Deprescribing:
A Proactive Approach to Prevent Geriatric Syndromes

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- Masters of Science in Medical Education
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- Certified Pain Educator
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Disclosure

- The speakers have no actual or potentially relevant financial relationship to disclose and no conflict of interest in relation to this activity.
Pharmacist Learning Objectives

• Describe the relationship between polypharmacy and geriatric syndromes
• Identify methods by which pharmacists and physicians can work together to optimize the medication regimens of older adults
• Describe tools that can be used to safely deprescribe medications
• Utilize deprescribing to reduce the risk of potential adverse events in geriatric patients

Pharmacy Technician Learning Objectives

• Define polypharmacy, geriatric syndromes, and deprescribing
• Describe how deprescribing can be utilized to prevent adverse events
• Identify medications that may increase the risk of geriatric syndromes in an older adult
Background

Geriatric Patients

- Age Related Changes
- Multi-morbidity
- Functional & Cognitive Limitations
- Polypharmacy
- Geriatric Syndromes
- Limited Evidence
Polypharmacy

• “The simultaneous use of multiple drugs by a single patient, for one or more conditions”
• Can be defined by quantity
  • Commonly, five or more medications
  • Range from two or more to greater than 10 meds
• Associated with multimorbidity and geriatric syndromes
• Increases risk of adverse outcomes
• Risk factors
  • Patient related
  • Systems related

Multimorbidity

• “The coexistence of multiple health conditions”
  • Often, two or more chronic conditions
• Associated with many challenges
  • Polypharmacy
  • Complex visits with multiple clinicians
  • Lack of clinical data/studies
Geriatric Syndromes

RISK

GERIATRIC SYNDROMES

Polypharmacy
Falls
Incontinence
Pressure Ulcers
Delirium

FRAILTY

POOR OUTCOMES

Disability
Nursing Home
Death

Geriatric Syndromes

Age Related Changes

- Physiologic changes
- Pharmacokinetic changes
  - Absorption
  - Distribution
  - Metabolism
  - Elimination
- Pharmacodynamic changes
  - Decreases in receptors

<table>
<thead>
<tr>
<th>Change</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Active transport ↓ First pass</td>
<td>Unpredictable bioavailability</td>
</tr>
<tr>
<td>D Total body water ↓ Total body fat</td>
<td>↓ Vd for water soluble drugs ↑ Vd for fat soluble drugs</td>
</tr>
<tr>
<td>M Phase I metabolism ↓ Hepatic blood flow</td>
<td>↓ Metabolism = ↑ t1/2</td>
</tr>
<tr>
<td>E Renal elimination ↓</td>
<td>↑ t1/2</td>
</tr>
</tbody>
</table>


Functional and Cognitive Limitations

- Functional changes
  - Hearing loss
  - Reduced physical activity
  - Decreased motor skills

- Cognitive changes
  - Increased processing time
  - Decreased attention
  - Decline in “new” learning abilities
  - Decline in executive cognitive function

*Limitation and changes can also be related to chronic disease and multimorbidity*

Limited Evidence

- Lack of guidelines
  - Particularly, to discontinue medications
  - Exclusion of older adults with multimorbidity

- Biases in literature
  - Recruitment bias
  - Misclassification bias

Image from: https://pharma.elsevier.com/pharmacovigilance/the-role-of-scientific-literature-in-pharmacovigilance/
Self-Assessment Question #1

Which of the following contribute to the complexity of caring for geriatric patients?

A. Pharmacokinetic changes
B. Polypharmacy
C. Limited evidence
D. All of the above

Deprescribing
Deprescribing

• “Deprescribing is the planned and supervised process of dose reduction or stopping of medication that might be causing harm, or no longer be of benefit.”
  • Deprescribing.org

• Systematic process to:
  • Identify medications that may cause harm
  • Discontinue those medications

• Patient-centered intervention

Why deprescribe?

Reduce Polypharmacy  Improve Health Outcomes
Prevent Adverse Events  Improve Medication Adherence
Increase Patient Satisfaction  Reduce Healthcare Costs
Polypharmacy + Geriatric Syndromes

<table>
<thead>
<tr>
<th>Medication Class</th>
<th>Geriatric Syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticholinergics Calcium channel blockers</td>
<td>Opioids</td>
</tr>
<tr>
<td>Anticholinergics Benzodiazepines</td>
<td>Corticosteroids H2-receptor antagonists</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>Sulfonylureas</td>
</tr>
<tr>
<td>Antihypertensives</td>
<td></td>
</tr>
<tr>
<td>Antihypertensives Centrally acting medications</td>
<td></td>
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<tr>
<td>Diuretics</td>
<td>Opioids</td>
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</tbody>
</table>

Can Deprescribing Prevent Geriatric Syndromes?

