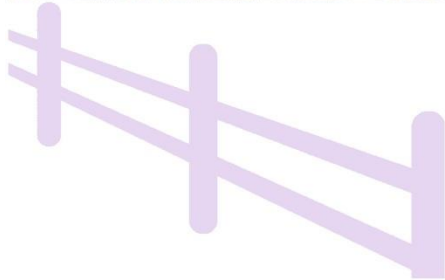


National Children's Center for Rural and Agricultural Health and Safety



Annual Report 2019

September 30, 2018 -- September 29, 2019
CDC/NIOSH Cooperative Agreement No. 2U54-OH009568-10-00

SECTION I: Center Overview

Center's Summary

The National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS) was established in 1997 and has a long history of developing, testing, and sustaining projects associated with children who live on, work on, and visit farms and ranches across the U.S. Our Center is unique among the other National Institute for Occupational Safety and Health (NIOSH) Agricultural Centers, in that we have a national focus versus a regional emphasis. Our major emphasis is on national leadership, knowledge mobilization and partnership development.

Relevance

As depicted in the annual Child Ag Injury Fact Sheet, which is prepared and disseminated by our Center, the nonfatal childhood agricultural injuries are trending downward overall and more than half of these injuries occur to non-working children who are present in the worksite with an estimated 33 children suffering nonfatal injuries each day. With respect to childhood agricultural fatalities, the numbers persist with more than 100 children dying each year. Among youth workers 15-17 years, the number of worker fatalities in agriculture remains consistently higher than all non-agricultural industries combined. Primary agents of fatalities are machinery (including tractors and skid steers), motor vehicles (ATVs) and drowning. The Center's range of research, interventions and communications is highly relevant as we build upon scientific evidence regarding the most preventable injuries and the most effective interventions.

Leadership

Our Center paves the way for identifying and addressing the most pressing issues regarding children that live, visit and work on farms. Our scientists and staff serve on many national advisory boards and task forces where they provide guidance and exert influence to include children's issues into broader activities. These include the USDA SAY Clearinghouse, Agricultural Safety and Health Council of America (ASHCA), International Society of Agricultural Safety and Health (ISASH), Agri-Safe, Ag Health and Safety Alliance, Children's Health Alliance of Wisconsin, and others. With a theme of "strengthening public-private partnerships to address childhood agricultural injury prevention," we have grown a network of individuals, organizations, and agricultural enterprises that are having a positive influence on the culture of safety for children. Much of our work is based upon the childhood agricultural safety adaptation of the Socio-Ecological Model as published in Journal of Agromedicine (Vol 22, No. 4) with projects and interventions crossing over multiple spheres of influence. To extend the impact of our efforts we strive to identify policy-relevance in all relevant projects.

A key tactic that expanded our impact this year was the planning, hosting, and evaluating a series of three Childhood Agricultural Injury Prevention workshops at locations across the U.S. With more than 60 participants primarily representing private-sector entities we are confident that evidence-based interventions will be more widely known and adopted to safeguard children living and working in agricultural settings.

Another leadership role we hold is the coordination of the Childhood Agricultural Safety Network – a loose-knit coalition of nearly 80 non-profit organizations, NIOSH Ag Centers, agribusiness, farm organizations, and the media. Through periodic electronic messages and an annual in-person meeting information on child farm fatalities, prevention techniques, and learning opportunities is shared.



Barbara Lee, Ph.D.

Table of Contents

Staff and Mission	3
Administrative and Planning	5
Advanced Knowledge Mobilization and E-Communication (AKME)	6
AgInjuryNews – Innovative Utility of Publicly Available Injury Reports	7
Strengthening Organizational Capacity (SOC)	8
Ag Youth Work Guidelines (AYWG)	9
Protecting Children While Parents Work	10
Filling the Gaps in Child Agricultural Injury Data	11
Intervention through Inquiry: Understanding Beginning Farmers and Ranchers	12
Developing a Sustainable Infrastructure for the SAY National Clearinghouse	13
Enhancing Supervisors’ Skills and Employer Policies: Young Agricultural Workers	14
Evaluation	15
Outputs	16
Workshops	20
Mini Grants	21



Staff



Barbara Lee, PhD
Director
Senior Research Scientist
[Email](#)



Casper Bendixsen, PhD
Associate Research Scientist
[Email](#)



Richard Berg, MS
Senior Biostatistician
[Email](#)



Kathrine Barnes, MS
Research Specialist
[Email](#)



Marie Fleisner
Editorial Specialist
[Email](#)



Scott Heiberger, MS
Health Communication Manager
[Email](#)



Melissa Ploeckelman, BS
Outreach Specialist
[Email](#)



Emily Redmond, BS
Research Coordinator
[Email](#)



Marsha Salzwedel, EdD
Agricultural Youth Safety Specialist
[Email](#)



Dixie Schroeder, MBA
Institute Research Administrator
[Email](#)



Kathleen Smith
Assistant Center Manager
[Email](#)



Andrea Swenson, PhD
Project Scientist – Evaluator
[Email](#)



Staff (continued)



Kyle Koshalek, BS
Research Coordinator
Associate
[Email](#)



Barbara Marlena, PhD
Research Scientist
[Email](#)



Matt Pliz, BS
Programmer Analyst
[Email](#)



Erin Teague
Administrative Secretary
[Email](#)



Bryan Weichelt, PhD
Associate Research Scientist
[Email](#)

External Staff



Shelly Campo, PhD
University of Iowa
[Email](#)



Linda Fetzer, BS
Penn State University
[Email](#)



Serap Gorucu, PhD
Penn State University
[Email](#)



Amy K. Liebman, MA
Migrant Clinician Network
[Email](#)



Sara Lindberg, PhD
UW-Madison
[Email](#)



Michael Pate, PhD
Penn State University
[Email](#)



Andrea Raygor, MS
UW-Madison
[Email](#)



Diane Rohlman, PhD
University of Iowa
[Email](#)



Josie Rudolphi, PhD
University of Illinois
[Email](#)



Megan TePeol
University of Iowa
[Email](#)

Mission: *The National Children's Center for Rural and Agricultural Health and Safety strives to enhance the health and safety of all children exposed to hazards associated with agricultural work and rural environments.*

SECTION II: Project Highlights

Administrative and Planning ^[1]

Key Personnel: Barbara Lee, Marsha Salzwedel, Cap Bendixsen, Andrea Swenson, Kathie Smith

