineland
- No relationship existed with the Daily Living Skills domain, a domain of adaptive function that is not descriptive of social abilities

Conclusions

- School-age children with ASD demonstrate deficits in social attribution, as assessed via SAT-MC
- Social attribution abilities are acquired developmentally and are not contingent on verbal ability
- Social attribution may be able to serve as a clinically relevant construct for assessing social disability in ASD, as evidenced by its correlation with social and communication domains of the Vineland, an established clinical measure with a distinct ASD profile
- The SAT-MC taps spontaneous social attribution, without the explicitly social framework of other assessments of social and mental-state attribution

Limitations and Future Directions

- Mean IQ of sample was not below average; need sample with more variability in verbal ability in order to assess SAT-MC's utility in ASD populations with more language impairment
- Lack of non-ASD clinical control group limits ability to draw conclusions about ASD-specificity of social attribution deficits
- Current sample was older than average age of ASD diagnosis; further exploration in younger, less verbal individuals is necessary to assess social attribution and utility of SAT-MC at younger ages

References

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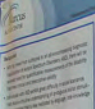
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 24th Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2015
 25th Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2016
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 28th Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2019
 29th Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2020
 30th Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2021
 31st Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2022
 32nd Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2023
 33rd Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2024
 34th Annual Meeting of the American Society of Human Genetics, Denver, Colorado, June 19-23, 2025

Quantifying social-communicative function in ASD via a structured Social Attribution Task

Rebecca Burt-Cullen¹, Warren Jones^{1,2}, Ami Klin^{1,3}
¹Department of Psychology, Emory University School of Medicine
²Department of Psychiatry, Emory University School of Medicine
³Department of Neuroscience, Emory University School of Medicine



What are the 2 sample sizes?
 A. 100
 B. 1000
 C. 10000
 D. 100000

Method
 • All SAT-MC was administered to 100 participants with ASD and 100 typically developing (TD) peers
 • Mean verbal IQ score was 70.00 (SD=15.00) for ASD group and 100.00 (SD=15.00) for TD group

Age	IQ	ADOS	ADOS-C
ASD	70.00	15.00	15.00
TD	100.00	5.00	5.00

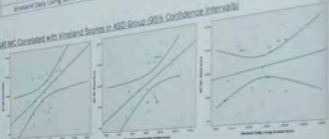
Results
 • Mean IQ of sample was not below average; need sample with more variability in verbal ability in order to assess SAT-MC utility in ASD populations with more language impairment
 • Lack of non-ASD clinical control group limits ability to draw conclusions about ASD-specificity of verbal social skills; necessary to assess social attribution and utility of SAT-MC at younger ages



Pearson Correlations with SAT-MC Global Score

	TD	ASD
Age	0.381**	0.431**
Verbal IQ	0.358*	0.238
Autism Socialization	0.482**	0.484**
Standard Communication	0.484**	0.218
Standard Daily Living Skills		

• Significant positive correlation between Global Score and Age in both groups indicates that SAT-MC taps a developmental process
 • No correlation between Global Score and Verbal IQ indicates independence of social attribution from verbal ability



• SAT-MC Global Score was significantly correlated with scores in both the Socialization and Communication domains of the Vineland
 • No relationship existed with the Daily Living Skills domain, a domain of adaptive function that is not receptive of social abilities

Conclusions
 • School-age children with ASD demonstrate deficits in social attribution, as assessed via SAT-MC
 • Social attribution abilities are acquired developmentally and are not contingent on verbal ability disability in ASD, as evidenced by its correlation with social and communication domains of the Vineland, an established clinical measure with a distinct ASD profile
 • The SAT-MC taps spontaneous social attribution, without the explicit social framework of other attribution tasks

Limitations and Future Directions
 • Mean IQ of sample was not below average; need sample with more variability in verbal ability in order to assess SAT-MC utility in ASD populations with more language impairment
 • Lack of non-ASD clinical control group limits ability to draw conclusions about ASD-specificity of verbal social skills; necessary to assess social attribution and utility of SAT-MC at younger ages

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Acknowledgments
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 Contact: rebecca.burt-cullen@emory.edu





Warren
[unreadable]

Children's
Hospital
University of Illinois

[unreadable]



Warren
Name

Children's
Hospital
University of Illinois













ULINWATER BALLROOM
SALON II



Established T-tubule Density in Mammalian Ventricular Cells is Associated with Remoteness of Calcium Transients

Figure 1 Characterization of T-tubule density and its relationship to calcium transients in ventricular myocytes. **A** Confocal images of T-tubules (red) and nuclei (blue) in ventricular myocytes. **B** Quantification of T-tubule density (T-tubule length per cell area) and its relationship to calcium transients (Ca²⁺ transient half-width at half-maximum, Ca²⁺ transient amplitude). **C** Relationship between T-tubule density and Ca²⁺ transient half-width at half-maximum. **D** Relationship between T-tubule density and Ca²⁺ transient amplitude.

Figure 2 Alterations in T-tubule density correlate with postnatal development in human heart. **A** Confocal images of T-tubules (red) and nuclei (blue) in human ventricular myocytes. **B** Quantification of T-tubule density (T-tubule length per cell area) and its relationship to postnatal development (age in months). **C** Relationship between T-tubule density and postnatal development.

CONCLUSIONS

Established T-tubule density in mammalian ventricular cells is associated with remoteness of calcium transients. Alterations in T-tubule density correlate with postnatal development in human heart.

Mary Hagan

Fluid balance accuracy between patients

University of Alabama at Birmingham
Department of Biomedical Engineering
1915 University Blvd., Birmingham, AL 35294
Dr. Pradyumn K. Jaiswal, Ph.D. (pradyumn.jaiswal@uab.edu)
Dr. Pradyumn K. Jaiswal, Ph.D. (pradyumn.jaiswal@uab.edu)
Dr. Pradyumn K. Jaiswal, Ph.D. (pradyumn.jaiswal@uab.edu)

Background
Clinical implementation of combined ECMO/CRRT is a major challenge in critical care medicine. A key challenge is to maintain accurate fluid balance during ECMO/CRRT. Inaccurate fluid delivery affects by periods of net removal and replacement fluid (RF) added to pump, under varying process conditions.

• Fluid balance inaccurate between dialysis (DF) removed and replacement fluid (RF) added

• Causes excessive extracorporeal blood volumes over time

• No FDA approved CRRT device for use in ECMO patients

• No FDA approved CRRT device for venous and arterial patients

• No standardized ECMO circuit

• We have developed a **low volume, patient-specific Kidney Injury and Dysfunction Support (KIDS) CRRT device** as a novel fluid management system providing **high accuracy in fluid balance** for combined implementation with ECMO.

Experiments were used to assess reliability of volume measurement during ECMO.

Fluid Balance (FB) accuracy for using ECMO and flow of combined ECMO circuit pump.

When any collection occurs, the flow is high-pressure (HF) of mixing tanks and a mass flow sensor design corrects error of HF and HF used to mixing flow.

• ECMO and CRRT are not designed to be used together.

• ECMO requires the use of 20-30 mL/min flow.

• Patient HF and HF are not the same.

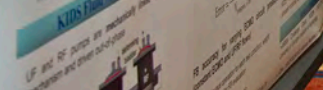
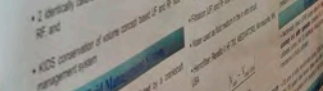
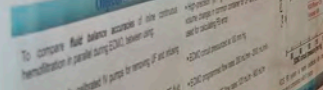
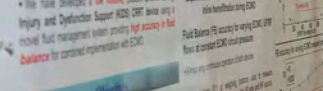
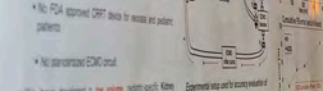
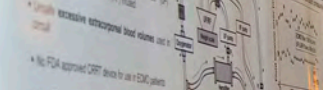
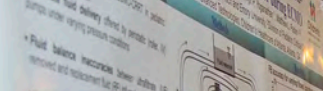
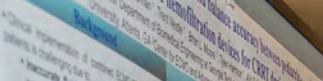
• High accuracy measurement of flow.

• Accurate fluid balance for ECMO and CRRT.

• Accurate fluid balance for ECMO and CRRT.

