Minimally Disruptive Medicine
a strategy to improve care among complex patients

Victor M. Montori, MD, MSc
Professor of Medicine
KER UNIT
Center for Clinical and Translational Sciences
Mayo Clinic

montori.victor@mayo.edu
@vmontori
Disclosures

Relevant Financial Relationships
None

Off Label Usage
None
Key problem: Do not follow advice

Wasted or misallocated healthcare resources: US$ 290b (100b in avoidable hospitalizations)

Poor health despite cost and side effects

Complicated patient-clinician relationship

Cutler and Everett NEJM 2010 10.1056/NEJMp1002305
Beliefs and adherence in diabetes

<table>
<thead>
<tr>
<th>Need</th>
<th>Low</th>
<th>High</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concerns</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>
Coercion thru threats of dire outcomes from poor control of the disorder are doubly unethical: it does not work and high anxiety patients withdraw from care when threatened.

Haynes et al. JAMA 2002
Poor fidelity to treatments is the patient’s fault

*Intentional noncompliance*

Beliefs about the disease and about the treatments

↓

Professional communication
Patient education
Behavioral interventions
Shared decision making

Patient values and preferences

Context

Research evidence
Patient begins consultation with clinician.

Clinician and patient discuss medication options.

Patient leaves consultation with prescription.

Patient makes decision about medication.

http://shareddecisions.mayoclinic.org
1. What goes into figuring out my risk of having a heart attack in the next 10 years?
- Age
- Sex
- Years of diabetes
- Smoking
- Hemoglobin A1C
- Blood pressure
- Cholesterol
- Protein in your urine

2. What is my risk of having a heart attack in the next 10 years?

**NO STATIN**
- 80 people DO NOT have a heart attack (green)
- 20 people DO have a heart attack (red)

**YES STATIN**
- 80 people still DO NOT have a heart attack (green)
- 5 people AVOIDED a heart attack (yellow)
- 15 people still DO have a heart attack (red)
- 85 people experienced NO BENEFIT from taking statins

3. What are the downsides of taking statins (cholesterol pill)?
- Statins need to be taken every day for a long time (maybe forever).
- Statins cost money. (to you or your drug plan)
- Common side effects: nausea, diarrhea, constipation (most patients can tolerate)
- Muscle aching/stiffness: 5 in 100 patients (some need to stop statins because of this)
- Liver blood test goes up (no pain, no permanent liver damage): 2 in 100 patients (some need to stop statins because of this)
- Muscle and kidney damage: 1 in 20,000 patients (requires patients to stop statins)

4. What do you want to do now?
- Take (or continue to take) statins
- Not take (or stop taking) statins
- Prefer to decide at some other time
What is my risk of breaking a bone?

As you get older, your risk of breaking a bone, often through a fall, increases. This increased risk may be due to weakened bones or osteoporosis.

Your risk is estimated primarily by:
Your age: ______
Your Bone Mineral Density (T score): ______

It is also affected by:
☐ If you have had a fracture
☐ If a parent had a fracture
☐ If you currently smoke
☐ If you drink more than 2 drinks of alcohol a day
☐ If you have taken prescription steroid medications

Based on these risk factors, we estimate your risk is <10% 10-30% 30%

Your fracture risk can be lowered with medications called bisphosphonates, which work to reduce bone loss. This decision aid will walk you through the benefits and drawbacks of bisphosphonates, so that we can make an informed choice about whether or not they are right for you.

Benefits

Without Medication
Roughly 40 in 100 have a fracture within the next 10 years. 60 will not.

With Medication
Roughly 24 in 100 have a fracture within the next 10 years. 76 will not.

16 have avoided a fracture because of the medication.

Drawbacks

This medication must be taken
• Once a week
• On an empty stomach in the morning
• With 8 oz of water
• While upright (sitting or standing for 30 min)
• 30 minutes before eating

Possible Harms
Abdominal Problems
About 1 in 4 people will have heartburn, nausea, or belly pain. However, it may not be from the medication. If the medication is the cause, the problem will go away if you stop taking it.

Osteonecrosis of the Jaw
Fewer than 1 in 10,000 (over the next 10 years) will have bone sores of the jaw that may need surgery.

