



# Polypharmacy Risk Reduction in the Context of Complexity, Frailty and End of Life

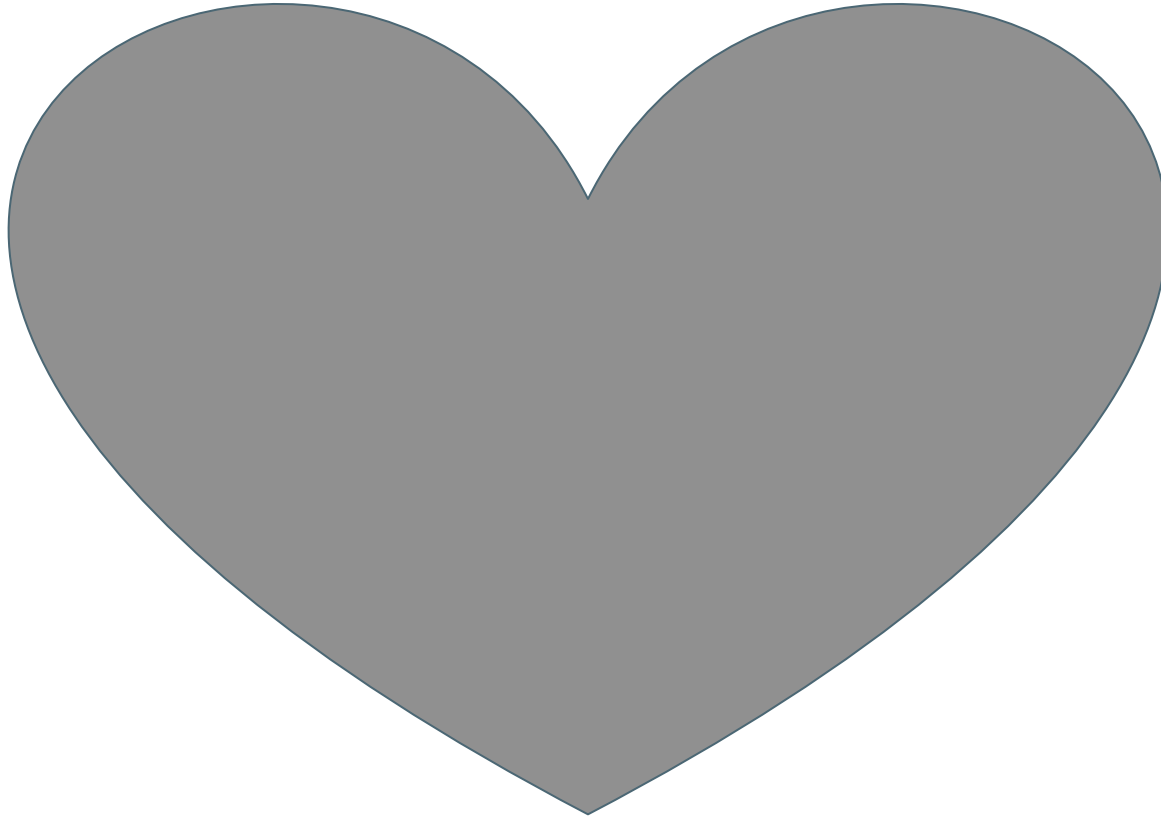
TORCH Education Program

Victoria, BC

Feb 14, 2015

Dr. Chris Rauscher





# Objectives/Focus

- ◆ Understand the basics of Polypharmacy Risk Reduction (PRR)-What, Why
- ◆ Understand moving from a focus on decisions about medications in general to making clinical decisions in the context of resident complexity, frailty and end of life as an intro to today's session
- ◆ Disclaimer- no conflicts of interest, although I am getting paid to be here as the Clinical Lead for the Shared Care PPh initiative

# What Exactly is Polypharmacy?

# What exactly is polypharmacy?

- ◆ If not defined by number of medications, then:
- ◆ Clinically indicated: proven benefit or benefit > harm
- ◆ (Clinically) Warranted- Justification for an action or a belief → Bring in patient/resident/family perspective
- ◆ Polypharmacy Risk Reduction
  - ◆ More than looking at individual drugs or drug classes-Balance
  - ◆ More than stopping meds
  - ◆ Starting meds
  - ◆ Reducing dose
- ◆ What is 'appropriate' for this resident?