• Accurate fluid balance for ECMO and CRRT.

• Accurate fluid balance for ECMO and CRRT.



KIDS Fluid Management System

UF and RF pumps are mechanically linked to a control mechanism and driven by a single pump.

RF control for using ECMO circuit pump.

ECMO and CRRT are not designed to be used together.

ECMO requires the use of 20-30 mL/min flow.

Patient HF and HF are not the same.

High accuracy measurement of flow.

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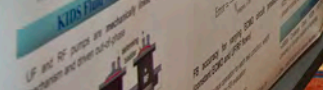
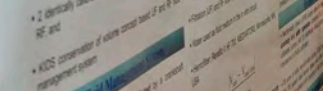
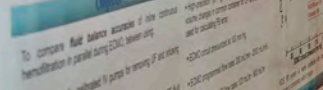
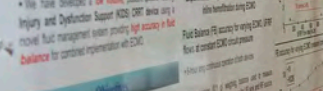
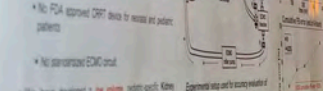
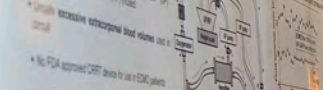
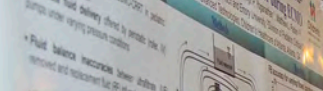
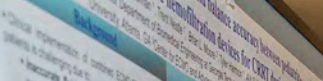
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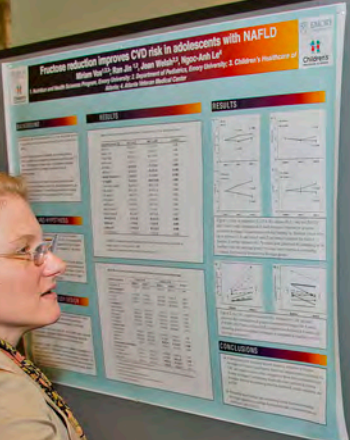
Accurate fluid balance for ECMO and CRRT.

Accurate fluid balance for ECMO and CRRT.

Accurate fluid balance for ECMO and CRRT.

Accurate fluid balance for ECMO and CRRT.





Background and Objective

- For children with Down syndrome information on hospitalizations beyond the first few years of life and the presence of critical congenital heart disease (CCHD) are lacking.
- We examined the prevalence of CCHD and associated costs for children with and without the presence of Down syndrome defects.

Methods

Study Design and Data Source
 Retrospective, population-based study of children with DS born 1998-2010, identified by the Florida Birth Defects Registry and linked to hospital discharge records for up to 10 years after birth.

- Results stratified by isolated DS (no other major birth defects present), presence of congenital heart defects (CHD), and presence of major non-cardiac birth defects.
- Results for children with CCHD stratified by presence or absence of 12 CCHD types.

Inclusion Criteria

- ICD-9-CM code for DS (578.00)
- Mothers delivered live-born infant in FL as residents at time of delivery

Exclusion Criteria

- Born out-of-state
- Adopted or any retrospective adoptees

Results

- For all children with DS, median inpatient costs were highest during the first two years of life (figure 1)
- Children with DS and CHD had significantly higher inpatient costs than children with isolated DS for infancy, year 1, and years 3-4 (figure 2)
- Among children with DS and CHD, children with CCHD had significantly higher inpatient costs than those without CCHD for infancy, year 1, and years 3-4 (figure 4)

Discussion

- Results are consistent with previous findings from the Quality (CHILD) Health Care Cost and Utilization Program that showed children with DS and CHD have higher inpatient costs.
- Stratified results by CCHD, including large sample combination of population-based, state-wide data, can provide valuable information to estimate costs and associated burden of CCHD.
- Limitations:** Passive case ascertainment; non-birth certificate information on prenatal diagnosis of DS.





Genomics
 Children's Hospital of Philadelphia

Genome Sequencing of GWAS Loci for Type 2 Diabetes in African Ancestry Populations

Department of Biostatistics, University City Science Center, University of Pennsylvania

Introduction

Informative, novel SNPs (IN) is a strategy to assess the impact of polymorphisms on gene expression, independent of their linkage disequilibrium (LD) with tag SNPs. INs are defined as SNPs that are not in LD with any other SNPs in the region and are not in LD with any other SNPs in the region. INs are defined as SNPs that are not in LD with any other SNPs in the region and are not in LD with any other SNPs in the region.

Objective and study design

We selected 100 SNPs for genotyping that were associated with T2D in African ancestry populations. We genotyped 100 SNPs in 100 African ancestry individuals and 100 European ancestry individuals. We compared the results of the genotyping in African ancestry individuals to the results of the genotyping in European ancestry individuals.

Methods

Genotyping was performed using Illumina Infinium arrays. The results of the genotyping were compared to the results of the genotyping in European ancestry individuals.

Results

The results of the genotyping in African ancestry individuals were compared to the results of the genotyping in European ancestry individuals.

Conclusion

The results of the genotyping in African ancestry individuals were compared to the results of the genotyping in European ancestry individuals.

Table 1: Genotyping results

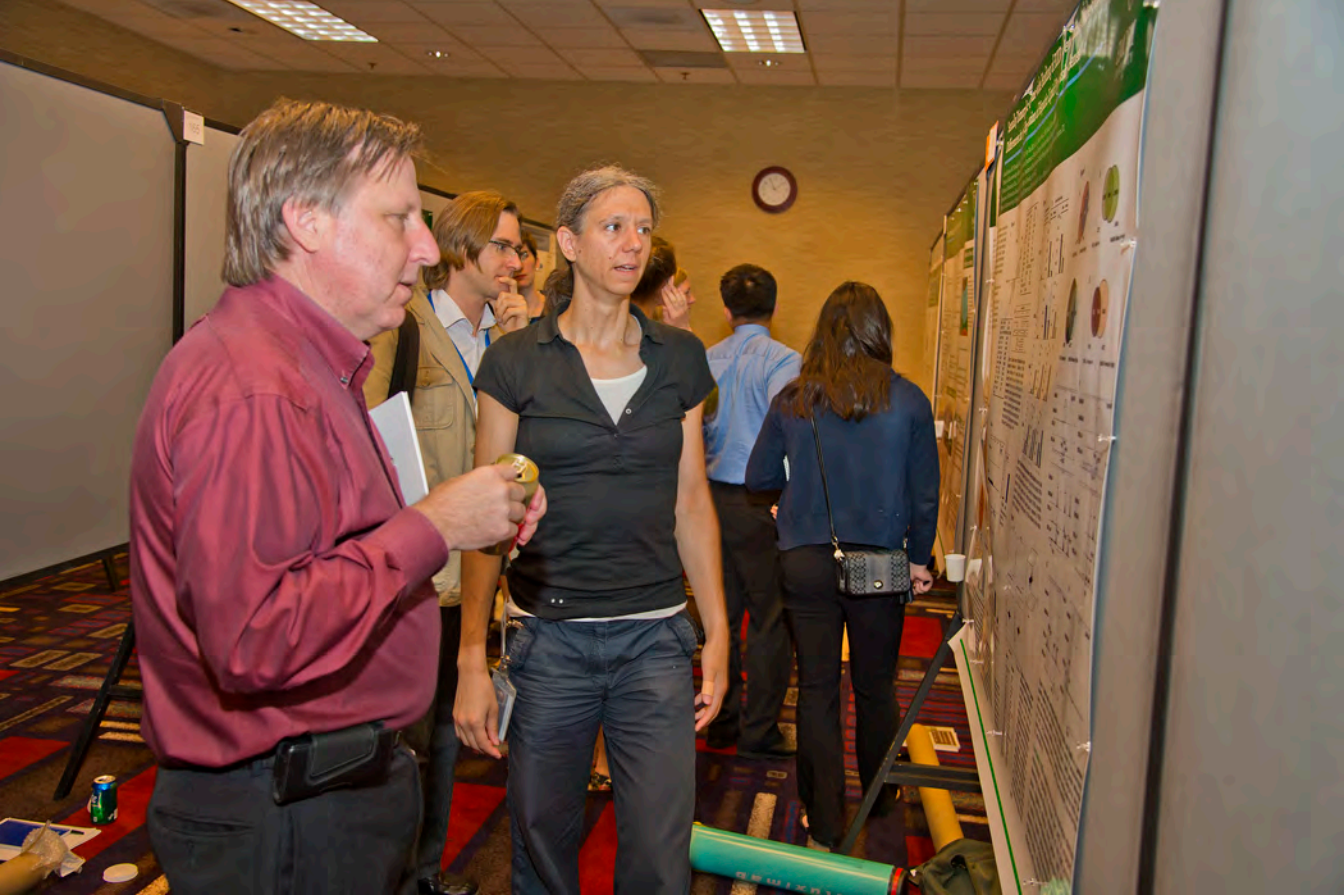
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rs33333333	0.003	0.003	0.003
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rs55555555	0.005	0.005	0.005
rs66666666	0.006	0.006	0.006
rs77777777	0.007	0.007	0.007
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rs10101010	0.010	0.010	0.010