Overview and Progress: The Administrative and Planning Core sets strategic direction and provides a framework that supports, guides, and monitors the progress of the evaluation, outreach, and research endeavors. Our Center Director, Barbara Lee, PhD, has served in this role since its inception and is joined by Cap Bendixsen, PhD (became NFMC Director in April) Bryan Weichelt, PhD, and Marsha Salzwedel, EdD along with many seasoned and new project coordinators, support staff and external P.I.s. Deputy Director, Barbara Marlenga, PhD, retired in May and one of our scientists, Josie Rudolphi, PhD resigned for a new position at UIUC, but continues her work as a contractor. The P.I. role of the SAY project based at Penn State transitioned to Serap Gorucu, PhD. Due to turnover of internal staff and external advisors, the role of our Scientific Advisory Board has evolved and is primarily associated with individual projects. Comprehensive evaluation was ensured by the UW-Madison evaluation team that recently has been transitioning evaluation tasks to the MCRI/NFMC Scientific Evaluator. Pragmatic recommendations come from colleagues in the Childhood Agricultural Safety Network (CASN), the Agricultural Safety and Health Council of America (ASHCA), and the NORA Agricultural, Forestry, and Fishing Sector Council. Monthly teleconferences with all the NIOSH Agriculture Centers keep our activities connected with relevant NIOSH intramural and extramural endeavors.

Our Center is housed within the National Farm Medicine Center of the Marshfield Clinic Research Institute with 13 FTEs of dedicated staff and the full resources of the Marshfield Clinic Health System. Fiscal affairs and contractual arrangements are facilitated and monitored in conjunction with the Office of Research Support Systems. Personnel training, combined with updated hardware and software systems, have streamlined many business/management protocols this year.

Outcomes and Impacts: The Administration and Planning Core handles the NCCRAHS mini-grant program. In 2019 we monitored progress of three funded projects and solicited proposals for FY20 projects, of which two have recently been approved. We facilitated the professional development of scientists and staff internal and external opportunities to gain knowledge regarding childhood agricultural safety and to network with colleagues from other centers.

As editors of *Journal of Agromedicine*, we have encouraged and facilitated the publication of manuscripts addressing various aspects of youth work in agriculture, the Agricultural Injury News data base and mental health in farming communities.

Our bi-annual *NURTURE* newsletter is electronically disseminated and available on our website, providing further details on our Center's project outcomes and impacts.



Publications and Presentations

Advanced Knowledge Mobilization and E-Communication (AKME) [2]

Key Personnel: Bryan Weichelt, Scott Heiberger, Melissa Ploeckelman, Marsha Salzwedel

Overview and Progress: The project's health communications and technology specialists collaborate with Center-wide and external partners to apply the most appropriate communication approaches for youth health and safety. This project facilitates timely and culturally appropriate communication strategies via digital and traditional platforms. Dr. Weichelt, involved with AKME from its inception, assumed the PI role in 2019.



Outcomes and Impacts: AKME's capabilities were on display throughout the entirety of the Child Agricultural Injury Prevention Workshop series. AKME developed a promotion and dissemination workshop session used by presenters at the respective workshops in Iowa, Kentucky, and Pennsylvania. AKME developed interactive activities for the workshop, including a "Working Youth" activity in which a "media person" interviewed groups of participants about real injury scenarios from AgInjuryNews.

AKME successfully promoted the workshops with host organizations to ensure adequate numbers of presenters and participants. Of particular note, AKME successfully embedded the Iowa workshop into the annual meeting of the International Society for Agricultural Safety and Health, the world's largest gathering of agricultural health and safety professionals. AKME examined the effectiveness of recruitment strategies for Kentucky and Pennsylvania workshops, including an emerging strategy, paid Facebook avenues. Findings indicate that personal connections and listservs were the most effective strategies, while paid Facebook avenues did not yield a high-return on investment for workshop recruitment.



In AKME's continual work promoting NCCRAHS as a credible national resource for child agricultural injury prevention, AKME (a) consulted on articles published by the [Washington Post](#), [Associated Press](#) and [Progressive Farmer](#), (b) published the Nurture newsletters, (c) distributed numerous press releases, (d) produced a Year in Review featuring the work of the National Children's Center and the National Farm Medicine Center, (e) updated relevant resources, including the Child Agricultural Safety Network "Media Guidelines," and (f) developed and engaged in media campaigns for the Center. AKME also

maintains 4 websites, 2 Facebook pages, 2 Twitter pages and 1 Instagram page.

Future Research and Opportunities: AKME is currently building a resource library, accessible through www.cultivatesafety.org, which unites the Center's resources. The resource library will allow visitors to search, save, and order all resources in one place and will be live in 2020. AKME is developing a research agenda to assess how to best use social media based on intended audience and outcomes.

Publications and Presentations

AgInjuryNews – Innovative Utility of Publicly Available Injury Reports ^[3]

Key Personnel: Bryan Weichelt, Emily Redmond, Serap Gorucu, Matt Pilz



Overview and Progress: Given the challenges of Agriculture, Forestry and Fishing (AFF) injury surveillance in recent years, a number of research centers have elected to employ media monitoring programs within their centers' surveillance and outreach cores. One of the largest collections, led by a cross-sectional national steering committee, is AgInjuryNews.org (AIN), a publicly available interactive dataset of publicly available AFF injury reports, primarily derived from news media. This initiative was launched within the Center, has since expanded to include youth and adult injuries, and administratively shifted into the National Farm Medicine Center (NFMC), part of the Marshfield Clinic Research Institute.

Initial conceptual design and development of the software, now housed on AgInjuryNews.org, began in January 2015. The prototype went through a heuristic evaluation by the Marshfield's Interactive Clinical Design Institute. Two rounds of external testers included ag journalists and members of the Child Agricultural Safety Network. The team began adding news clippings of adult incidents in late 2015. In 2016, the team gathered feedback from analysts within the Bureau of Labor Statistics and worked to facilitate journalists' ability to inject a safety message into news reports. In January 2017, we formed a 15-member national cross-sector Steering Committee to guide future directions, and in late 2018 we launched a newly redesigned system that will include new features such as customizable email alerts and new data filters.

Outcomes and Impacts: We have received a number of positive comments through our website, e-newsletter, and user surveys. Most notably was our impact on the Bureau of Labor Statistics: "The BLS has begun using AgInjuryNews as a part of their CFI case discovery quality assurance. In a review of each state's case discovery process, potential cases are culled from databases and news sources and flagged for follow-up, and many potential cases are now noted from AgInjuryNews. We were given a month to resolve these potential cases, so that's why you're seeing a lot more BLS users at this time. On a side note, of all the sources BLS is using, AgInjuryNews is really well organized and readable with a lot of important information pertinent to CFI workers noted, so it's a really impeccable addition to the quality assurance tools we have at our disposal." – Jameson Bair, WI BLS

Future Research and Opportunities: In the final year of this project, we will be expanding the dissemination of the injury data (via presentations and news media articles), research findings (via peer-reviewed manuscripts), and further integrating our system and data with other projects and programs across the Center and other NIOSH-funded ag centers. Several new lines of research have recently emerged, including the recent submission of two R01 proposals that hinge upon the AIN initiative and its growing dataset. Included in the proposals are commitments from six external collaborators to analyze AIN data and submit a manuscript for peer-review during the proposed project period – representing AIN's influential impact on other researchers who value this type of data.