- *If*, treatment of geriatric syndrome consists of:
  - Identifying and treating related disease states
  - Risk assessment and reduction
- *And*, deprescribing identifies and removes medications that may cause harm
- *Then*, deprescribing can prevent geriatric syndromes

*Deprescribing is a Proactive Approach!*
Assessing Medication Regimens: Patient Case

Mr. Taylor is a 74 year-old-male with a history of hypertension, hyperlipidemia, GERD, benign prostatic hyperplasia, osteoarthritis of the knee, and insomnia. He presents to the clinic today for a medication review.

**Vital Signs**
- Age: 74 years
- Height: 70 inches
- Weight: 182 lbs

**Pertinent Labs**
- Age: 74 years
- Height: 70 inches
- Weight: 182 lbs

<table>
<thead>
<tr>
<th>Vital Signs</th>
<th>Pertinent Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR 66</td>
<td>Na 140 mmol/L</td>
</tr>
<tr>
<td>BP 124/82</td>
<td>Hgb 14 g/dL</td>
</tr>
<tr>
<td>Temp 98.2</td>
<td>K 4.2 mmol/L</td>
</tr>
<tr>
<td>RR 18</td>
<td>Cl 102 mmol/L</td>
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<tr>
<td></td>
<td>WBC 5.2</td>
</tr>
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<td></td>
<td>CO2 20 mmol/L</td>
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<tr>
<td></td>
<td>Pit 240</td>
</tr>
<tr>
<td></td>
<td>Scr 1.2 mg/dL</td>
</tr>
<tr>
<td></td>
<td>HgbA1c 6.8%</td>
</tr>
<tr>
<td></td>
<td>BUN 12 mmol/L</td>
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<tr>
<td></td>
<td>Glucose 138 mg/dL</td>
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</tbody>
</table>
Patient Case: Mr. Taylor

**Past Medical History:**
- Hypertension
- Hyperlipidemia
- GERD
- BPH
- Osteoarthritis
- Insomnia

**Home Medications:**
- Amlodipine 10mg PO daily
- Lisinopril 20mg PO daily
- Rosuvastatin 40mg PO daily
- Pantoprazole 40mg PO daily
- Tamsulosin 0.4mg PO daily
- Oxycodone/Acetaminophen 5/325mg, 1 to 2 tabs PO q6h PRN pain
- Amitriptyline 25mg PO HS
- Zolpidem 10mg PO HS

Assess the Medication Regimen

- Indication
- Duplication
- Dosing
- Interactions
- Risk-Benefit
- Patient Factors
Tools to Evaluate the Medication Regimen

**Beers Criteria & STOPP**
- Potentially inappropriate medications

**Medication Appropriateness Index**
- Criteria to determine appropriateness

**Anticholinergic Burden Calculator**
- Identify medications with a high anticholinergic burden

**Fit FOR The Aged (FORTA)**
- Tool to optimize drug therapy management

Tools to Evaluate the Medication Regimen

**Brown Bag Method**
- Review all medications the patient has at home

**MedStopper.com**
- Enter medication list for specific patient

**AHRQ 3I tool & CDC: STEADI tool**
- Medication fall risk score and evaluation tools

**Health in Aging**
- Ten medications older adults should avoid or use with caution
Self-Assessment Question #2

After reviewing Mr. Taylor’s medication regimen, can you identify all of the medications that may put this patient at risk for developing a geriatric syndrome?

A. Lisinopril, Rosuvastatin, Pantoprazole
B. Amlodipine, Lisinopril, Tamsulosin, Oxycodone/APAP, Amitriptyline, Zolpidem
C. Oxycodone/APAP, Zolpidem, Amitriptyline
D. Amlodipine, Lisinopril, Rosuvastatin, Tamsulosin, Oxycodone/APAP, Amitriptyline, Zolpidem

Patient Case: Mr. Taylor

<table>
<thead>
<tr>
<th>Medication</th>
<th>Geriatric Syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticholinergics</td>
<td>Opioids</td>
</tr>
<tr>
<td>Calcium channel blockers</td>
<td>Constipation</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>Corticosteroids</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>H2-receptor antagonists</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>Sulfonylureas</td>
</tr>
<tr>
<td>Antihypertensives</td>
<td>Dizziness</td>
</tr>
<tr>
<td>Centrally acting medications</td>
<td>Falls</td>
</tr>
<tr>
<td>Diuretics</td>
<td>Sedative hypnotics</td>
</tr>
<tr>
<td>Opioids</td>
<td>Urinary Incontinence</td>
</tr>
</tbody>
</table>
Prioritize Medications

1. Medications that have already caused an adverse event
2. Medications most likely to cause the greatest harm
3. One medication that can cause multiple geriatric syndromes
4. Medications with safer alternatives
5. Unnecessary medications
   - No indication
   - Duplication of therapy

Self-Assessment Question #3

After identifying medications that can cause geriatric syndromes in Mr. Taylor’s medication regimen, how would you prioritize deprescribing?