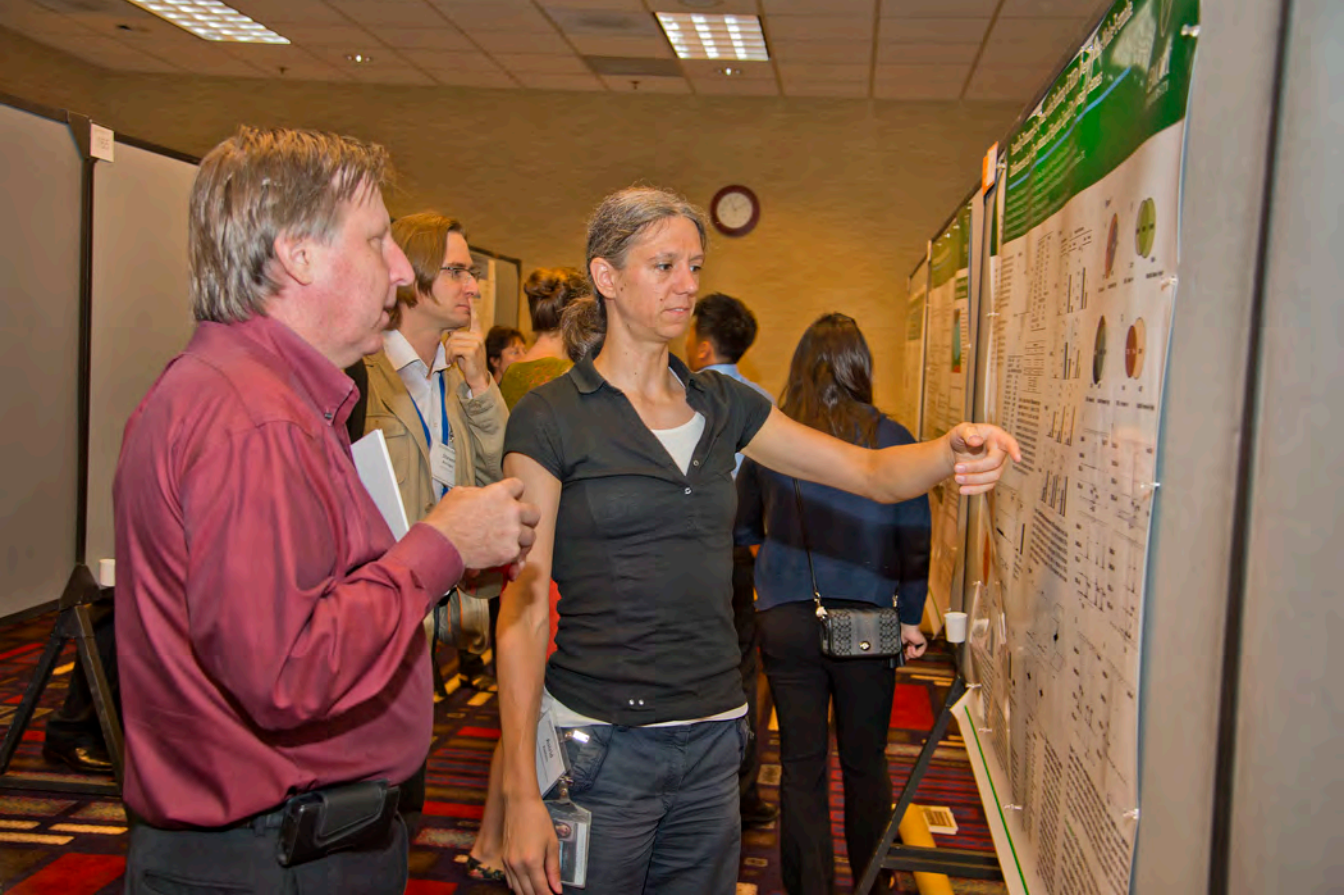
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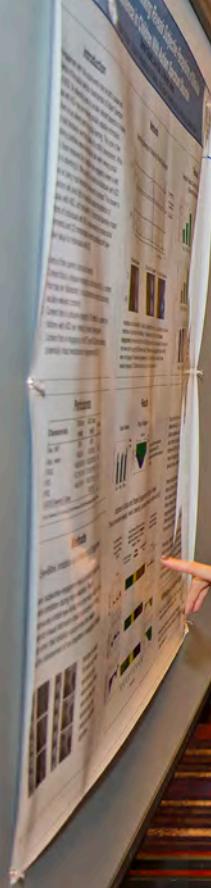














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Nuclease-based Gene Correction for Treating Spinal Muscular Atrophy

Wilfried Rosahl, PhD¹, TJ Cradick, PhD, Han Phan, MD, Gong Sun, PhD
¹Dept. of Cell Biology, Emory University ²Dept. of Biomedical Engineering, Georgia Inst. of Technology ³Pediatric Neurology, Emory University and Children's Healthcare of Atlanta

Abstract

Spinal muscular atrophy (SMA) is caused by homozygous deletions or mutations in the SMN2 gene, which provides the only source of SMN protein in the nervous system.

Nucleases that precisely cut the SMN2 gene, which encodes the same protein, can remove a single SMN2 exon that causes skipping of exon 7 in approximately 80% of the SMN2 transcripts, resulting in a functional and stable protein.

Restoring SMN2 activity can rescue the spinal muscular atrophy disease phenotype. We are currently testing nucleases that correct the exon 7 deletion in the SMN2 locus as a novel approach for treating SMA.

Spinal Muscular Atrophy (SMA)

-Progressive decline diagnosed with SMA can do not usually live past two years of age

-Genotype - SMN2 exon 7 deletion results in the functional protein SMN2 protein



SMN2 TALEN Pairs Utilized



1.5 kb 1 2 3 4 5 6 7

7x28-mediated editing of SMN2 Corrects SMN Protein Levels



Humans have two SMN genes, SMN1 and SMN2, with identical protein-encoding capacity.



SMN1 gene deactivation in SMA leaves SMN2 as the only source of SMN protein.



7x28-mediated editing of SMN2 Corrects SMN Protein Levels



Poster board with text and diagrams, partially obscured by people.

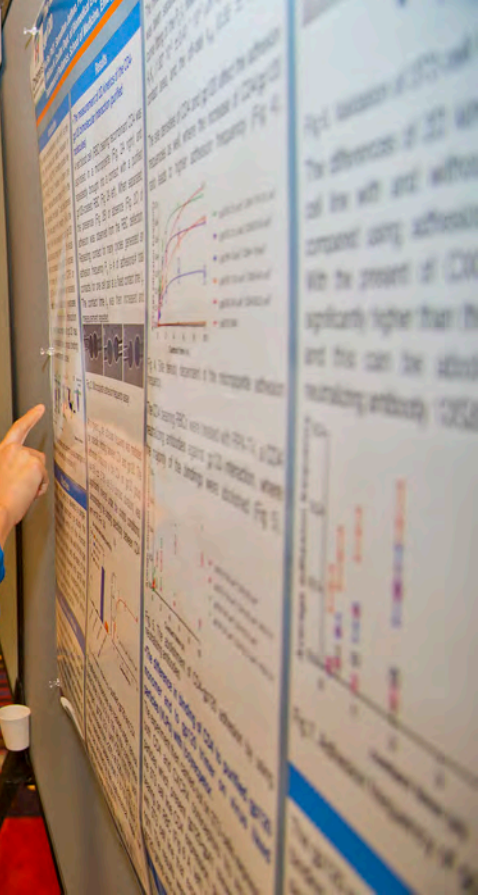
Poster board with text and diagrams, partially obscured by people.

