Pharm to Farm: Making Clinical Pharmacy Services Accessible to Missouri Farmers

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UMKC School of Pharmacy at MU
Learning Objectives

1. Identify medications which may increase risk of injury to farmers or those in agriculture

2. Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers

3. Recognize opportunities for pharmacists to fill the healthcare gaps in rural areas and serve as partners in agricultural health and safety
In your pharmacy...

- RJ is a 67 year old Missouri farmer
- Hobby farm on roughly 300 acres which includes: hay, corn, and 95 head of beef cattle
- Medical conditions:
  - Parkinson’s disease
  - Arthritis pain
  - Hypertension
  - Diabetes
  - Constipation
  - Depression
  - Seasonal Allergies
- Past surgical history:
  - Hip replacement 1 year ago
Agriculture in the U.S.

- Farming is consistently one of the most dangerous occupations in the United States\(^1\)

- Fatality rate among the 2,166,000 agricultural workers is 642 deaths or 29.2 per 100,000\(^1\)

- One in 20 farm injuries each day result in permanent impairment and lost work.\(^2\)

- Taking a medication increases risk of agricultural injury by 2-4 fold\(^3\)

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## 2015 STATE AGRICULTURE OVERVIEW

### Missouri

### Farms Operations\(^\d\)

<table>
<thead>
<tr>
<th>Economic Characteristics</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Operations - Area Operated, Measured in Acres / Operation</td>
<td>291</td>
</tr>
<tr>
<td>Farm Operations - Number of Operations</td>
<td>97,100</td>
</tr>
<tr>
<td>Farm Operations - Acres Operated</td>
<td>28,300,000</td>
</tr>
</tbody>
</table>

### Other State Highlights, 2012

#### Economic Characteristics

<table>
<thead>
<tr>
<th>Economic Characteristics</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm by value of sales</td>
<td></td>
</tr>
<tr>
<td>Less than $1,000</td>
<td>25,130</td>
</tr>
<tr>
<td>$1,000 to $2,499</td>
<td>7,872</td>
</tr>
<tr>
<td>$2,500 to $4,999</td>
<td>8,520</td>
</tr>
<tr>
<td>$5,000 to $9,999</td>
<td>11,206</td>
</tr>
<tr>
<td>$10,000 to $19,999</td>
<td>12,070</td>
</tr>
<tr>
<td>$20,000 to $24,999</td>
<td>3,771</td>
</tr>
<tr>
<td>$25,000 to $39,999</td>
<td>7,479</td>
</tr>
<tr>
<td>$40,000 to $49,999</td>
<td>3,343</td>
</tr>
<tr>
<td>$50,000 to $99,999</td>
<td>7,365</td>
</tr>
<tr>
<td>$100,000 to $249,999</td>
<td>5,738</td>
</tr>
<tr>
<td>$250,000 to $499,999</td>
<td>2,891</td>
</tr>
<tr>
<td>$500,000 or more</td>
<td>3,786</td>
</tr>
<tr>
<td>Total farm production expenses ($1,000)</td>
<td>8,290,499</td>
</tr>
<tr>
<td>Average per farm ($)</td>
<td>83,598</td>
</tr>
<tr>
<td>Net cash farm income of the operations ($1,000)</td>
<td>1,988,702</td>
</tr>
<tr>
<td>Average per farm ($)</td>
<td>20,053</td>
</tr>
</tbody>
</table>

#### Operator Characteristics

<table>
<thead>
<tr>
<th>Operator Characteristics</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal operators by primary occupation</td>
<td></td>
</tr>
<tr>
<td>Farming</td>
<td>43,788</td>
</tr>
<tr>
<td>Other</td>
<td>55,383</td>
</tr>
<tr>
<td>Principal operators by sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>88,044</td>
</tr>
<tr>
<td>Female</td>
<td>11,127</td>
</tr>
<tr>
<td>Average age of principal operator</td>
<td>58.3</td>
</tr>
<tr>
<td>All operators by race(^2)</td>
<td></td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>711</td>
</tr>
<tr>
<td>Asian</td>
<td>419</td>
</tr>
<tr>
<td>Black or African American</td>
<td>239</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>61</td>
</tr>
<tr>
<td>White</td>
<td>148,324</td>
</tr>
<tr>
<td>More than one race</td>
<td>760</td>
</tr>
<tr>
<td>All operators of Spanish, Hispanic or Latino Origin(^2)</td>
<td>883</td>
</tr>
</tbody>
</table>
Knowing Your Population...