Our team is also on the cusp of having a 5-year dataset available for analyses, with each injury coded by the Farm and Agricultural Injury Classification System (FAIC) and the Occupational Injury and Illness Classification System (OIICS), a significant accomplishment in it of itself.

Publications and Presentations

Strengthening Organizational Capacity (SOC) [4]

Key Personnel: Marsha Salzwedel, Barbara Lee

Overview and Progress: This project protects children from agricultural injury and death by working with others to share safety strategies and resources and encouraging farm families and employers to adopt them as best practices. Throughout the year, this project has created new partnerships and strengthened existing connections with numerous organizations, taking advantage of multiple opportunities to increase our networks. Connections have been made through presentations, exhibits, resource sharing, and the addition of three interactive Child Agricultural Injury Prevention (CAIP) Workshops in 2019.

Outcomes and Impacts: Several outcomes from the 2018 CAIP workshop occurred in 2019. One of the members of SafeKids Worldwide attended the 2018 workshop and subsequently added a rural/agricultural focus. They invited the Center's staff to present and moderate a panel at their annual conference. Five other participants are carrying out projects, ranging from the creation of farm safety videos to projects that targeted health care workers, the Latino population, and the Amish population. Additional funding from Westfield Insurance Foundation, John Deere, and National Farm Medicine Center, enabled the Center to conduct three more CAIP workshops in 2019. They were held in Des Moines, IA (June), Lexington, KY (August), and Hershey, PA (September). Similar to the inaugural workshop, the participants, sponsors, and staff represented various sectors of the agricultural industry including insurance, cooperatives, manufacturers, media, banking, education, and safety and health. These regional workshops were co-hosted by other NIOSH Ag Centers, including Great Plains Center for Agricultural Health and Central States Center for Agricultural Safety and Health (Iowa), Southeast Center for Agricultural Health and Injury Prevention and the Southeastern Costal Center for Agricultural Health and Safety (Kentucky), and the Northeast Center for Occupational Health and Safety in Agriculture, Forestry, and Fishing, along with Penn State (Pennsylvania). All workshops had media attendance and coverage. Additional outcomes from the SOC project include presentations and exhibits at conferences and events, participation in external organizations' steering committees and advisory boards, as well as numerous press releases, media interviews, and newsletter publications.

Future Research and Opportunities: Additional CAIP workshops may be held and the workshop format may be adapted for other topics. In addition, the learning lab portion of the workshop is being expanded and set up as an adjunct session for larger conferences and meetings, the first of which is the 2020 ASHCA Summit. At least two publications are planned based on the CAIP workshop, and several CAIP projects conceived during the 2019 workshops will be carried out by workshop participants in 2019-2020.



Publications and Presentations

Agricultural Youth Work Guidelines (AYWG) [5]

Key Personnel: Marsha Salzwedel, Emily Redmond

Overview and Progress: It is well known that work is inherently beneficial for youth, but for young workers in agriculture, the number of fatal injuries is consistently higher than all other industries combined. These injuries are often associated with youth performing work that does not match their developmental level or abilities. The Agricultural Youth Work Guidelines (AYWG) help parents and supervisors determine which tasks youth can perform safely in agriculture. Funding from CHS augmented NIOSH funding to complete guidelines for 51 farm tasks, and information on related topics was also updated. All guidelines have been translated into Spanish and French, as well as the supplemental materials (communication plan and template, supervision information, etc.). All translated materials will be added to the Cultivate Safety website in the near future.

Outcomes and Impacts: Partnerships were strengthened through the update process, as content consultants from numerous organizations, who assisted with the updates, are now supporters of AYWG and assist with dissemination. The Canadian Agricultural Safety Association completed the French translations and will be launching a media campaign as soon as the French versions go live. AYWG were also promoted extensively through the Child Agricultural Injury Prevention Workshops, at conferences, in media releases, and in listserv posts. AYWG have been included in safety videos (Extension and Progressive Agriculture Foundation), in the AgriSafe “Invest in Your Health” activities, promoted at conferences and workshops, and included as part of grant proposals.

Future Research and Opportunities: Additional funding was secured from CHS to assist with promotion and dissemination of the guidelines. Plans for the next year include updating the existing garden and farm equipment booklets, along with creating an additional booklet for working with animals. All three of these booklets will be created in French and Spanish as well. In addition, the Center will work with other organizations to customize booklets and/or materials for use in their organizations. The existing media kit will be updated and a media campaign will be conducted. Research will focus on the dissemination and implementation of the guidelines.

Publications and Presentations

Operating a Tractor

Can youth do this job safely?

Youth must be able to do/have all of the following to perform this job safely:

- Reach and operate controls while wearing a seatbelt
- Strength to repeatedly operate controls
- Tall enough for good field of vision when seated on tractor
- Understand and consistently repeat a 10-step process
- Recognize a hazard, problem solve, and respond appropriately

Conduire un tracteur

Est-ce que les jeunes peuvent faire cette tâche en sécurité?

Les jeunes doivent être capables de faire/avoir tout ce qui suit pour faire cette tâche de manière sécuritaire :

- Atteindre et actionner les commandes avec la ceinture de sécurité attachée.
- Assez de force pour actionner les commandes à plusieurs reprises.
- Être assez grand pour avoir un bon champ de vision en étant assis à bord du tracteur.
- Comprendre et répéter un processus à 10 étapes de la même manière.
- Reconnaître un danger, résoudre les problèmes et réagir.

Operación de un tractor

¿Pueden los jóvenes realizar esta tarea de manera segura?

Los jóvenes deben ser capaces de hacer lo siguiente/tener las siguientes características para hacer esta tarea de manera segura:

- Alcanzar y operar controles con el cinturón de seguridad abrochado.
- Fuerza para operar los controles repetidamente.
- Estatura suficiente para tener buen campo visual al estar sentado en el tractor.
- Comprender y repetir sistemáticamente un proceso de diez pasos.
- Reconocer un peligro, resolver un problema y responder de manera adecuada.
- Reaccionar rápidamente ante un peligro.
- Muestra suficiente para hacer sistemáticamente lo que se deba hacer.
- Pensar conscientemente sobre las acciones y consecuencias antes de actuar.
- Evitar la ropa suelta o con cordones; al tener el cabello largo, recogerlo.
- Cumplir con lo indicado en la [guía de trabajo al site link](#).
- Mostrar de manera segura cómo se hace la tarea cuatro o cinco veces.
- Mantener una vía de [comunicación bidireccional](#).