Large poster board with text and diagrams, partially obscured by people.

Poster board with text and diagrams, partially obscured by people.



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Department of Medicine





Wide Binding of RXR α Determines Male-Female Expression of Hepatic Lipid Processing Genes

Feng Tian, MD; Julio C. Feltes, Wei Li, PhD; Saad J. Karpen, MD/PhD
 Department of Pediatrics, Emory University School of Medicine, Atlanta, GA
 Department of Pediatrics, Emory University School of Medicine, Atlanta, GA
 Emory University, Atlanta, GA
 Department of Pediatrics, Emory University School of Medicine, Houston, TX



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Figure 3: Sexual dimorphism in RXR binding and gene expression. A: Genes with RXR binding sites. B: RXR binding levels in male and female liver. C: Gene expression levels for RXR-bound genes.

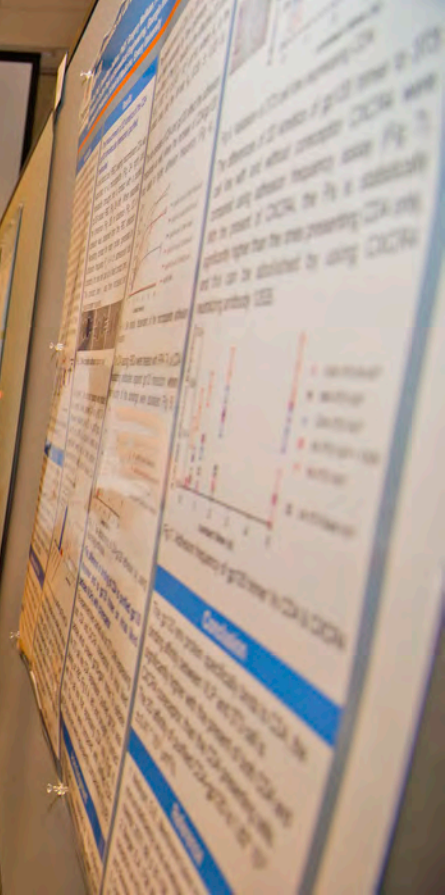


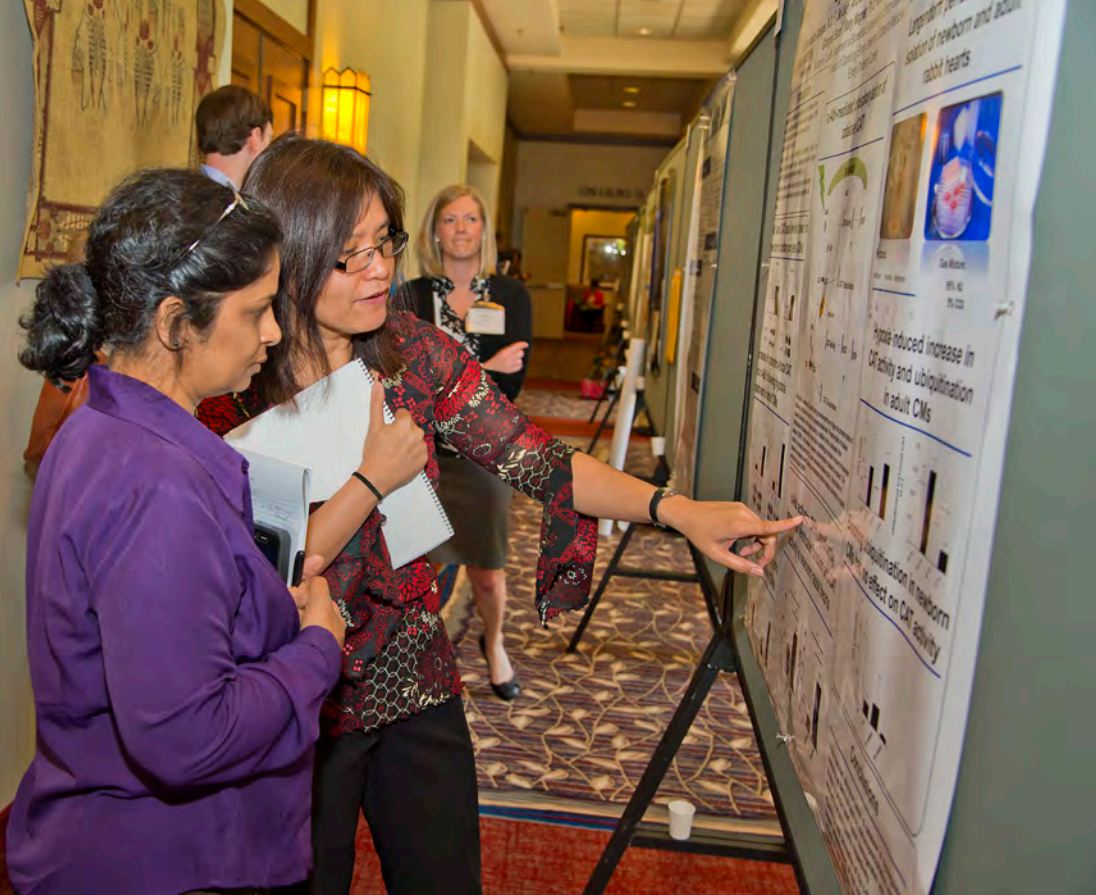
Figure 7: Genes with overlapping binding sites for RXR and RXR. A-D: Venn diagrams showing overlap of RXR and RXR binding sites. E-G: Bar graphs showing gene expression levels for RXR-bound genes.

Conclusion: RXR α appears to be one of the most widely distributed transcriptional regulators in mouse liver and is implicated in determining sexually-dimorphic expression of key lipid processing genes, suggesting potential novel gender- and gene-specific responses to RXR-based treatments for lipid-related liver disease. In addition, hepatic gender differential expression of RXR α with several sites appears to involve functional association of RXR α with several other regulatory factors, including Stat3, suggesting complex layers of interactions within the process.

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Children's
Hospitals of Philadelphia

Growing up: not an easy transition. Perspectives of patients transferred from the liver transplant

Abstract

Background: Liver transplantation is a complex procedure with a high risk of mortality. The transition from pediatric to adult care is a challenging process for patients and their families. This study aims to explore the perspectives of patients transferred from the liver transplant program to the adult care program.

Methods

A series of focus groups were conducted with 12 patients who had been transferred from the liver transplant program to the adult care program. The focus groups were held in a private room at the hospital and lasted approximately 45 minutes. The participants were asked to discuss their experiences with the transition process, including their feelings, concerns, and expectations.

Results

The results of the focus groups indicate that the transition process is a challenging experience for patients. The most common concerns expressed by the patients were related to the loss of their pediatric care team, the change in their environment, and the uncertainty of the future. The patients also expressed a desire for more information and support during the transition process.

Conclusions

The findings of this study suggest that the transition process from pediatric to adult care is a complex and challenging experience for patients. It is important for healthcare providers to be aware of the patients' perspectives and to provide them with the necessary support and information to facilitate a successful transition.