Rural Missouri

- 58% of Missouri hospitals
  - Majority with fewer than 25 beds
- 18% of Missouri’s primary care physicians

Map 11 Primary Care Physicians per 10,000 Residents, March 2010
Source: Missouri Department of Health and Senior Services, License Renewal Data

www.health.mo.gov/data/brfss/BRFSSRegionsMap.pdf
Leading cause of death in Missouri....

- Rural heart disease death rate: 261.5 vs urban 235
- 92% of counties with death rate higher than state rate are rural
Selected Rural Healthcare Facilities in Missouri

Graphic from: https://www.ruralhealthinfo.org/states/images/missouri-rural-health-facilities.jpg
The stroke mortality rate for Missouri’s rural counties (58.4) significantly higher than the rate for Missouri’s urban counties (52.5). Rural counties make up 88% of the counties that have a stroke mortality rate significantly higher than the state rate.
Location of Sole Rural Community Independent Pharmacies in Missouri

ORHP Rural-Urban Typology
- Rural
- Urban

Sole Independent Rural Pharmacies
- Red cross: 10 Miles or More From Any Other Retail Pharmacy
- Blue circle: Within 10 Miles of Another Pharmacy
- N: Counties Without Retail Pharmacies

Note: Sole independent pharmacy is the only pharmacy in a community and is independently owned.


Needs Assessment

- COPD:
  - 4th leading cause of death in Missouri
  - Rural death rate (53.2) due to COPD significantly higher than urban rate (45.6)

- Diabetes:
  - 6th leading cause of death in Missouri
  - Rural Missouri counties make up 82% of the Missouri counties with significantly higher rate of diabetes deaths than the state rate
Rural access to clinical pharmacy services
Brandon J. Patterson, Peter J. Kaboli, Traviss Tubbs, Bruce Alexander, and Brian C. Lund

- Retrospective examination of Veterans Health Administration database in 2011
- n=3,040,635 of which 23.4% received CPS at various locations:
  - Medical center: 25.9%
  - Urban clinic: 22.5%
  - Rural clinic: 17.6%
- Nearly 50% of CPS encounters via telehealth, in particular video telehealth services among rural clinic patients was substantially higher than among medical center patients (OR = 9.7; 95%CI 9.0–10.5)
- Rural patients 35% less likely to receive CPS

Agriculture in the U.S.

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- Taking a medication increases risk of agricultural injury by 2-4 fold\(^3\)

Health, Medication Use, and Agricultural Injury: A Review

Donald C. Voaklander, PhD, Michelle L. Umbarger-Mackey, RN, MSN, PhDc, and Michael L. Wilson, MPH
Medication-Related Agricultural Injury

- Use of medications alone and in combination
- Regular medication use increases risk 1.44-3.02 times\(^1\-^3\)
- Stomach, laxative medicines increase risk 2.8 times\(^4\)
- Heart, circulatory medicines increase risk 4.2 times\(^4\)
- Narcotic pain relievers increase risk 9.3 times\(^5\)
- Non-narcotic pain relievers increase risk 2.4 times\(^5\)
- Incontinence therapy increases risk 2.95 times\(^5\)
- Sleep agents increase risk 2.11 times\(^6\)

Assess for Side Effects

- Dizziness
- Confusion
- Lightheadedness
- Drowsiness
- Blurred vision
- Gait disturbance
Objective 1: Identify medications which may increase risk of injury to farmers or those in agriculture

<table>
<thead>
<tr>
<th>Condition</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis/Chronic pain</td>
<td>Narcotics</td>
</tr>
<tr>
<td>Heart disease</td>
<td>Diuretics</td>
</tr>
<tr>
<td>Stroke</td>
<td>Antihypertensives</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>Antiarrhythmics</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Oral diabetes agents</td>
</tr>
<tr>
<td>Seizure disorders</td>
<td>Insulin</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>Anticonvulsants</td>
</tr>
<tr>
<td>Parkinson’s disease</td>
<td>Antidepressants</td>
</tr>
<tr>
<td>Depression</td>
<td>Anti-anxiety agents</td>
</tr>
<tr>
<td>Alzheimer’s disease</td>
<td>Antipsychotics</td>
</tr>
<tr>
<td>Dementia</td>
<td>Anti-nausea agents</td>
</tr>
<tr>
<td>Psychosis</td>
<td>Allergy medicine</td>
</tr>
<tr>
<td>Spasms</td>
<td>Anti-spasm medicine</td>
</tr>
<tr>
<td></td>
<td>Bladder medicine</td>
</tr>
<tr>
<td></td>
<td>Sedatives</td>
</tr>
</tbody>
</table>
In your community pharmacy...