Responsabilidades de los adultos

- Asegurarse de que el equipo esté en buen estado mecánico y las medidas de seguridad estén implementadas, incluida la estructura de protección antivuelcos (Automatic Desintegrable Roll Over Protection Structure, RDPS).
- Revisar la [guía de operación](#) a fin de verificar la habilidad de los jóvenes para operar un tractor.
- Mostrar cómo conducir un tractor de manera segura.
- Proporcionar la capacitación adecuada.
- Enseñar a los jóvenes a sujetarse al tractor usando tres puntos de contacto.
- Asegurarse de que el área de trabajo esté libre de peligros en la mayor medida posible.
- Enseñar a los jóvenes a evitar o abordar los peligros que puedan quedar.
- Asegurarse de que los jóvenes no operen el tractor después del atardecer ni en condiciones de mal tiempo.
- Capacitar a los jóvenes para que llamen a un adulto en caso de que el equipo no funcione correctamente.

Supervisión

Nota: Asegúrese de que el tractor sea del tamaño adecuado para los jóvenes. Los jóvenes deben tener 16 años o más para conducir un tractor articulado. Consulte el [Guía de operaciones con tractor](#) para obtener orientación.

14-16 años	Supervisión intermitente y progresiva hasta volverse periódica
16 años o más	Supervisión periódica

Peligros

- Alta velocidad
- Pasajero adicional
- Vuelco
- Atrás
- Choque contra objetos

Estrategias de protección

- Cinturón de seguridad
- Caballo antevuelcos
- Manual del operador
- Protección antivuelco (si es necesario)
- Protección secundaria (si es necesario)

cultivate SAFETY

www.cultivatesafety.org

Mapa NIOSH agr18-2163/Infra/2018/AYWG/AYWG-2017

Protecting Children while Parents Work ^[6]

Key Personnel: Amy Liebman, Barbara Lee, Katherine Kruse, Marsha Salzwedel

Overview and Progress: This project brings together key stakeholders, including agribusiness and childcare providers, to improve access to off-farm childcare services for migrant and immigrant agricultural workers with children. Utilizing the input and direction gained from focus groups in the previous year as well as formative research throughout the project, the project team finalized and promoted *A Roadmap for Delivering Child Care in Agricultural Communities*. The roadmap is available here: https://www.cultivatesafety.org/wp-content/uploads/2019/06/A-Roadmap-for-Delivering-Child-Care-in-Agricultural-Communities_Web.pdf

The roadmap includes step-by-step guidance to develop off-farm child care programs in rural regions. Following the roadmap's release, the resource was marketed to stakeholders through publications, social media posts, and presentations. Partners at Migrant Clinicians Network also introduced a new staff member this year: Katherine Kruse, a project coordinator at the organization's Environmental and Occupational Health office.



Invest in
your workers.
**Keep their
children safe.**



Outcomes and Impacts: To promote this project to key stakeholders, the team developed a strategic marketing plan that included a promotional video, social media toolkit, and a media release. The marketing plan accounted for the varying audiences and strategies to multiply our reach. For more outreach efforts, a preliminary article about this resource was published in *Nurture* and the project was presented at an ISASH meeting in Iowa in June 2019 by Marsha Salzwedel.



**Farmworker families and growers benefit
when child care is accessible.**

Future Research and Opportunities: Incorporating our research and knowledge gained from the development of the roadmap, the project team plans to partner with Head Start Child Care Services on a project to train farmworker parents as community health workers to reach

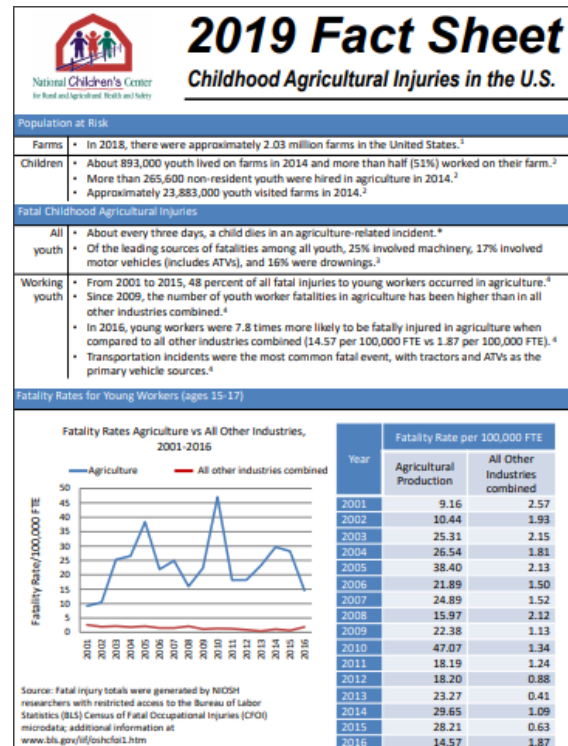
other farmworker parents with information and resources to help keep their children safe from contaminants in their community.

Publications and Presentations

Filling the Gaps in Child Agricultural Injury Data ^[7]

Key Personnel: Josie M. Rudolphi, Richard Berg, William Pickett

Overview and Progress: The goal of this project is to explore the most promising, existing public health data systems to determine how they can help “fill the gaps” by identifying injury events missed by other methods and/or providing more details about risks, activities and circumstances surrounding child agricultural injury events. This information, in turn, can help to guide prevention efforts. In the past year, we made progress in analyzing four public health data systems that are national, ongoing, injury-focused, and contain a “farm” variable. An interesting exploration has been farm youth’s mental health and sleep using data from Canada’s School-Based Survey (HBSC). Currently, we are in the process of analyzing Canadian child agricultural injury data from two time periods to determine if changes in injury rates or injury characteristics have changed. Josie Rudolphi, PhD, assumed the role of PI of the project.



Outcomes and Impacts: In the past year, the team published two manuscripts using the Health Behaviors in School-aged Children (Canada survey). The Child Agricultural Injury Fact Sheet for 2019 was updated and disseminated. It continues to be among the most cited resource of the Center.



Future Research and Opportunities: We continue to explore new avenues for child agricultural injury data with increased interest in child agricultural health, especially as it relates to sleep and mental health. The team is also exploring children’s participation and injury in commercial fishing. Commercial fishing, an industry included in the NIOSH AFF sector, is hazardous and, like agriculture, employs children. However, research to quantify the burden of injury among children is nonexistent. Using similar methods employed throughout the current project, the team is interested in exploring existing public health data systems to determine the burden of injury to children in commercial fishing.