Keywords

liver transplantation, transition, patients, perspectives, adult care



Derivation of Multiple Induced Pluripotent Stem Cell Lines to Model Muscular Dystrophy-Associated Cardiomyopathy

Doan C. Nguyen, Qingling Wu, Tracy A. Hennessy, Rajneesh Sax, Karmali Chen, Tahir Sheikh, Tao & Sude, Daniel A. Geller, Gang Bao, Paul Spornstein, Christopher & Deshpande, Kevin Mahan, Todd Matlock, Kay & Wayne Swartz, Li



BACKGROUND

- Cardiomyopathy is the major cause of death in Duchenne muscular dystrophy (DMD)
- Mechanism(s) of dystrophic cardiomyopathy remain incompletely understood
- We model dystrophic cardiomyopathy using patient-specific IPS cells

METHODS

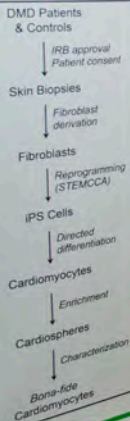
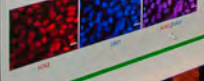
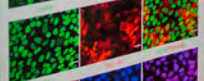
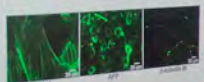
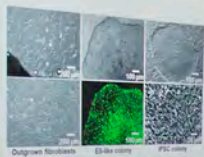
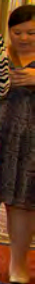
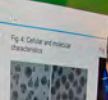
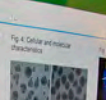
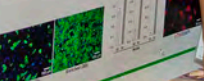
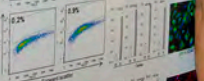
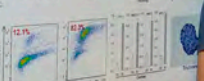
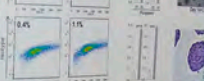
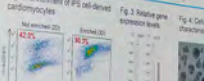


Fig. 1: Derivation and verification of DMD-derived IPS cell lines



RESULTS



Derivation of Multiple Induced Pluripotent Stem Cell Lines to Model Muscular Dystrophy-Associated Cardiomyopathy

Deen C. Nguyen, Qinghui Wu, Yiran A. He, Andrew R. Powell, Sha-Amin Chen, Yuxia Ren, Todd R. Hall, Lauren S. Baker, Gang Bao, Paul Spessert, Christopher E. Desautels, Jorge Malar, Todd Hoffman, Kerry S. Wagner, Charles Y. Lu



BACKGROUND

- Cardiomyopathy is the major cause of death in Duchenne muscular dystrophy (DMD)
- Mechanism(s) of dystrophic cardiomyopathy remain incompletely understood
- We aimed to model dystrophic cardiomyopathy using patient-specific IPS cells

METHODS

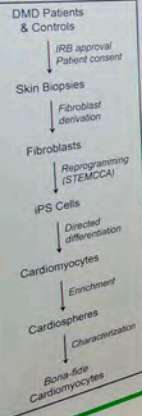


Fig. 1: Derivation and verification of DMD-derived iPS cell lines

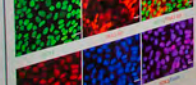
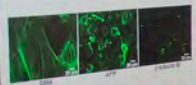
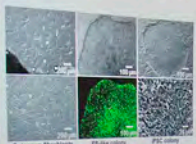
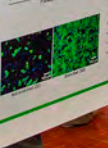
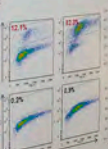
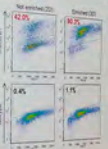


Fig. 2: Enrichment of iPS cell-derived cardiomyocytes



RESULTS

Fig. 3: Real-time gene expression analysis



Fig. 4: Cellular and molecular characteristics





Ignacio
Canz

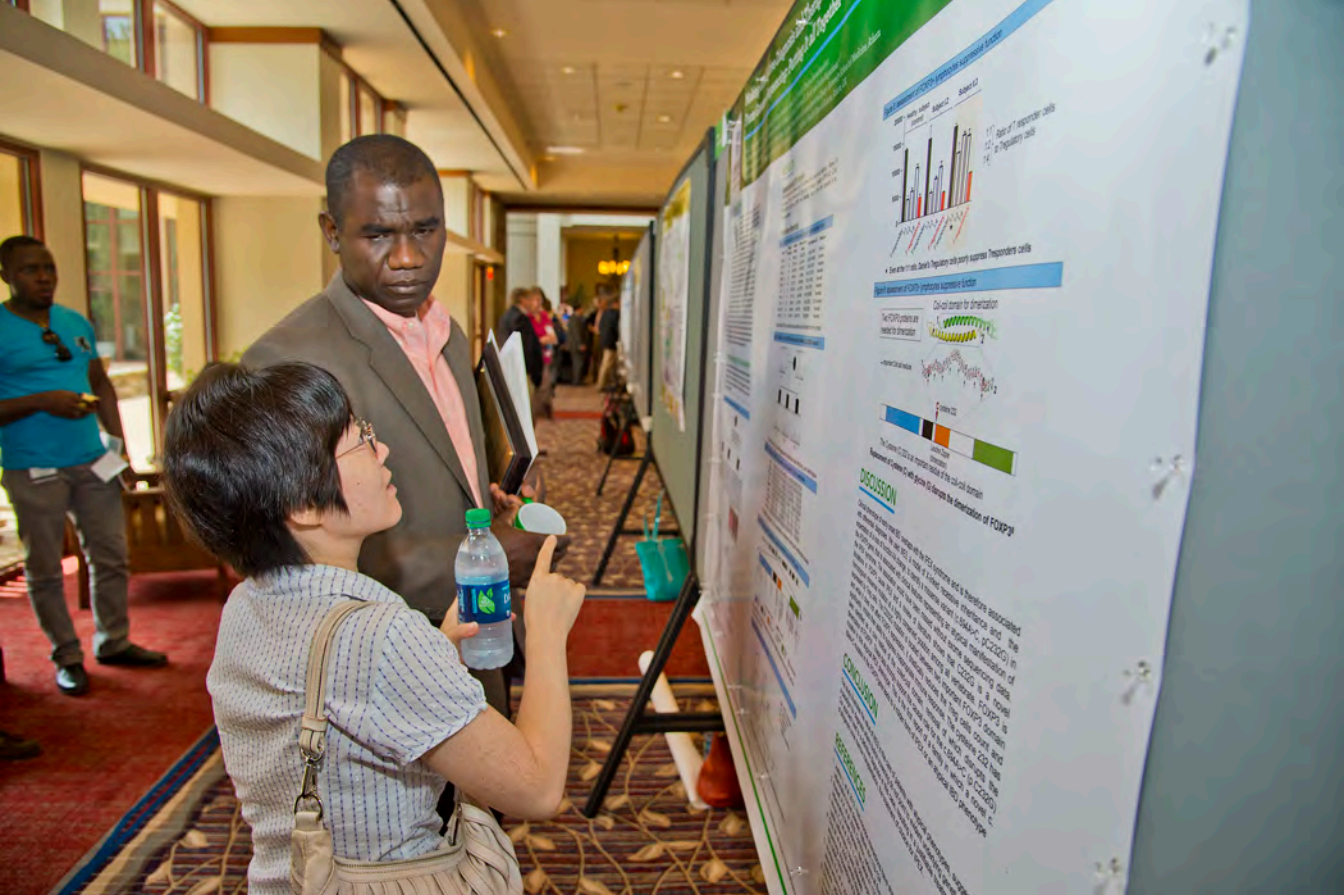


2013 Pediatric Research Forum
Poster Award
Presented to the author(s) of the poster presentation
at the Pediatric Research Forum
on June 28, 2013
1st Place
Clinical Research
Presented on June 28, 2013

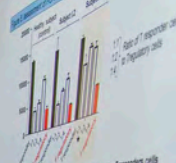


2013 Pediatric Research Retreat
Poster Award
Emerson Young Health Research Group "Research Training
in Child Health Care" Award
Presented at the 2013 Pediatric Research Retreat
1st Place
Clinical Research
Presented on June 20, 2013