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  - Hypertension
  - Diabetes
  - Constipation
  - Depression
  - Seasonal Allergies

- Past surgical history:
  - Hip replacement 1 year ago
Why Pharmacists as Partners in Agricultural Health and Safety?

- “most accessible healthcare profession”
- “among most trusted healthcare professionals”
- medication expert

Knowledge and Training
- Assessment
- Safe medication use

Communication skills
- Health literacy
- Adherence
- Counseling
- Education

- Patient advocate
Objective 2: **Describe techniques pharmacists can incorporate into practice** and resources available to meet the healthcare needs of Missouri farmers

- Minimize jargon
- PAR technique
- APPLE principle
  - Accessible
  - Personal
  - Professional
  - Linked
  - Empathetic
- Respect
- Patient-centered plan of care
- Motivation linked to continued productivity

Culture of Agriculture

- Solid family values
- Hard work
- Commitment to community
- Strong religious beliefs
- Self-sufficiency

Identify Characteristics and Needs

- “Can do and must do” attitude
- Independent
- Proud
- Realistic
- Thrifty
- Private
- Stoic
- Skeptical
Identify Barriers

- Long working hours and seasonal deadlines
- Fatigue
- Isolation
- Worry about survival of the family farm
- Tensions of handling on-farm and off-farm work
- Inability to control external factors
Identify Barriers

- Work still has to get done
- Reluctance to enter a sick role
- Access to health care limited by resources and insurance as well as demands of farming
- Rehabilitation must result in their ability to get work done
"We need to feed our cows, to continue to produce the milk which is our livelihood, and how do you choose between that and paying for the health insurance for your family?"
--Sandi Cihlar, a third-generation dairy farmer with her husband for 30 years.

Objective 2: Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers

Recognize that **farming is a chosen** way of life

*Respect and listen* to what the farmer wants for his/her life

As appropriate, *help return safely* the farmer to farm life and work

Rural Tele-pharmacy
Objective 2: Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers.
Identifying Potential Risks

- Sedation
- Dizziness
- Confusion
- Lightheadedness
- Blurred vision
- Gait disturbance
Objective 2: Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers

0 During the past 12 months were you injured seriously enough that you got medical advice or treatment?
0 Do you visit a primary care provider regularly?
0 Predisposing conditions
0 Do you take medicine for a condition?
0 Multiple physicians
0 Decreased alertness
0 Onsite Farmstead Assessment

Identify risk
Red Flags

- Balance impairment
- Changes in sensorimotor function/skills
- Recent falls
- Recent hospitalization
- Altered confidence in ability to work on the farm
- Changes to farm management
- Changes to family involvement
- Determine if changes to farm work
- Recognize that medication side effects could be contributing
- Recognize that chronic conditions could be contributing
- Express concern for potential risks
Objective 2: Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers

- Identify
- React
- Connect with resources
- Empower
- Advocate
- React
Objective 2: Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers

- Determine if there have been changes to farm work
- Recognize that medication side effects could be contributing
- Recognize that chronic conditions could be contributing
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- Identify
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Objective 2: Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers

- Missouri Extension
- Comprehensive medication review — especially at Transitions of Care!
- Telehealth Networks
- Health fair screenings
- Falls Prevention Resources

Connect with resources
Venues

0 Considerations
  0 target population
  0 proximity
  0 access
  0 services offered
  0 feasibility
  0 cost
  0 awareness
  0 advertising

0 Accessible locations employed:
  0 Public health & wellness events
  0 County and state fairs
  0 Community centers
  0 Farm safety days
  0 Western Farm Show
  0 Pharm to Farm On-site Farmstead Medication Assessments
PHARM to FARM

UMKC
United States Department of Agriculture
National Institute of Food and Agriculture

Missouri AgrAbility

UNIVERSITY OF MISSOURI Extension
Objective 2: **Describe** techniques pharmacists can incorporate into practice and **resources** available to meet the healthcare needs of Missouri farmers.

Missouri AgrAbility Project: [http://agrability.missouri.edu/](http://agrability.missouri.edu/)
Objective 2: **Describe** techniques pharmacists can incorporate into practice and **resources available to meet the healthcare needs of Missouri farmers**

- Pharm to Farm: [http://info.umkc.edu/pharmtofarm/](http://info.umkc.edu/pharmtofarm/)
- Missouri Association of Rural Health Clinics: [http://www.marhc.org/#!rhcfinder/c1dyz](http://www.marhc.org/#!rhcfinder/c1dyz)
- Rural Health Information Hub: [https://www.ruralhealthinfo.org/](https://www.ruralhealthinfo.org/)
- National Rural Health Association: [http://www.nrharural.org](http://www.nrharural.org)
- International Society for Agricultural Safety and Health: [https://isash.org/](https://isash.org/)