[Publications and Presentations](#)

Intervention through Inquiry: Understanding Beginning Farmers and Ranchers ^[8]

Key Personnel: Casper Bendixsen, Kathrine Barnes, Josie Rudolphi, Kyle Koshalek



Overview and Progress: The project strives to understand the attitudes of the millennial generation and non-traditional family farmers whose livelihood has been launched by USDA-funded support. The team is comparing and contrasting demographics and practices of African Americans, Native Americans, Hispanics, and other unique groups in order to guide future culturally-relevant interventions addressing children and farm safety. Analysis continues on the survey of conventional Wisconsin and Pennsylvania farmers' attitudes towards parenting. We

have also started the process to launch the same survey to beginning farmers in a national organic producers' co-op.

Outcomes and Impacts: Analysis of the survey of conventional Wisconsin and Pennsylvania farmers has yielded significant results. Our results suggest the authoritative parenting style is protective against reported child agricultural injury. The survey is being replicated among organic farmers across the U.S. to determine if parenting styles and child agricultural injury differ by production method. This information will inform child agricultural injury prevention strategies.

Future Research and Opportunities: Findings from Beginning Farmers and Ranchers will continue to inform and tailor existing materials to meet the needs of this dynamic group. We anticipate our publications and presentations to spur research on health and safety in niche populations. We also expect our work to result in publications on field methods related to long-term field methods and injury intervention. These publications could encourage novel research methodologies in injury intervention research.

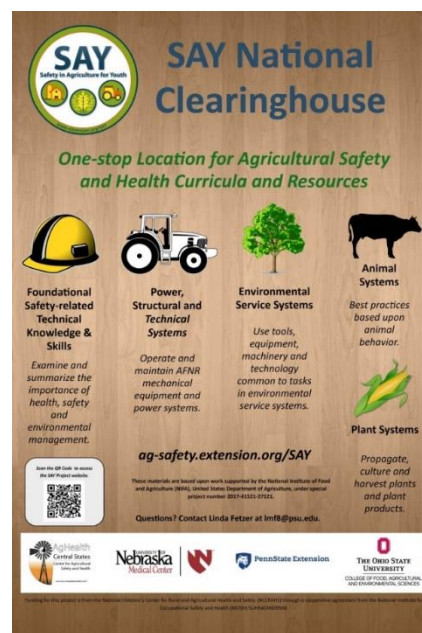


[Publications and Presentations](#)

Developing a Sustainable Infrastructure for the SAY National Clearinghouse ^[9]

Key Personnel: During year 5, the key personnel for this project were Dr. Michael Pate and Ms. Linda Fetzer. Dr. Pate was Principal Investigator (PI) of the project until August 1, at which time Dr. Serap Gorucu assumed the PI role. Mr. Nathan Moyer, undergraduate agricultural education major, worked with Dr. Pate on the SaferFarm evaluation project. Kelly Chege, PhD graduate student, focused on the cost of safety, is consulting with Ms. Fetzer on the business plan for the SAY Clearinghouse.

Overview and Progress: The Safety in Agriculture for Youth (SAY) Clearinghouse evaluation continues to progress in examining the usage, format, and satisfaction with the Clearinghouse through surveying 4-H and FFA educators in Pennsylvania and Utah. During the past year, we continued to produce and send the quarterly eNews and completed the annual survey. This year, we broadened the scope of the annual survey to determine if there are differences between 4-H leaders and FFA advisors in their use of material and overall evaluation of the Clearinghouse. The information from the survey helped develop initial recommendations for the business plan. The impact of the Clearinghouse is the increased availability of ag safety and health curriculum and resources for adults who provide training to youth; it is only beneficial if they use the resource. The business plan addresses how to increase usage and usability.



Two high school agricultural education programs in Pennsylvania evaluated SaferFarm.org. A presentation about SaferFarm.org was made to FFA and 4-H members and 43 students completed the survey evaluation (38 valid responses). Data indicated average or moderate interest in the use of the SaferFarm.org resource, however, more student recruitment is needed to gain additional insights. While the tool addresses the need for relevant and real time risk assessment on farms, incentives or intrinsic motivation to use the tool is lacking. This may be due to a lack of connection between risk assessment/management and preparation of students for agricultural career experiences. Additional research is needed to assess this hypothesis.

Outcomes and Impacts: For the Clearinghouse evaluation, the primary outcome is the critical look at the current model and proposed ideas of ways to improve not only the actual Clearinghouse, but also explore options to include educators in the promotion process.

Future Research and Opportunities: For the Clearinghouse to be used on a regular basis by 4-H and FFA instructors, it is vital to get buy-in from people at the state, regional, and national levels including the instructors and teachers. The current approach seems to be a top down approach. We aim to involve teachers and advisors in the development process to learn what they need and want regarding agricultural safety and health information, how they can use it in their clubs and classrooms and what are the most efficient ways to make that information available to them.

Publications and Presentations

Enhancing Supervisors' Skills and Employer Policies: Young Agricultural Workers ^[10]

Key Personnel: Shelly Campo, Diane Rohlman, Megan TePoel

Overview and Progress: Young workers in agriculture are injured at higher rates than in any other type of job. Researchers at the University of Iowa funded through the Center developed an online training for supervisors of young agricultural workers. The training describes the health and safety risks that young workers experience because of developing minds and bodies. Based on the NIOSH Total Worker Health approach, the training focuses on both safety and health risks. Specific skills for supervisors are included in the training, such as asking open-ended questions, methods to make sure young workers understand and can perform work tasks safely, how to have difficult conversations with employees, and the role of workplace policies in protecting young workers.



We are currently recruiting supervisors to evaluate the training. Over 180 participants have completed the training, representing 31 states, 2 U.S. territories, and Canada. Due to interest in an in-person training, all materials have been adapted for a classroom-based version and a set of interactive activities was developed. We are moving the online training into a new software for dissemination, to ensure its long-term availability. We are also developing supplemental videos that demonstrate training concepts and help

facilitate discussions in various formats (web, classroom, etc.).

Outcomes and Impacts: We have received positive feedback on the training:

“Really good information; things I’ll be able to use when working with youth on our farm. We are very aware of what a dangerous line of work we are in!” – Iowa Farmer

“I have completed the training and thought the training information was presented well and would like my supervisors to also participate. I also like that there is a Certificate of Training Completion available once the training is complete.” – HR Manager

Future Research and Opportunities: In the final year of this project, we will be sharing the results of the evaluation and will make the training more widely available. The training will be made available in various formats to expand reach.

[Publications and Presentations](#)

Evaluation ^[11]

Key Personnel: Sara Lindberg, Andrea Raygor

Overview and Progress: The Evaluation Core guides documentation and study of the Center's successes and its projects in achieving objectives for research, education, and public service. The Evaluation Core continuously facilitates quarterly reporting by all projects, which includes collection of process and outcome measures. Evaluation data provides empirically-driven feedback to guide decision-making, policy formulation, and improvements at the Center.