11
UNIVERSITY OF MICHIGAN
SCHOOL OF MEDICINE
DEPARTMENT OF PEDIATRICS

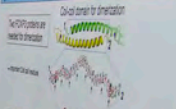


The C-terminal domain of FOXP3 is a novel transcriptional repressor



• The C-terminal domain of FOXP3 is a novel transcriptional repressor

Signal pathway of FOXP3 protein expression



The C-terminal domain of FOXP3 is a novel transcriptional repressor

DISCUSSION

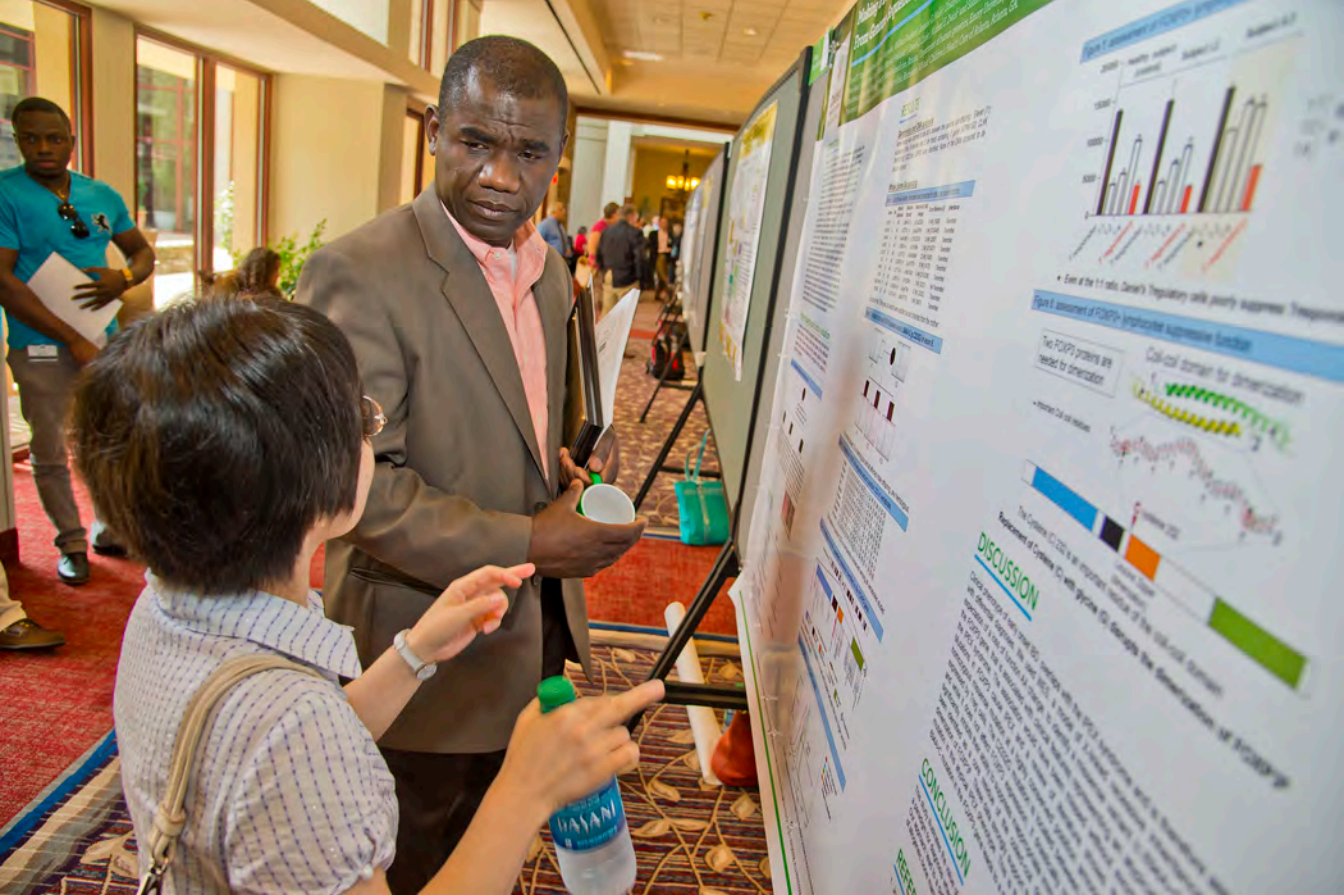
The C-terminal domain of FOXP3 is a novel transcriptional repressor. It is a novel transcriptional repressor that is expressed in T-regulatory cells. It is a novel transcriptional repressor that is expressed in T-regulatory cells. It is a novel transcriptional repressor that is expressed in T-regulatory cells.

CONCLUSION

The C-terminal domain of FOXP3 is a novel transcriptional repressor. It is a novel transcriptional repressor that is expressed in T-regulatory cells. It is a novel transcriptional repressor that is expressed in T-regulatory cells.

REFERENCES

- 1. [Reference 1]
- 2. [Reference 2]
- 3. [Reference 3]
- 4. [Reference 4]
- 5. [Reference 5]





Mary
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EMORY UNIVERSITY

EMORY UNIVERSITY

EMORY UNIVERSITY

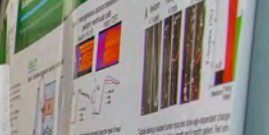


Figure 1: Bar chart showing relative expression levels of various genes. The y-axis is labeled 'Relative Expression' and ranges from 0 to 1.0. The x-axis lists genes: GAPDH, PGC, and others. A color scale on the right indicates expression levels from 0 (blue) to 1.0 (red).



Figure 2: Bar chart showing relative expression levels of various genes. The y-axis is labeled 'Relative Expression' and ranges from 0 to 1.0. The x-axis lists genes: GAPDH, PGC, and others. A color scale on the right indicates expression levels from 0 (blue) to 1.0 (red).

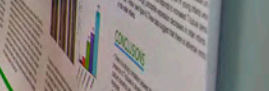


Figure 3: Bar chart showing relative expression levels of various genes. The y-axis is labeled 'Relative Expression' and ranges from 0 to 1.0. The x-axis lists genes: GAPDH, PGC, and others. A color scale on the right indicates expression levels from 0 (blue) to 1.0 (red).

CONCLUSION

The data presented here suggest that the expression of the genes studied here is significantly altered in the presence of the treatment. This finding is consistent with previous reports and suggests that the treatment may be acting through a common pathway. Further studies are needed to elucidate the underlying mechanism.



EMORY UNIVERSITY

Cardiac Health & Performance in the Elderly

Cardiac Health & Performance in the Elderly

Figure 1: Alterations in T-tubule density with aging of PDLF across developmental stages of cardiac development.

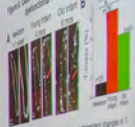
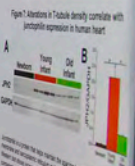


Figure 2: Alterations in T-tubule density correlate with parvalbumin expression in human heart.



CONCLUSIONS

Alterations in T-tubule density with aging of PDLF across developmental stages of cardiac development. T-tubule density increases with aging of PDLF across developmental stages of cardiac development. T-tubule density also increases with aging of PDLF across developmental stages of cardiac development. T-tubule density also increases with aging of PDLF across developmental stages of cardiac development.



PEDIATRIC RESEARCH CENTER

The Children's Hospital of Philadelphia Research Center is the premier clinical research center of the Academy and Translational Science Institute (ACTSI). The center will support a wide range of pediatric research projects, providing patients and their families with increased access to leading-edge clinical trials.

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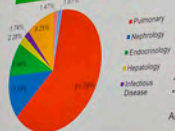
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How to Access

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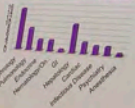
The PRC staff are available to assist you through the protocol development and administrative processes.

Administrative services provided include:

- Assistance with budget development
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Number of Active Studies by Department



The Pediatric Research Center mission is to provide an environment for the advancement of clinical excellence through clinical research. An essential component of this mission is to support the development of pediatric investigators by providing an environment that is supportive and conducive to the execution of quality clinical research.

PRC Volumes



Emily
Researcher

PEDIATRIC RESEARCH CENTER



The Atlanta Children's Research Network is a national clinical research network site of the Atlanta Clinical and Translational Science Institute (ACTSI). Research investigators (pediatric researchers) provide services to a wide variety of patients and have families with convenient access to leading-edge clinical trials.

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- Administrative services provided include:
- Assistance with budget development
 - Feasibility assessment and ancillary department approvals
 - Assistance with development of physician orders
 - Clinical staff education and outreach

Additional tools and resources are available on www.ACTSI.org.

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 - Subscription services
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- #### OUT-OF-STATE SERVICES
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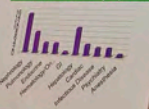
- #### LABORATORY SERVICES
- Laboratory research support
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- #### CONSTRUCTION SERVICES
- Construction research support
 - Construction administrative research support
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Current Users



Number of Active Studies by Department



PRC Volumes



Annex







169

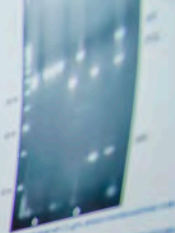
Wilson Disease Associated with...