- **Federally Funded NIOSH Ag Centers:**
  - Great Plains Center for Agricultural Health, University of Iowa [http://www.public-health.uiowa.edu/gpcah/](http://www.public-health.uiowa.edu/gpcah/)
  - Upper Midwest Agricultural Safety and Health Center, University of Minnesota [http://umash.umn.edu/](http://umash.umn.edu/)
  - Central States Center for Agricultural Safety and Health, University of Nebraska [http://www.unmc.edu/publichealth/cscash/](http://www.unmc.edu/publichealth/cscash/)
  - National Farm Medicine Center and National Children’s Center for Rural and Agricultural Health and Safety, Marshfield WI [https://www3.marshfieldclinic.org/NFMC/](https://www3.marshfieldclinic.org/NFMC/)
AgroMedicine Courses

Agricultural Medicine: Occupational and Environmental Health for Rural Health Professionals
College of Public Health Building, 145 N. Riverside Dr., Iowa City, IA, 52242

Agricultural Health and Safety for Healthcare and Safety Professionals
Session A – July 12-13, 2016
Session C (Online) – Begins July 12, 2016

Registration now open at www.isash.org.

Agricultural Safety and Health Certificate Course
“Establishing Competency in Core Knowledge in the Agricultural Safety and Health Profession”
Objective 2: Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers

- Encourage overall health
- Motivate client to:
  - Place value on seeking care
  - Ask questions of their healthcare providers
  - Voice concerns about injuries or medicine
Objective 2: Describe techniques pharmacists can incorporate into practice and resources available to meet the healthcare needs of Missouri farmers

- Services & resources to resource-poor areas
- Missouri Extension
- Access to care
Objective 3: Recognize opportunities for pharmacists to fill the healthcare gaps in rural areas and serve as partners in agricultural health and safety

- Application of skills, identification of drug-related problems
- Environment:
  - Medication Therapy Services collaboration with rural physicians
  - Rural Health Clinics
  - Federally Qualified Health Centers
  - Senate Bill 716 signed July 2014 creating new medical license for “assistant physicians” to engaged in limited practice in underserved areas
    - Rules pending Board of Healing Arts
Pharmacists as Partners in Agricultural Health and Safety

- Safe medication use practices
- Assess drug interactions
- Prevent adverse effects
- Individualized evaluation
- Educate and empower patients
Interested in partnering?

0 Please drop your business card in a basket OR
0 Fill out this Google Form:
   https://goo.gl/forms/U5vCwjpdl562R0P6n1
Posttest Question #1

Which of the following medication classes is known to cause the highest potential risk of medication-related agricultural injury?

a. Antihypertensives
b. NSAIDs
c. Sedatives
d. Narcotics
Posttest Question #1

Which of the following medication classes is known to cause the highest potential risk of medication-related agricultural injury?

a. Antihypertensives
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Posttest Question #2

RJ is a 67 year old Missouri farmer of roughly 300 acres which includes: hay, corn, and 95 head of beef cattle

Medical conditions:
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- Hypertension
- Diabetes
- Constipation
- Depression
- Seasonal Allergies

Past surgical history:
- Hip replacement 1 year ago

How can you, as his community pharmacist, assess RJ to prevent farm injury?

a. Ask about recent falls
b. Recognize changes to farm management
c. Evaluate medication history for drug-related problems
d. All of the above
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How can you, as his community pharmacist, assess RJ to prevent farm injury?

a. Ask about recent falls
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c. Evaluate medication history for drug-related problems
d. All of the above
Pharmacists can incorporate the APPLE principle into practice to meet the healthcare needs of Missouri farmers by being:

a. Admirable, Public, Professional, Local, Engage
b. Accessible, Personal, Professional, Linked, Empathic
c. Accessible, Public, Professional, Local, Engage
d. Admirable, Personal, Poised, Local, Empathetic
Posttest Question #3

Pharmacists can incorporate the APPLE principle into practice to meet the healthcare needs of Missouri farmers by being:

a. Admirable, Public, Professional, Local, Engage
b. Accessible, Personal, Professional, Linked, Empathic
c. Accessible, Public, Professional, Local, Engage
d. Admirable, Personal, Poised, Local, Empathetic
Opportunities for pharmacists to fill the healthcare gaps in rural areas and serve as partners in agricultural health and safety exist through:

a. Telehealth
b. Rural outreach and wellness initiatives
c. MTS with rural providers
d. All of the above
Posttest Question #4

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Questions?

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