Out of Pocket Cost
With insurance $30 | without insurance $70-90

What would you like to do?
<table>
<thead>
<tr>
<th>Weight Change</th>
<th>Low Blood Sugar (Hypoglycemia)</th>
<th>Blood Sugar (A1c Reduction)</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metformin</strong></td>
<td>Metformin</td>
<td>Metformin</td>
<td>Metformin</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
<td>1 - 2%</td>
<td>In the first few weeks after starting Metformin, patients may have some nausea, indigestion or diarrhea.</td>
</tr>
<tr>
<td><strong>Insulin</strong></td>
<td>Insulin</td>
<td>Insulin</td>
<td>Insulin</td>
</tr>
<tr>
<td>4 to 6 lb. gain</td>
<td>4 to 6 lb. gain</td>
<td>Unlimited%</td>
<td>There are no other side effects associated with Insulin.</td>
</tr>
<tr>
<td><strong>Glitazones</strong></td>
<td></td>
<td></td>
<td>Glitazones</td>
</tr>
<tr>
<td>More than 2 to 6 lb. gain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exenatide</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 to 6 lb. loss</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sulfonylureas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 to 3 lb. gain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gliptins</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Daily Routine

| **Metformin**         | Monitor 2 - 5 times weekly, less often once stable. |
| **Insulin**           | Monitor once or twice daily, less often once stable. |
| **Glitazones**        | Monitor 3 - 5 times weekly, less often once stable. |
| **Exenatide**         | Take in the hour before meals. |
| **Sulfonylureas**     | Take 30 min. before meal. |
| **Gliptins**          | Monitor twice daily after meals when used with Sulfonylureas, as needed when used with Metformin. |

### Daily Sugar Testing (Monitoring)

**Metformin** (Generic available): $10 / 3 months

**Insulin** (No generic available - price varies by dose):
- Lantus: Vial, per 100 units: $10
- Pen, per 100 units: $43
- NFL: Vial, per 100 units: $6
- Pen, per 100 units: $30

**Glitazones** (No generic available):
- Short acting analog insulin: Vial, per 100 units: $10
- Pen, per 100 units: $43

**Exenatide** (No generic available):
- $7.20 per day
- $650 / 3 months

**Sulfonylureas** (Generic available):
- $9.00 per day
- $800 / 3 months

**Gliptins** (No generic available):
- $6.70 per day
- $500 / 3 months

These figures are estimates and are for comparative reference only. Actual out-of-pocket costs vary over time, by pharmacy, insurance plan coverage, preparation and dosage. Under some plans, name brands may be comparable in cost to generics.
Weight Change

Some people may experience weight change. It is most likely to occur over six to twelve months and depends on your actual weight. The chart below is based on a 150 lb person.

<table>
<thead>
<tr>
<th>Weight loss (1 to 5 lbs)</th>
<th>None</th>
<th>Weight gain (1 to 5 lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citalopram (Celexa®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Escitalopram (Lexapro®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluoxetine (Prozac®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluvoxamine (Luvox®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paroxetine (Paxil®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sertraline (Zoloft®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desvenlafaxine (Pristiq®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duloxetine (Cymbalta®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venlafaxine (Effexor®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bupropion (Wellbutrin®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mirtazapine (Remeron®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amfiptriptyline or Nortriptyline (Elavil® or Aventyl® HCl)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCA's</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSRIs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Stopping Approach

Quitting your medicine all at once can make you feel sick, as if you had the flu (e.g., headache, dizziness, light-headedness, nausea or anxiety).

<table>
<thead>
<tr>
<th>Insomnia</th>
<th>Sleeplessness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citalopram (Celexa®)</td>
<td></td>
</tr>
<tr>
<td>Escitalopram (Lexapro®)</td>
<td></td>
</tr>
<tr>
<td>Fluoxetine (Prozac®)</td>
<td></td>
</tr>
<tr>
<td>Fluvoxamine (Luvox®)</td>
<td></td>
</tr>
<tr>
<td>Paroxetine (Paxil®)</td>
<td></td>
</tr>
<tr>
<td>Sertraline (Zoloft®)</td>
<td></td>
</tr>
<tr>
<td>Desvenlafaxine (Pristiq®)</td>
<td></td>
</tr>
<tr>
<td>Duloxetine (Cymbalta®)</td>
<td></td>
</tr>
<tr>
<td>Venlafaxine (Effexor®)</td>
<td></td>
</tr>
<tr>
<td>Bupropion (Wellbutrin®)</td>
<td></td>
</tr>
<tr>
<td>Mirtazapine (Remeron®)</td>
<td></td>
</tr>
<tr>
<td>Amfiptriptyline or Nortriptyline (Elavil® or Aventyl® HCl)</td>
<td></td>
</tr>
<tr>
<td>TCA's</td>
<td></td>
</tr>
</tbody>
</table>

Cost

These figures are estimates and are for comparative reference only. Actual out-of-pocket costs vary over time, by pharmacy, insurance plan coverage, preparation and dosage.

Sexual Issues

Some people may experience loss of sexual desire (libido) or loss of ability to reach orgasm because of their antidepressant.

Sleep

Some people may experience sleeplessness or insomnia because of their antidepressant.

Keep In Mind

Depression medicines may cause some:
- constipation, diarrhea and nausea
- increased risk of suicidal thoughts and behaviors (10- to 24-year-olds)
- harm to an unborn child
- risk of developing serotonin syndrome, a potentially life-threatening condition
- possible drug-drug interactions

What You Should Know

Will this medicine work for me?
- The antidepressants presented in this decision aid all work the same for treating depression.
- Most people with depression can find one that can make them feel better.
- 6 out of 10 people will feel better with the first antidepressant they try and the rest will have to try other antidepressants before they find the one that is right for them.