Objective
To determine the prevalence of Wilson disease (WD) in patients with self-reported recurrent skin and soft tissue infections (SSTI) who were treated with oral penicillins.

Method
A retrospective cohort study was conducted using medical records from a tertiary care center. All patients with a diagnosis of WD and a history of SSTI were included in the study. The prevalence of WD was determined by reviewing medical records for the presence of WD.

Results
The prevalence of WD in patients with a history of SSTI was 10.5% (95% CI 6.8-14.2%). The prevalence of WD was significantly higher in patients with a history of SSTI compared to patients without a history of SSTI (p < 0.001).

Characteristic	Prevalence (%)
Wilson Disease	10.5
Self-Reported Recurrence of SSTI	10.5



Descriptive Table of Follow Up Patients with Self-Reported Recurrence of SSTI

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Number of Patients	10	12	15	18	20	22	25	28	30	32	35	38	40	42	45	48	50	52	55	58	60	62	65	68	70	72	75	78	80	82	85	88	90	92	95	98	100

Flow Chart of Patients with Self-Reported Recurrence of SSTI



Conclusions
Wilson disease is associated with self-reported recurrent skin and soft tissue infections (SSTI) in patients treated with oral penicillins.

References
1. Wilson Disease. National Institutes of Health. 2023.



Genetic Factors Associated with Self-Reported Recurrence of SSI

Background: Self-reported recurrence of SSI is a common clinical problem. Genetic factors may play a role in the pathogenesis of SSI. This study investigated the association between genetic factors and self-reported recurrence of SSI.

Objectives: To identify genetic factors associated with self-reported recurrence of SSI.

Methods: A case-control study was conducted. Cases were patients who self-reported recurrence of SSI within 30 days of their initial surgery. Controls were patients who did not self-report recurrence of SSI. Genotyping was performed for several SNPs.

Results: Significant associations were found between self-reported recurrence of SSI and certain genetic variants. The odds ratio for recurrence was significantly higher for patients with the GG genotype at SNP rs123456 compared to those with the AA genotype (OR 1.5, p < 0.05).

Conclusions: Genetic factors, specifically the GG genotype at SNP rs123456, are associated with self-reported recurrence of SSI.

References: [List of references]

Acknowledgements: [Acknowledgements]

Table 1: Descriptive Table of Follow Up Patients with Self-Reported Recurrence of SSI

SNP	AA	AG	GG	Total
rs123456	10	20	10	40
rs234567	15	15	10	40
rs345678	12	18	10	40
rs456789	18	12	10	40
rs567890	14	16	10	40

Figure 1: Flowchart illustrating the study design and patient flow.

Flowchart description: A flowchart showing the process from patient identification to final analysis. It starts with 'Initial Patient Population', followed by 'Genotyping', then 'Analysis', and finally 'Results'.



Impact of Spatial Accessibility on Severe Health Outcomes

Department of Industrial and Systems Engineering
 Children's Hospital of Atlanta

Methodology

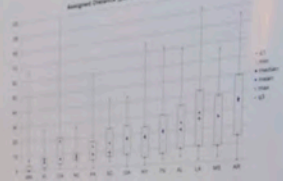
Severe Diseases in Mass
 Children's Hospital of Atlanta
 Data from 2010-2012
 Data from 2010-2012
 Data from 2010-2012

Assignment Rules

Each patient is assigned to one of the following:
 - Closest hospital
 - Closest hospital with a specialist
 - Closest hospital with a specialist and a hospital with a specialist
 - Closest hospital with a specialist and a hospital with a specialist and a hospital with a specialist

Results

Assigned Disease per County Summary by State



Regression Results for ED Visits per Child with Asthma

State	Age 5-14	Age 15-64	Age 65+	High School Diploma	College Degree
Alabama	0.0000	0.0000	0.0000	0.0000	0.0000
Alaska	0.0000	0.0000	0.0000	0.0000	0.0000
Arizona	0.0000	0.0000	0.0000	0.0000	0.0000
Arkansas	0.0000	0.0000	0.0000	0.0000	0.0000
California	0.0000	0.0000	0.0000	0.0000	0.0000
Colorado	0.0000	0.0000	0.0000	0.0000	0.0000
Connecticut	0.0000	0.0000	0.0000	0.0000	0.0000
Delaware	0.0000	0.0000	0.0000	0.0000	0.0000
District of Columbia	0.0000	0.0000	0.0000	0.0000	0.0000
Florida	0.0000	0.0000	0.0000	0.0000	0.0000
Georgia	0.0000	0.0000	0.0000	0.0000	0.0000
Hawaii	0.0000	0.0000	0.0000	0.0000	0.0000
Idaho	0.0000	0.0000	0.0000	0.0000	0.0000
Illinois	0.0000	0.0000	0.0000	0.0000	0.0000
Indiana	0.0000	0.0000	0.0000	0.0000	0.0000
Iowa	0.0000	0.0000	0.0000	0.0000	0.0000
Kansas	0.0000	0.0000	0.0000	0.0000	0.0000
Kentucky	0.0000	0.0000	0.0000	0.0000	0.0000
Louisiana	0.0000	0.0000	0.0000	0.0000	0.0000
Maine	0.0000	0.0000	0.0000	0.0000	0.0000
Maryland	0.0000	0.0000	0.0000	0.0000	0.0000
Massachusetts	0.0000	0.0000	0.0000	0.0000	0.0000
Michigan	0.0000	0.0000	0.0000	0.0000	0.0000
Minnesota	0.0000	0.0000	0.0000	0.0000	0.0000
Mississippi	0.0000	0.0000	0.0000	0.0000	0.0000
Missouri	0.0000	0.0000	0.0000	0.0000	0.0000
Montana	0.0000	0.0000	0.0000	0.0000	0.0000
Nebraska	0.0000	0.0000	0.0000	0.0000	0.0000
Nevada	0.0000	0.0000	0.0000	0.0000	0.0000
New Hampshire	0.0000	0.0000	0.0000	0.0000	0.0000
New Jersey	0.0000	0.0000	0.0000	0.0000	0.0000
New Mexico	0.0000	0.0000	0.0000	0.0000	0.0000
New York	0.0000	0.0000	0.0000	0.0000	0.0000
North Carolina	0.0000	0.0000	0.0000	0.0000	0.0000
North Dakota	0.0000	0.0000	0.0000	0.0000	0.0000
Ohio	0.0000	0.0000	0.0000	0.0000	0.0000
Oklahoma	0.0000	0.0000	0.0000	0.0000	0.0000
Oregon	0.0000	0.0000	0.0000	0.0000	0.0000
Pennsylvania	0.0000	0.0000	0.0000	0.0000	0.0000
Rhode Island	0.0000	0.0000	0.0000	0.0000	0.0000
South Carolina	0.0000	0.0000	0.0000	0.0000	0.0000
South Dakota	0.0000	0.0000	0.0000	0.0000	0.0000
Tennessee	0.0000	0.0000	0.0000	0.0000	0.0000
Texas	0.0000	0.0000	0.0000	0.0000	0.0000
Utah	0.0000	0.0000	0.0000	0.0000	0.0000
Vermont	0.0000	0.0000	0.0000	0.0000	0.0000
Virginia	0.0000	0.0000	0.0000	0.0000	0.0000
Washington	0.0000	0.0000	0.0000	0.0000	0.0000
West Virginia	0.0000	0.0000	0.0000	0.0000	0.0000
Wisconsin	0.0000	0.0000	0.0000	0.0000	0.0000
Wyoming	0.0000	0.0000	0.0000	0.0000	0.0000

- Disease is a significant predictor by itself
- Disease has a higher impact on severe outcomes
- For younger children (Age 5-14)
- In areas where a greater percentage of the adult population has no more than a high school diploma

Conclusions

Overall there are more factors and interactions that are significant when estimating ED visits than hospitalizations, and the size holds for the predictors related to geographic access.