In December 2018, the Evaluation Core published *In Pursuit of a 2020 Vision: Evaluation Findings of the National Initiative for Childhood Agricultural Injury Prevention*. This evaluation was conducted to assess the status of the National Initiative for Childhood Agricultural Injury Prevention with the goal of generating and disseminating recommendations for future leadership of this initiative.



The Evaluation Core continued support for the Safety in Agriculture for Youth (SAY) National Clearinghouse in an evaluation project to understand ag educators' awareness of the website, their perceptions of its usefulness, and their ideas for improvement. Work for this evaluation included study design, survey development, implementation of a web-based survey, data analysis, and reporting. The third report in this on-going project was delivered to SAY staff in February 2019. Results of the Clearinghouse evaluation hope to inform recommendations for modification and long-term sustainability.

In April 2019, the Evaluation Core traveled to Marshfield for a day-long needs assessment training. The workshop included a basic overview of definitions and concepts, a step-by-step guide on how to conduct a needs assessment, practice with Center-specific examples, and open workshop time with Principle Investigators for individual technical assistance for project-specific plans.

Outcomes and Impacts: The publication of *In Pursuit of a 2020 Vision: Evaluation Findings of the National Initiative for Childhood Agricultural Injury Prevention* included 21 specific immediate and long-term recommendations for the Center. Recommendations set forth are influencing the design and approach of the center moving forward. Based on recommendations, Strengthening Organizational Capacity will conduct a needs assessment to document current partners, potential partners, and how to best work together. A recent joint project between PIs assessed the effect of social media on workshop attendance based on recommendations to be systematic and focus on impact.

Future Research and Opportunities: Andrea Swenson, PhD, was recently hired as a MCRI/NFMC Scientific Evaluator and will lead the evaluation core moving forward. Sara Lindberg, PhD, and Andrea Raygor, MS, will continue to work with the Center providing technical assistance and evaluation consultation and guidance.

Publications and Presentations

OUTPUTS FROM OCTOBER 2018 – SEPTEMBER 2019

Outputs	Number
Publications	9
Abstracts & Presentations	32
Webinars	6
Exhibits	5
Media Releases	12
Contributed Article	1
Newly Created & Updated Resources	7
Social Media – Facebook Presence	892 Posts 340,649 People Reached 7,786 Likes 1,717 Shares 343 Comments

Outputs for each project are labeled with the same subscript number.

1. Administrative and Planning [\[1\]](#)
2. Advanced Knowledge Mobilization and E-Communication (AKME) [\[2\]](#)
3. AgInjuryNews – Innovative Utility of Publically Available Injury Reports [\[3\]](#)
4. Strengthening Organizational Capacity (SOC) [\[4\]](#)
5. Ag Youth Work Guidelines (AYWG) [\[5\]](#)
6. Protecting Children While Parents Work [\[6\]](#)
7. Filling the Gaps in Child Agricultural Injury Data [\[7\]](#)
8. Intervention through Inquiry: Understanding Beginning Farmers and Ranchers [\[8\]](#)
9. Developing a Sustainable Infrastructure for the SAY National Clearinghouse [\[9\]](#)
10. Enhancing Supervisors' Skills and Employer Policies: Young Agricultural Workers [\[10\]](#)
11. Evaluation [\[11\]](#)

Publications

1. Bendixsen C. A farm kid paradox. *Journal of Anthropology of North America*. Accepted. [\[7\]](#)
2. Gorucu S, Weichelt B, Pate M. Fatal agricultural injuries in Pennsylvania, 2015-2017: Comparative analysis of two systems' data collection methods and datasets. *Journal of Agricultural Safety and Health*. 2019; 25(2):53-61. [doi:10.13031/jash.13165](https://doi.org/10.13031/jash.13165) [\[3\]](#)
3. Janssen I, Berg RL, Marlenga B, Pickett W. Sleep in farm adolescents. *The Journal of Rural Health*. 2018; 34(4):436-41. [doi:10.1111/jrh.12341](https://doi.org/10.1111/jrh.12341) [\[7\]](#)
4. Murphy D, Gorucu S, Weichelt B, Scott E, Purschwitz M. Using multiple coding schemes for classification and coding of agricultural injury. *American Journal of Industrial Medicine*. 2019; 62(2):87–98. [doi:10.1002/ajim.22932](https://doi.org/10.1002/ajim.22932) [\[3\]](#)
5. Nour MM, Field WE, Ni J-Q, Cheng C. Development of methodology to document and code farm-related injuries and fatalities involving manure storage, handling and transport – with summary of 2017 incidents. *Journal of Agromedicine*. 2019; 24:90-100. [doi:10.1080/1059924X.2018.1539420](https://doi.org/10.1080/1059924X.2018.1539420)
6. Raygor AD, Lindberg SM. *In pursuit of a 2020 vision: Evaluation findings of the National Initiative for Childhood Agricultural Injury Prevention*. Madison, WI: University of Wisconsin Population Health Institute; 2018. [\[11\]](#)
7. Pickett W, Berg RL, Kaprelian J, Marlenga B. A contemporary profile of the mental health of girls from farm and non-farm environments. *Journal of Agromedicine*. 2019; 30:1-10. [doi:10.1080/1059924X.2019.1623142](https://doi.org/10.1080/1059924X.2019.1623142) [\[7\]](#)

8. Weichelt B, Gorucu S, Murphy D, Alves Pena A, Salzwedel M, Lee BC. Agricultural youth injuries: A review of 2015-2017 cases from U.S. news media reports. *Journal of Agromedicine*. 2019; 24(3):298-308. [doi:10.1080/1059924X.2019.1605955](https://doi.org/10.1080/1059924X.2019.1605955) ^[3]
9. Weichelt B, Heimonen T, Gorucu S, et al. Redesigning a sentinel surveillance system for collecting and disseminating near real-time agricultural injury reports: System usability study. *JMIR Form Res*; 2019; 3(3):e13621. [doi:10.2196/13621](https://doi.org/10.2196/13621) ^[3]