How long before I feel better?
- Most people need to take an antidepressant regularly for at least 6 weeks to begin to get the full effect.

Understanding side effects
- Most people taking antidepressants have at least one side effect.
- Many side effects go away after a few weeks, but some only go away after you stop the medicine.
55

Diabetes
Hypertension
High cholesterol
Depression
Bad back
Neuropathy
Obese
A1c 8.2%
LDL high
HCTZ
Beta-blocker
Metformin
Glipizide

3 2 1
Numbers don’t add up

Deadline is now
take work home
perform!

Obese
High cholesterol
Avoid salt, fats, carbs

Dizzy
Take off work
Get a ride

Endocrinologist
Dietitian
Podiatrist
Take pills
Check sugars
Check his feet

108 kg

Diet
Exercise

Daughter back at home
2 beautiful girls

Wasted!

Daughter back at home
2 beautiful girls

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!

Mortgage
debt

Deadline is now take work home perform!

Numbers don’t add up

3 2 1

Daughter back at home
2 beautiful girls

Wasted!
Collaborate to co-create a program that fits better

FIT

Intensify treatment
A survey of 627 US primary care clinicians

50% of my patients get too much care

50% of primary care docs are too aggressive

60% of specialists are too aggressive

35% practice much more aggressively than what they would like
Epidemic of risk-defined diseases
Promotion of treatments
Evidence-based guidelines are disease-specific
Poor care coordination
Increasingly complex regimens
Treatments | Monitoring
Decreasing healthcare support
Shift towards self-management
Increasing treatment burden
Failure to cope
Poor fidelity to the treatment program
Disease-specific guidelines and quality targets
Multiple treatments | Monitoring tests
Limited care prioritization
Poor care coordination

Life

Workload

Capacity

Burden of treatment
access
use
self-care

Burden of illness

Outcomes

Shippee N et al JCE 2012
The work of being a chronic patient

- Sense-making work
- Organizing work and enrolling others
- Doing the work
- Reflection, monitoring, appraisal
The work of being a chronic patient

People with more chronic conditions attend more visits, get more tests, and more medicines

2 hours/day spent on health-related activities

Of 83 workload discussions in 46 primary care visits (24 min):

70% left unaddressed
Superusers
Are heavier* users of visits, lab tests, imaging, pharmacy visits, number of medications

3 conditions: 2x
4 conditions: 4x
5+ conditions: 9x

vs. patients with diabetes and 1-2 conditions, adjusted by sex and age, in commercially insured patients
* top 25%

Poor people accumulate comorbidity faster

Barnett et al. Lancet 2012
Poor people accumulate mental comorbidity faster

Barnett et al. Lancet 2012
Life

Workload

Capacity

Scarcity

Burden of treatment

access
use
self-care

Burden of illness

Outcomes

Shippee N et al JCE 2012
Minimally disruptive healthcare

Health care delivery designed to reduce the burden of treatment on patients while pursuing patient goals

May CR, Montori VM, Mair FS. BMJ 2009; 339:b2803
Minimally disruptive healthcare

Burden of treatment (w vs. c)

Coordination of care

Comorbidity in clinical evidence and guidelines

Prioritize from the patient’s perspective
But...how do we do it clinically?

1. Lean Consumption
2. SDM and Goal-Setting
3. Medication Therapy Management
4. Choosing Wisely

KEY INPUTS: Reduce waste points that consume patient time and energy; Invest in interventions that fit patient goals and improve adherence; Avoid medication/refill burden and wasteful interventions

DECREASE WORKLOAD

Baseline: overwhelmed and overburdened patients with multiple chronic conditions

End Result: satisfied and well-equipped patient able to pursue life goals

INCREASE CAPACITY

1. Capacity Coaching
2. Community Navigators

KEY INPUTS: Identify key focus areas of limited capacity in regards to education, mental capacity, physical or functional capacity, financial or social capital, and literacy capacity; Identify and connect to community resources
But...how do we measure quality?

Outcomes
Patient important outcomes
(illness, function)

Experience of care
Access, continuity, seamless transitions

Content of care
Avoid inappropriate, non beneficial care
Shared decision making

NQF: MCC Measurement Framework 2012
Minimally disruptive healthcare

- Burden of treatment
- Coordination of care

Comorbidity in clinical evidence and guidelines

Prioritize from the patient’s perspective
To fully play the role they play
What is the care I need: EBM
http://www.gradeworkinggroup.org

What is the care I want: SDM
http://shareddecisions.mayoclinic.org

What is the care I can implement: MDM
http://minimallydisruptivemedicine.org