A. Oxycodone/APAP, Zolpidem, Amitriptyline
B. Amlodipine, Oxycodone/APAP, Zolpidem
C. Lisinopril, Amlodipine, Tamsulosin
D. Oxycodone/APAP, Amlodipine, Tamsulosin
Deprescribing Algorithms

- **Deprescribing.org**
  - Evidence based guidelines and algorithms
    - Antihyperglycemics
    - Antipsychotics
    - Benzodiazepines
    - Cholinesterase Inhibitors and Memantine
    - Proton Pump Inhibitors
  - Educational tools for patients

2021 Annual Meeting & Exhibition
November 4-7, 2021 | San Diego, California

Deprescribing Algorithms

- **Primary Health Tasmania**
  - Evidence based guides
    - Allopurinol
    - Antihyperglycemics
    - Antihypertensives
    - Antipsychotics
    - Aspirin
    - Benzodiazepines
    - Bisphosphonates
    - Cholinesterase Inhibitors
    - Glaucoma eye drops
    - NSAIDs
    - Opioids
    - Proton Pump Inhibitors
    - Statins
    - Vitamin D and Calcium
  - Consumer resources

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Avoiding Withdrawal Events

- **Tapering algorithms**
  - Use to avoid adverse drug withdrawal events
  - Can stop many drugs without withdrawal reactions

- **If there is concern for adverse withdrawal events, and no guideline exists:**
  - Taper slowly, over 4-6 weeks
  - Monitor patient closely

### Medications That Can be Stopped without Tapering

<table>
<thead>
<tr>
<th>Medication Class</th>
<th>Withdrawal Reaction</th>
<th>Tapering Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACE/ARB</strong> (for nephroprotection)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Antibiotics (prophylaxis)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Antihyperglycemic (oral)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Anti-platelets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bisphosphonates</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Calcium + Vitamin D</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Estrogen</strong> (for menopausal symptoms)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **5α-Reductase Inhibitors**
- **Memantine**
- **Multivitamins**
- **NSAIDs**
- **Nutritional Supplements**
- **Statins**
- **Theophylline**

Medications that Require Tapering

<table>
<thead>
<tr>
<th>Medication Class</th>
<th>Withdrawal Reaction</th>
<th>Tapering Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anticholinergics</strong></td>
<td>Irritability, anxiety, insomnia</td>
<td>4 – 8 weeks</td>
</tr>
<tr>
<td><strong>Antiepileptics</strong></td>
<td>Seizure recurrence</td>
<td>3 – 6 months</td>
</tr>
<tr>
<td><strong>Antipsychotics</strong></td>
<td>Dyskinesias, overactivity</td>
<td>1st generation: 1 – 2 weeks 2nd generation: 4 – 8 weeks</td>
</tr>
<tr>
<td><strong>Beta Blockers</strong></td>
<td>Tachycardia, rebound HTN</td>
<td>3 – 4 months</td>
</tr>
<tr>
<td><strong>Benzodiazepines</strong></td>
<td>Anxiety, insomnia, tremor</td>
<td>1 – 2 months</td>
</tr>
<tr>
<td><strong>Central α-blockers</strong></td>
<td>Rebound hypertension</td>
<td>3 – 6 weeks</td>
</tr>
<tr>
<td><strong>Corticosteroids</strong></td>
<td>Anorexia, lethargy, arthralgia, postural hypotension</td>
<td>Several months</td>
</tr>
<tr>
<td><strong>H2 receptor antagonists (H2RA)</strong></td>
<td>Rebound gastric hypersecretion</td>
<td>4 weeks</td>
</tr>
</tbody>
</table>

Perspectives

Pharmacist Perspective

• Understand importance of deprescribing
  • Interpret data
  • Communicate across healthcare team

• Medication review and recommendations
  • Utilize literature
  • Apply evidence based algorithms
  • Discuss with physician
  • Counsel patient

