Intervention Strategies to Reduce Injuries to Older Farmers

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What happens with aging?

What is aging?
- To “show the effects or the characteristics of increasing age” (Merriam-Webster)
- Old age is generally considered 65 years and older
  - When geriatric medicine begins (Sieber, 2007)
  - General age of retirement
- Who’s an older worker depends on who you ask
  - 55 years and older is a common definition (Myers, Marsh, 2009)

Aging is not chronological
- Everyone does not grow old in the same way (Cavanaugh & Blanchard-Fields, 2018)
Vision

- Visual acuity decreases with age (Owsley et al, 1983)
- Changes in the eyes reduce the amount of light received by the retina
  - 2/3 amount of light captured by the retina is lost from age 20 to age 60 (LRC, 2017)
- Increase in risk of developing age-related diseases (National Eye Institute, n.d.)
  - Glaucoma
  - Macular degeneration
- As age increases the risk of eye injury increases (Iftikhar et al, 2019)
Hearing

- Hearing loss is common with aging (NIHCD, 2017)
- Farm-related activities expose workers to hazardous sound levels
  - Farming increases loss of hearing sensitivity (Engdahl & Tambs, 2010)
- Hearing loss increases the risk of sustaining farm related injuries (Choi et al, 2005)
Mobility

- Decrease in hand function (Ranganathan et al, 2001)
  - Hand and finger strength
- Arthritis increases in risk starting at 45-54 years and up (Lawrence et al, 2008)
- Farmers have an increased risk of osteoarthritis of the hip and knee (Walker-Bone & Palmer, 2002; Davis & Kotowkis, 2007)
- Older farmers with mobility issues are twice as likely to experience farm work injuries (Heaton et al., 2012)
Mental/Cognitive

- Aging leads to slower reflexes and reaction times (Kenney, 1982; Fozard et al, 1994)
- Decrease in episodic memory with age
  - Memory that enables people to remember personal happenings from the past (Tulving, 1987)
  - Slower to access stored information (Glisky, 2007)
- Harder to divide attention (Brouwer et al, 1991)
  - Older adults perform less well than younger adults in dual-task conditions
- Emergency response time for older adults is greater (Rogers et al, 2005)

https://universityhealthnews.com/daily/memory/worried-about-forgetfulness-heres-how-to-tell WHETHER ITS SERIOUS/
Farming Poses Higher Risk of Injury to Older Workers

- Farming is dangerous
  - In 2016 farmers had a fatal work injury rate of 23.1 versus 3.1 for all workers (CFOI, 2016)
  - From 1992 to 2004 farmers 55 years and older had a fatality rate of 45.8 (Myers et al, 2009)
    - Twice the rate of all farmers
  - About half of deaths of US farmers from 1992 to 2004 were over 55 years (Myers et al, 2009)
  - Half of reported fatality cases in Indiana since 2012 were farmers 60 years or older (Cheng & Field, 2018)
  - In 2012 there were 449,300 principal operators 70 years and older (USDA, 2012)

![Civilian occupations with high fatal work injury rates, 2016](image)
Agents of Fatal Injury

- Tractors are the most common type of contributing agent for fatal injuries for older farmers
  - 46% of U.S. cases of farmers 55 years and older from 1992 to 2004 (Myers et al, 2009)

- Other top contributing agents include (Myers et al, 2009)
  - Farm machinery
  - Roadway

- Falls are the most common cause of deaths in older adults within the general public (CDC, 2016)
Breakdown of Indiana Senior Farmer Fatalities

- A total of 388 cases
- Average age was 69.3 years old
- Mostly involved males
  - 373 male vs 15 female
- Tractors were the most common cause of fatality
  - 40.5% of all cases involved tractors
- There is an increasing trend in the frequency of fatalities for those 55 and over

Number of fatalities per year for farmers 55 years and older - 1988-2017
Why does this matter to AgrAbility?