Abstracts & Presentations

1. Pate M. Who cut the cheese? Educational resources for teaching ag safety. Breakout sessions presented at: National FFA Convention; October 2018; Indianapolis, IN. ^[9]
2. Pate M. Who cut the cheese? Educational resources for teaching ag safety. Breakout session presented at: National Association of Agricultural Educators Annual Conference; November 2018; San Antonio, TX. ^[9]
3. Ploeckelman M. Social media messaging: What gets viewers engaged? Poster presented at: Midwest Rural Agricultural Safety and Health Conference; November 2018; Council Bluffs, IA. ^[2]
4. Ploeckelman M, Heiberger S, Leonard S, Duysen E, Sheets L, Howell D. Storytelling: How to make positive changes when lives change. Panel presentation at: Midwest Rural Agricultural Safety and Health Conference; November 2018; Council Bluffs, IA. ^[2]
5. Rohlman D, Campo S, TePoel M. A review of targeted safety and health interventions for youth working in agriculture, 2010-present. Poster presented at: Midwest Rural Agricultural Safety and Health Conference; November 2018; Council Bluffs, IA. ^[10]
6. Yoder A. Safety in agriculture for youth: Maintaining a clearinghouse. Poster presented at: Midwest Rural Agricultural Safety and Health Conference; November 2018, Council Bluffs, IA. ^[9]
7. Salzwedel M. What's the Risk? How important is it that I look at that safety stuff? And training my employees. Presentation at: Great Lakes Expo; December 2018; Grand Rapids, MI. ^[4]
8. Salzwedel M. Implementing safety strategies: What to do and where to find stuff. Presentation at: Wisconsin Association of Fairs Convention; January 2019; Wisconsin Dells, WI. ^[4]
9. Salzwedel M. Working in agriculture – Ensuring workers are equipped to do their work. Presentation at: Agricultural Safety Connection Educational Seminar; January 2019; Stevens Point, WI. ^[4]
10. Salzwedel M. Employee training: What workers need to know to keep visitors (and themselves) safe. Presentation at: 32rd Annual Farmer's Inspired Convention; February 2019; Noblesville, IN. ^[4]
11. Salzwedel M. Team development: From smooth sailing to rough seas and back again. Presentation at: 32rd Annual Farmer's Inspired Convention; February 2019; Noblesville, IN. ^[4]
12. Lee B. Evidence-based interventions: How they fail to safeguard children in agriculture. Presented at: University of Washington, Seattle Graduate Lecture Series; March 2019; Seattle, WA. ^[1]
13. Salzwedel M. Ag tourism at the farm: Ag experience must haves. Presented at: Wisconsin Agricultural Tourism Association Field Day; April 2019; WI. ^[4]
14. Barnes K, Rudolphi J, Bendixsen C. Addressing the safety needs of new female organic farmers. Presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. ^[8]
15. Gorucu S, Weichelt B. Assessing coding agreement of agricultural injuries. Presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. ^[3]

16. Heiberger S, Duysen E, Ploeckelman M, Leonard S, Yoder A. Promoting behavioral change through storytelling. Panel presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[2\]](#)
17. Nour MM, Field, WE. Manure storage, handling and transport: Development of an incident coding system. Poster at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[1\]](#)
18. Ploeckelman M. Why are altmetric scores attractive? Presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[2\]](#)
19. Rudolphi JM, Barnes K, Bendixsen C. Parenting style and child agricultural injury – Opportunity for intervention? Presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[8\]](#)
20. Salzwedel M, Anderson R. Strengthening international partnerships: Translating the Agricultural Youth Work Guidelines for French Canadians. Panel presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[5\]](#)
21. Salzwedel M, Kampa D, Klumb C. Health and safety of agritourism workers. Panel presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[4\]](#)
22. Salzwedel M, Lee B, Liebman A. Developing a roadmap for delivering child care services for hired farm worker families. Panel presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[6\]](#)
23. Salzwedel M, Rudolphi JM, Lee B. Preventing child agricultural injuries: Designing a new workshop model. Presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[1\]](#)[\[4\]](#)
24. Yoder A. Safety in agriculture for youth: Maintaining a clearinghouse. Presentation at: International Society for Agricultural Safety and Health Annual Conference; June 2019; Des Moines, IA. [\[9\]](#)
25. Rohlman D. Farm health and safety. Presentation at: North American Fruit Explorers and Northern Nut Growers Joint Conference; July 2019; Iowa City, IA. [\[10\]](#)
26. Salzwedel M. Rural safety: Special attention to injury prevention. Invited panel moderator and presenter at: SafeKids Worldwide/PrevCon; July 2019; Washington D.C. [\[4\]](#)
27. Field WE, Nour MM. Enhancing the safety and health of manure storage and handling facilities. Educational seminar at: 2019 North American Manure Expo; August 2019; Fair Oaks, IN. [\[1\]](#)
28. Nour MM, Field, We. Farm-related injuries and fatalities involving manure storage, handling and transport. Student presentation at: 2019 North American Manure Expo; August 2019; Fair Oaks, IN. [\[1\]](#)
29. Heiberger S, Ploeckelman M, Yoder A, Duysen E, Leonard S. NIOSH ag centers partner on “Telling the Story” project. Poster and lightning talk at: Western Ag Safety and Health Conference; August 2019; Seattle, WA. [\[2\]](#)
30. Lee B. Partnering with agribusiness to raise the national agri-safety culture. Presentation at: Western Ag Safety and Health Conference; August 2019; Seattle, WA. [\[1\]](#)
31. Rudolphi J. Farm related stressors. Roundtable at: Western Ag Safety and Health Conference; August 2019; Seattle, WA. [\[7\]](#)[\[8\]](#)
32. Weichelt B. Monitoring agricultural injuries from media reports. Presentation at: Western Ag Safety and Health Conference; August 2019; Seattle, WA. [\[3\]](#)

WEBINARS/ELECTRONIC PRESENTATIONS

1. Lee B. Safeguarding children who live and work on farms: A clinicians guide. Presented online at: AgriSafe Nurse Scholar Program; October 2018. [\[1\]](#)

2. Salzwedel M. Safeguarding youth working in agriculture. Presented online at: Workplace Health Without Borders; November 2018. [\[1\]](#) [\[2\]](#) [\[4\]](#)
3. Salzwedel M. Children and youth in agriculture. Presented online at: CS-CASH Agricultural Health and Safety Course; July 2019. [\[1\]](#) [\[2\]](#) [\[4\]](#)
4. Ploeckelman M. Safeguarding children and youth who live, work and play on farms and ranches. Presented online at: Wisconsin Farm Bureau Federation Young Farmer and Agriculturalist Program; September 2019. [\[1\]](#) [\[2\]](#) [\[4\]](#)
5. Lee B. Activities and impact of the National Children’s Center. Presented online at: NIOSH Agricultural Centers Teleconference; September 2019. [\[1\]](#)
6. Ploeckelman M. Safeguarding children and youth who live, work and play on farms and ranches. Presented online at: Agrisafe; September 2019. [\[1\]](#) [\[2\]](#) [\[4\]](#)