• Goal to collaborate with physician
Pharmacy Technician Perspective

- Perform medication reconciliation in the inpatient setting
  - Obtain preadmission medication list
  - Contact outpatient pharmacies and physician offices
  - Document complete medication list
- Upon discharge, list sent to:
  - Primary care physician
    - Accurate medication list is key to deprescribing efforts
  - Home with patient
- Collaborate with pharmacist when polypharmacy is identified

Physician Perspective

- View deprescribing as a therapeutic intervention
- Practice prudent prescribing
- Patients are more likely to consider deprescribing if recommended by a trusted physician
- Importance of a streamlined medication reconciliation process
- Challenges
  - Time constraints
  - Multiple prescribers
  - Multiple pharmacies
  - Prescribing cascade
- Goal to collaborate with pharmacist
Pharmacy + Physician Team

• Key role in managing polypharmacy
• Areas for collaboration
  • Recommendations regarding drug therapy
  • Over the counter medication selection
  • Patient counseling
  • Identification of medication side effects
  • Improving medication adherence
  • Advise regarding drug interactions
• Challenges
  • Community setting
  • Reimbursement
  • Experience
  • Time

Patient Perspective

• Willingness to deprescribe influenced by:
  • Perception of medication appropriateness
  • Fear of adverse outcomes
  • Involvement of regular primary care physician
  • Understanding of why deprescribing is important
  • Previous experiences
• Caregiver perspective
  • Influenced by complexity
Communicating with Patients

• Consider goals
• Ask the right questions!
• Discuss options, introduce choice, make decisions:
  • Several medications you are taking have side effects that may be contributing to your dizziness
  • If you are open to it, we can reduce the dose or stop one of these medications to see if your dizziness improves
  • How do you feel about this?
  • What questions do you have for me?

Adapted from: Farrell B, Mangin D. AAFP, 2019; 99(1): 7-9

Patient Case
Mrs. Brown

Mrs. Brown is a 78-year-old female with a recent fall at home. The fall occurred at night when she was getting up to use the bathroom. This is the first fall she has had. She lives at home with her husband. She presents to the clinic today for a follow up appointment.

Age: 78 years
Height: 64 inches
Weight: 144 lbs
Imaging: normal
Micro: UA no growth

<table>
<thead>
<tr>
<th>Vital Signs</th>
<th>Pertinent Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>Na 138 mmol/L</td>
</tr>
<tr>
<td>BP</td>
<td>Hgb 12 g/dL</td>
</tr>
<tr>
<td>Temp</td>
<td>K 4.0 mmol/L</td>
</tr>
<tr>
<td>RR</td>
<td>Cl 104 mmol/L</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CO2</th>
<th>WBC 4.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCr 1.0 mg/dL</td>
<td>HgbA1c 7.2%</td>
</tr>
<tr>
<td>BUN 10 mmol/L</td>
<td>Glucose 144 mg/dL</td>
</tr>
</tbody>
</table>

Past Medical History:
- Hypertension
- Hyperlipidemia
- Depression
- Anxiety
- Incontinence
- Osteoporosis
- Recent Fall

Home Medications:
- Lisinopril 10mg PO daily
- Hydrochlorothiazide 12.5mg PO daily
- Atorvastatin 80mg PO daily
- Escitalopram 10mg PO daily
- Lorazepam 0.5mg PO TID PRN
- Oxybutynin ER 10mg PO daily
- Calcium/Vitamin D 600mg/400 IU PO daily
Self-Assessment Question #4

Which diagnoses does Mrs. Brown have that would be considered geriatric syndromes?

A. Hypertension  
B. Incontinence  
C. Falls  
D. B and C

Self-Assessment Question #5

Could any of the medications Mrs. Brown is taking contribute to geriatric syndromes?

A. Hydrochlorothiazide  
B. Oxybutynin  
C. Lorazepam  
D. All of the above
Mrs. Brown: Collaboration

- Prior to seeing Mrs. Brown in the office, the physician and pharmacist meet to discuss a plan
  - Would like to deprescribe one or more medications
  - Determine that more information is needed to develop a plan
- Key discussion points with Mrs. Brown:
  - Timing of lorazepam before the fall
  - Frequency of lorazepam usage
  - Urinary incontinence history
  - Symptoms prior to fall