- The most striking geographic access to specialist care is to have a greater impact on ED visit rate than on hospitalizations
- Interventions to improve geographic access to specialist care should be focused on elementary and middle school children in areas where fewer of adults graduated from high school

This research is supported in part by the 2012 Georgia Tech IPAT & Children's Hospital of Atlanta seed grant and by NSF CAREER grant CMM-0964283



Quantitative Analysis of Phase-Contrast Magnetic Resonance in Pediatric Patients with Chiari Malformation

Kyle Park, Kabila Riemenchneider, Joshua Chern, Nilesh Desai, John Oshinski



Introduction

Chiari malformation is defined as a bony bridge of greater than 5 mm in the posterior arch of the cervical spine. A CSF leak sign in the center of the posterior arch is termed a syrinx. Figure 1 shows the location of the posterior arch bridge and the syrinx. Quantitative analysis of CSF flow is necessary to determine the degree of obstruction. Phase-contrast MRI (PCMR) allows for quantitative analysis of CSF flow. This study was designed to evaluate CSF flow in pediatric patients with Chiari malformation and syrinx. We have focused our study on the measurement of CSF flow in the posterior arch of the spine in pediatric patients.

Chiari Types



Figure 1. PCMR and magnetic bridge of the posterior arch. Yellow line represents bony bridge and red line represents flow at C6. B) PCMR and syrinx. Yellow line represents CSF flow and red line represents CSF flow at C6.

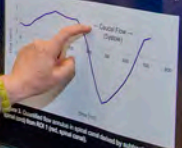


Figure 2. CSF flow at C6. Yellow line represents CSF flow at C6. Red line represents CSF flow at C6.

Results

PCMR analysis showed that the maximum cranial CSF flow was significantly lower in those patients that presented with a syrinx when compared to those without a syrinx ($p=0.01$). Figure 4. A smaller decrease in flow was observed at the foramen magnum in those patients with a syrinx (2.19 ± 0.53 ml/s, $p=0.19$). These results suggest that compensation in flow in response to decreased subarachnoid space.

It was also observed that the duration of cranial CSF flow was significantly increased in patients with a syrinx at the foramen magnum (441.43 s, $p=0.05$) and the foramen magnum (480.50 s, $p=0.02$). Figure 4. Therefore, an attenuated and prolonged flow seems to be characteristic of Chiari malformation patients with a syrinx.

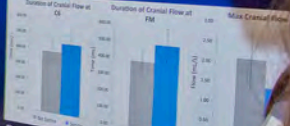


Figure 4. Duration of cranial-directed flow at C6, at the foramen magnum and cranial-directed flow at C6 in patients with a syrinx ($n=13$).

Conclusion

PCMR analysis of the transverse plane at C6 showed a reduction in maximum cranial CSF flow and an increase in duration of cranial CSF flow in Chiari malformation patients with a syrinx. Quantitative measures may be helpful in analysis of CSF flow and subjective condition as Chiari malformation patients with a syrinx. Analysis of PCMR will concentrate on how different patients may respond to surgery.

Quantitative Analysis of Phase-Contrast Magnetic Resonance in Pediatric Patients with Chiari Malformation

Nyla Fata, Katelyn Rasmussen, Joshua Chern, Nilesh Desai, John Oshinski



Introduction
Chiari malformation (CM) is a congenital anomaly of the skull base and brain, Figure 1. CM is characterized by the descent of the cerebellum and brainstem into the spinal canal. This can lead to a variety of symptoms, including respiratory (RPM) and neurological symptoms. Quantitative analysis of flow in the vertebral column has been used to assess the degree of obstruction. Phase-contrast MRI (PCMR) is a non-invasive technique for measuring flow in the vertebral column. This study aims to quantify flow in the vertebral column in patients with CM using PCMR. The study was conducted in a pediatric population. The study was conducted in a pediatric population. The study was conducted in a pediatric population.



Figure 1. MRI scans showing Chiari malformation. The top row shows axial views of the skull base, and the bottom row shows sagittal views. Labels 'Chiari I' and 'Chiari II' are visible.

Results
PCMR analysis showed that the flow in the vertebral column was significantly lower in those with CM when compared to those without CM. The flow in the vertebral column was significantly lower in those with CM when compared to those without CM. The flow in the vertebral column was significantly lower in those with CM when compared to those without CM.



Figure 2. MRI scans showing flow in the vertebral column. The top row shows axial views, and the bottom row shows sagittal views. Labels 'Flow' and 'CM' are visible.

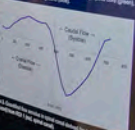


Figure 3. Line graph showing flow in the vertebral column over time. The y-axis is labeled 'Flow (ml/min)' and the x-axis is labeled 'Time (min)'. The graph shows a peak in flow at 10 minutes, followed by a decrease and then a recovery. Labels 'Cerebral Flow' and 'Spinal Flow' are visible.

Results
PCMR analysis showed that the flow in the vertebral column was significantly lower in those with CM when compared to those without CM. The flow in the vertebral column was significantly lower in those with CM when compared to those without CM. The flow in the vertebral column was significantly lower in those with CM when compared to those without CM.

It was also observed that the flow in the vertebral column was significantly lower in those with CM when compared to those without CM. The flow in the vertebral column was significantly lower in those with CM when compared to those without CM. The flow in the vertebral column was significantly lower in those with CM when compared to those without CM.



Figure 4. Bar chart showing the duration of cerebral and spinal flow in patients with Chiari malformation. The y-axis is labeled 'Duration of Flow (min)' and the x-axis is labeled 'Flow Type'. The chart shows that the duration of cerebral flow is significantly longer than the duration of spinal flow.

Conclusion
PCMR analysis of the transverse sections in the vertebral column showed a significant reduction in flow in Chiari malformation. Quantitative measures may be used to assess the degree of obstruction. The study was conducted in a pediatric population. The study was conducted in a pediatric population. The study was conducted in a pediatric population.



Quantitative Analysis of Phase-Contrast Magnetic Resonance in Pediatric Patients with Chiari Malformation

Raja Pan, Kabil Ramchandrababu, Joshua Chern, Nilesh Desai, John Oshinski



Introduction

Chiari malformation is a congenital anomaly of the skull base and spine. Type I is the most common form, characterized by a bony spur or spur-like protrusion. Phase-contrast magnetic resonance imaging (PC-MRI) is a non-invasive technique that can be used to quantify the flow of cerebrospinal fluid (CSF) in the spine. This study aims to quantify the flow of CSF in the spine of pediatric patients with Chiari malformation using PC-MRI.

Methods

PC-MRI was performed on 10 pediatric patients with Chiari malformation. The flow of CSF was measured in the cervical spine. The results were compared to a control group of 10 pediatric patients without Chiari malformation.



Figure 1: MRI images showing the location of the flow measurements in the cervical spine.

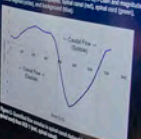


Figure 2: Graph showing CSF flow velocity over time.

Results

PC-MRI analysis showed that the flow of CSF in the cervical spine was significantly lower in the Chiari malformation group compared to the control group. The mean flow velocity was 0.10 cm/s in the Chiari malformation group versus 0.15 cm/s in the control group.

It was also observed that the flow of CSF in the cervical spine was significantly lower in the Chiari malformation group compared to the control group. The mean flow velocity was 0.10 cm/s in the Chiari malformation group versus 0.15 cm/s in the control group.



Figure 3: Bar chart showing mean CSF flow velocity in the Chiari malformation group and the control group.

Conclusion

PC-MRI analysis of the Chiari malformation in pediatric patients showed a significant reduction in the flow of CSF in the cervical spine. This study suggests that PC-MRI is a useful tool for quantifying the flow of CSF in the spine of pediatric patients with Chiari malformation.











































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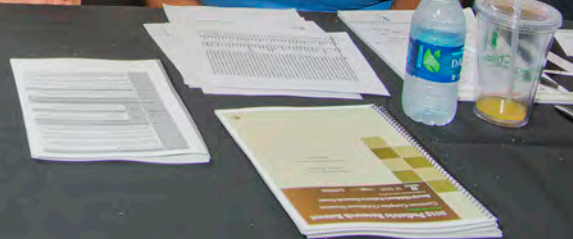


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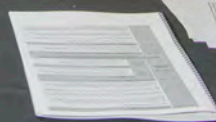
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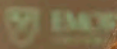


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Emory University, Department of Pediatrics
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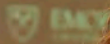
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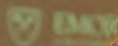


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