EXHIBITS featuring NCCRAHS projects and resources

1. National Association of 4-H Agents Annual Conference. Columbus, OH; Oct 7-11, 2018. [\[9\]](#)
2. National FFA Convention. Indianapolis, IN; Oct 31-Nov 2, 2018 [\[2\]](#) [\[9\]](#)
3. National Association of Farm Broadcasters. Kansas City, MO; Nov 7-8, 2018 [\[2\]](#)
4. Agricultural Media Summit. Minneapolis, MN; July 29-30, 2019 [\[2\]](#)
5. Minnesota Farm Fest. Redwood Falls, MN; Aug 6-8, 2019 [\[2\]](#)

MEDIA RELEASES

1. Jan 9, 2019 – Child agricultural injury prevention workshop set for Hershey, PA. [\[2\]](#) [\[4\]](#)
2. Jan 17, 2019 – Farm medicine scientist named 2019 Rural Health Fellow. [\[2\]](#)
3. Feb 15, 2019 – Become a leader in presenting child ag injuries: Scholarships available for March workshop in Pennsylvania. [\[2\]](#) [\[4\]](#)
4. Feb 25, 2019 – National Farm Medicine Center names new director. [\[2\]](#)
5. March 21, 2019 – Make your agritourism corn box into a sand box safety experts urge. [\[2\]](#)
6. April 9, 2019 – Child Ag Injury Prevention Workshop part of world safety conference. [\[2\]](#) [\[4\]](#)
7. May 9, 2019 – Child Ag Injury Prevention Workshop coming to Des Moines. [\[2\]](#) [\[4\]](#)
8. June 12, 2019 - \$20,000 Child Ag Injury Prevention grants available. [\[1\]](#) [\[2\]](#)
9. June 19, 2019 – Protect the future of agriculture: Registration open for child injury prevention workshop, Lexington, KY. [\[2\]](#) [\[4\]](#)
10. June 25, 2019 – New online database puts sharper focus on U.S. agricultural injuries. [\[2\]](#) [\[3\]](#)
11. July 11, 2019 – Child Ag Injury Prevention Workshop set for Sept 17-18, Hershey, PA, during National Farm Safety Week. [\[2\]](#) [\[4\]](#)
12. Aug 12, 2019 – Delivering child care in agricultural communities. [\[2\]](#) [\[6\]](#)

CONTRIBUTED ARTICLE

1. May 16, 2019 -- Keep youth safe this summer. *AgriView*; Professional Dairy Producers of Wisconsin “Dairy Bottom Line” supplement; page 5. [\[2\]](#)

NEWLY CREATED & UPDATED RESOURCES

1. Safety concerns: Grain boxes and play bins; March 2019 [\[4\]](#)
2. Child agricultural injury: Safety brochure; April 2019 [\[1\]](#)
3. National Farm Medicine Center Year in Review 2018; April 2019 [\[1\]](#)
4. Child agricultural injury facts 2019; May 2019 [\[1\]](#)
5. Media guidelines. Childhood Agricultural Safety Network; June 2019 [\[4\]](#)
6. Mini-grants available; Aug 2019 [\[1\]](#)
7. Roadmap for delivering child care in agricultural communities; Aug 2019 [\[6\]](#)

WORKSHOPS

Three Child Agricultural Injury Prevention Workshops were lead throughout the year. The first workshop was held in conjunction with the International Society for Agricultural Safety and Health in Des Moines, Iowa in June. Highlights included an international audience and a focus on program development. The second workshop was held in Lexington, Kentucky in August. Highlights included a focus on regional needs related to youth horse safety. The final workshop was held in Hershey, Pennsylvania in September. Highlights included a focus on vulnerable populations and engagement in advocacy. Attendees at each of the workshops had the opportunity to apply for funding to continue child injury prevention in area. Westfield Insurance, John Deere, and National Farm Medicine Center provided additional financial support for the workshops. Several of the Center's staff members presented topics at each of the workshops. A typical agenda for the workshops include the following topics on child agricultural injury prevention:

- Opportunities for Protecting Young People in Agriculture
- Community Based Approaches
- Program Planning, Implementation and Evaluation
- Roundtables Based on Local Needs
- Non-Working Children Panel
- Promotion and Dissemination (*using traditional and social medias*)
- Working Youth Panel
- Public Policy and Advocacy
- Learning Labs
- Grant Writing



MINI-GRANTS AWARDED

The Center provides annual funding for mini-grants that support small-scale projects and pilot studies addressing prevention of childhood agricultural injury and disease. This year three grants related to youth health and safety were selected through a peer-review process.

Backup Visibility Awareness: A Novel Intervention for the Prevention of Rural Trauma in Anabaptist Youth, PI: Eric Bradburn, D.O., Lancaster General Hospital.

The majority of farmers operate equipment that does not physically allow them to see directly behind the equipment, leading to situations where children may be run over or pinned by the equipment. The aim of this project is to reduce these preventable injuries and fatalities in rural Anabaptist youth by providing backup cameras or mirror prototypes to attach to skid loaders. Backup cameras and mirror prototypes were developed with respect to community standards. Consultation from a forensic scientist who specialized in accident reconstruction also aided the development on prototypes. The equipment is in the process of being distributed to Anabaptists populations.

Augmented Reality Intervention for Safety Education (ARISE): A Pilot Study of AR Farm Safety Education Program for Farm Parents and Children, PI: Kang Namkoong, Ph.D., University of Maryland.

This project developed an innovative farm safety education program, ARISE, using vivid second-hand experiences of children-involved farm incidents from news reports and interactive learning tools based on Agricultural Youth Work Guidelines for farm parents and children. ARISE uses augmented reality, a novel approach for safety education, to place the participant in a simulated environment to observe farm incidents as they happen. In addition to having a second-hand experience of farm-incidents, an interactive learning tool guides users through farm safety tutorials designed to promote safety benefits, lower perceived barriers, and enhance self-efficacy for farm safety.

Summarizing Child-related Issues around Manure Storage and Handling Facilities and Equipment, PI: Mahmoud M. Nour, Purdue University.

To enhance the understanding of the health and safety of agricultural manure storage, handling facilities, and equipment on children and youth, 65 cases of incidents involving fatalities or injuries collected by Purdue University's Agricultural Confined Spaces Incident Database were analyzed to develop evidence-based strategies to reduce frequency and severity of manure storage and handling fatalities and injuries in youth. Work related to this mini-grant resulted in one publication in the *Journal of Agromedicine* and presentations at the International Association for Agricultural Safety and Health and the National Manure Expo. The PIs are currently in communication with *Manure Manager*, an industry magazine, to write an article based on the findings of this work.



National Children's Center
for Rural and Agricultural Health and Safety

1000 N. Oak Avenue – ML1, Marshfield Clinic Research Institute, Marshfield, WI 54449
1-800-662-6900