- The Vision of AgrAbility is “to enhance quality of life for all farmers, ranchers, and other agricultural workers with disabilities.”
  - Aging is included in the scope of AgrAbility’s mission
- 41.8% of AgrAbility clients during the 2016-2017 period were 60 years or older
Perceptions of Farm Safety Among Older Farmers

- **Strong feelings**
  - Farmers define health as the “ability to work” (Reed et al., 2012)
  - 27% of 418 farmers said, “they intended never to retire” (Duffy et al., 2000)

- **Education methods**
  - Important to understand each unique situation (Ambe & Murphy, 1995)
  - Stories are an effective model for teaching beliefs and attitudes (Cole, 2002)
  - Family, friends, and neighbors are important in senior-farmer safety related beliefs (Whitman & Field, 1995)
Communicating with Clients

- How do you pass on safety practices to clients?
  - Many farmers have strong feelings about farming
- Have conversations with clients
  - Personal contacts are more likely to change old safety practices (Ambe & Murphy, 1995)
  - Talk about safety concerns with clients
- Have conversations with client's family and friends
  - Interventions
  - Mediate compromises
- Creating nontraditional safety material
  - Findings suggested nontraditional methods or formats such as a sign with a picture of a young kid telling their granddad to buckle-up to be effective (Whitman & Field, 1995)
Case Study #1

“84-year-old Farmer Died When Tractor Overturned while Feeding Cattle on Hillside” (Iowa FACE, 2010)

- The farmer was an 84-year-old male farmer who owned a 900-acre farm with cattle.
  - Terrain was hilly.
- Began to feed his cattle at sunset.
  - Friends and family said that he preferred to work at night.
  - No artificial lighting.
- Family got worried when he did not return after four hours.
- Found the victim pinned underneath an overturned tractor.
- Investigations suggested that the tractor was going fast downhill as it ran over a hay bale and overturned 1.5 times.
Case Study #1

- Potential preventative measures
  - Addition of ROPS
    - 1966 tractor that had never been fitted
  - Making sure lighting is sufficient
    - Know that vision decreases with age
    - There was no artificial lighting on that part of the property
    - Unsure how effective the headlights were prior to the incident
    - Operating during daylight hours
  - Understanding what factors can help contribute to an overturn
    - Steep surfaces can upset the balance of a tractor
    - Wetness reduces the speed of braking
  - Carry a communication device (cellphone, two-way radio, etc)
Case Study #2

“Elderly Part-Time Farmer Dies during Fall and Subsequent Runover by Tractor and Attached Brush-hog” (New York FACE, 2003)

- The farmer was an 84-year-old male who had 50 acres
  - Lived by himself
  - Had a history of fainting spells
- He was cutting hay to prepare for winter
- Driving a 1945 Ford 8N tractor with a five-foot bush hog mower
  - Both in excellent condition
- While he was traveling down the slope the victim fell forwards to the left of the tractor and was struck by the mower
- A neighbor found the victim after noticing the tractor had ran into the victim’s pickup truck
- The victim was declared dead on the scene
Case Study #2

- Potential preventative measures
  - Understand how medical conditions can increase injury risk
    - Medical conditions, such as fainting or blackouts, can increase the risk of injury while using farm machinery
    - Refrain from the activity until medical conditions are diagnosed and treated
  - Choose jobs based on the farmer’s skill
    - Know that age can decrease mobility and reaction time
      - Increasing the risk of falling
    - If it is unsafe to perform actions, such as tractor driving, then get help from others
  - Do not work alone
  - Operate a cab equipped tractor that would keep the driver within the zone of protection
Case Study #3

“Tractor avoids oncoming car but rolls in a ditch killing the operator.” (Iowa FACE, 1996)

- The farmhand was a 67-year-old male who worked weekends for a small 250-acre farm
- The victim was transporting hay from the field on an older narrow-front tractor with rear mount bale hooks
- He was waiting on the right side of a state highway to turn left into the farm
  - The highway had a steep slope with the top 200 ft north of the farm entrance
- As the victim began to turn a car came over the crest of the hill
- The car was able to brake before the driveway, but the tractor driver focused on getting out of the road and ran into a ditch
  - Missed the driveway by a few feet
- The tractor rolled over completely and killed the victim
Case Study #3

Potential preventative measures

- Addition of ROPS
  - Tricycle-type tractors are especially prone to overturns
  - Could have saved the victim by preventing a complete rollover

Rerouting the farm entrance

- Limited visibility due to steep slope
  - The farm knew it was a safety risk
- Older adults have slower reaction times and not as effective at multi-tasking

(Iowa FACE, 1996)
Questions?
References

References

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