Mrs. Brown: Additional Information

- **How often do you take your lorazepam?**
  - “I only take it when I can’t sleep. On average, I take it two times a month.”
- **How long have you been taking lorazepam?**
  - “I first got the prescription 10 or 15 years ago after my neighbor passed away. We were close friends, and I was very worried about how I would get on without her. I took the medicine a lot more back then. Now, I just keep it around because I find it useful to help me sleep.”
- **What time did you last take your lorazepam before your fall?**
  - “I took it at 8 or 8:30pm.”
- **Did you take your lorazepam that evening to help with sleep?**
  - “Yes. Our 14-year-old cat has been sick lately. We had an appointment to take her to the veterinarian the next morning, and I was worried about the diagnosis. I was thinking too much about it, and couldn’t fall asleep.”
- **Did you try anything else to help with your symptoms that night?**
  - “No, I didn’t. Sometimes I take a melatonin pill before I take the lorazepam, but I was out of them.”
Mrs. Brown: Additional Information

- **How long have you been suffering from urinary incontinence?**
  - “Probably 5 years. When I have to go, I have to go! I figured it’s just part of getting old.”

- **Was it before or after you started taking hydrochlorothiazide?**
  - “Well, I started taking it about 7 or 8 years ago. So I think my bladder issues came after I started the water pill.”

- **How often do you get up during the night to use the bathroom?**
  - “At least once every night. Sometimes twice. Usually I am very thirsty, so I have a glass of water when I get up too. Come to think of it, that probably makes my bladder issues worse.”

- **Did you feel any different than normal before you fell?**
  - “Well, I got up to go to the bathroom. I was in the hallway, and I started to feel dizzy. There wasn’t anything to hold on to, so I fell to the floor. I wouldn’t say that it was very different though. I have had quite a few dizzy spells lately. It was something I wanted to talk to you about today.”

- **How often do you experience dizziness?**
  - “Oh, I feel dizzy for a minute or two almost every day now. It started about two months ago.”

Mrs. Brown: Polypharmacy + Geriatric Syndromes

- **Taking greater than 5 medications**
- **Evaluate all medications associated with geriatric syndromes for deprescribing**
- **By deprescribing now, we can:**
  - Prevent future medication related adverse events
  - Increase quality of life

<table>
<thead>
<tr>
<th>Geriatric Syndrome</th>
<th>Associated Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls/Dizziness</td>
<td>Hydrochlorothiazide, Lisinopril, Lorazepam, Oxybutynin</td>
</tr>
<tr>
<td>Urinary Incontinence</td>
<td>Hydrochlorothiazide, Oxybutynin</td>
</tr>
<tr>
<td>Polypharmacy</td>
<td>all</td>
</tr>
</tbody>
</table>
Self-Assessment Question #6

We have identified that we should consider deprescribing Mrs. Brown’s hydrochlorothiazide, lisinopril, lorazepam and oxybutynin. Based on the information gathered during your discussion with Mrs. Brown, which medication would you prioritize to deprescribe first?

A. Hydrochlorothiazide  
B. Lisinopril  
C. Lorazepam  
D. Oxybutynin

Mrs. Brown: Deprescribing Benzodiazepines

- Mrs. Brown no longer has an appropriate indication for lorazepam
- Discussion with Mrs. Brown about risks and benefits of tapering
  - She is in agreement
- Implement tapering plan
  - Dose reduction to 0.25mg
  - Frequency reduction to HS PRN
- Follow-up phone call in 2 weeks, Follow-up visit in 4 weeks
Mrs. Brown: 8 Week Follow-up

- Mrs. Brown is completely tapered off lorazepam
  - She has not had any falls!
- She is still struggling with urge incontinence
  - Discuss deprescribing hydrochlorothiazide
  - She is in agreement
  - Follow-up on BP and frequency of urge incontinence in 4 weeks
  - If improved, can taper off oxybutynin

Mrs. Brown: Discussion

- Other ideas on how to approach this patient?
- Have you used any of these deprescribing techniques in practice?
- Thoughts on pharmacist – physician collaboration?
Summary

• Deprescribing is a proactive approach to prevent geriatric syndromes
  • Identify
  • Prioritize
  • Discuss
  • Implement
  • Follow-up
  • Review

• Collaboration between physician, pharmacy team, and patient are key to successful deprescribing

• Key resources:
  • Beer’s Criteria, STOPP, Medication Appropriateness Index, FORTA
  • Deprescribing.org and Primary Health Tasmania

References

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• Hanlon JT, Tija J. Avoiding adverse drug events when stopping unnecessary medications according to the STOPP frailty criteria. Senior Care Pharmacist. 2021; 36:136-41.
• Lexico.com/en/definition/polypharmacy (from Oxford dictionary)
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- Stevens JA. The STEADI Tool Kit: A fall prevention resource for health care providers. IHS Prim Care Provi. 2013 Sep: 39(9); 162-166.