# Why is Polypharmacy Important?

◆ There is **No Magic Number** To Define Polypharmacy  
But Adverse Events Increase as Meds Increase

◆ Likelihood of an ADE

◆ 2 pills.....13%

◆ 5 pills.....58%

◆ 7 or more.....82%

# Adverse Drug Events

- ◆ 'Events': Falls, Delirium
- ◆ Side effects (Versus 'Drug Reactions')
- ◆ Interactions
  - ◆ Drug-Drug
  - ◆ Drug-Disease
  - ◆ Drug-Nutrition



# Adverse Drug Events (ADE's)

## ◆ Acute care Admissions

- ◆ Elderly - **16%** of all admissions (**27-40% preventable**)
- ◆ Younger- 4% of admissions (20% preventable)

*J Am Geriatr Soc. 2002 Dec;50(12):1962-8. BMJ 2004 Jul 3;329(7456):15-9 ;  
JAMA 1998 Apr 15;279(15):1200-5. ; Pharm World Sci. 2002 Apr;24(2):46-54.*

## ◆ Residential Care

- ◆ **10%** of LTC population/**month** have ADE
- ◆ (Gurwitz:Am J Med. 2005 Mar;118(3):251-8.)
- ◆ **40% preventable**

# Common Side Effects For Meds

## **Decreased general health**

- ◆ Fatigue, weakness, muscle aches
- ◆ Anorexia, nausea, bloating, cramps, constipation, diarrhea

## **Increased risk of falls and hip fracture**

- ◆ Dizziness, postural instability, orthostatic hypotension , hypoglycemia

## **Decreased cognitive function**

- ◆ Confusion, sedation, headaches, insomnia, restlessness, agitation, delirium

My belief: Accumulation of minor  
side effects = people could feel  
*crappy!*

Affecting their function and quality  
of life!

# Polypharmacy is a stand-alone risk factor for morbidity and mortality

Even when we control for other comorbidities and specific drug effects.

# Hospitalisation-Associated Disability

Hospitalization is a sentinel event that often precipitates disability. This results in the subsequent inability to live independently and complete basic activities of daily living (ADLs). This hospitalization-associated disability occurs in approximately one-third of patients older than 70 years of age and may be triggered even when the illness that necessitated the hospitalization is successfully treated.

# The Challenge

- ◆ Average number of regular medications per LTC resident in BC is around 9 (range 0-55!). Anecdotally, 12-14 not uncommon.
- ◆ With careful practice, this number can be 5-6
- ◆ RAI-MDS counts number of residents on >9 regular meds, and this is often above 50%
- ◆ What is your site's RAI-MDS data?

# What are the Causal Factors Leading to Polypharmacy?

# What are the causal factors leading to Polypharmacy?

- Wrong Context: Single Disease-Shift to Complex, Multimorbidity, Frailty, End of Life
  - Clinical Practice Guidelines (Chronic Disease Management)
  - Multiple prescribers
  - Treating surrogate markers
  - Clinical uncertainty
    - ADE or new symptom?-Drug cascade
  - Uncertain treatment goals



# What are the causal factors leading to Polypharmacy?

- Clinical and system complexity
  - Difficulty getting the history
  - Inadequate communication
  - Collaborative and Shared Care challenges
  - Challenges of involving resident/family

# What are the barriers to effective Medication Decision-Making?

# What are the Barriers to Effective Medication Decision-Making?

- ◆ Consensus on clinical/pharmacological knowledge, especially with complexity of resident population
- ◆ Perceived Medico-legal Risks
- ◆ Process and communication issues
- ◆ Absentee MRPs
- ◆ Other care priorities, time, remuneration.
- ◆ Family and Resident Involvement

Supportive Initiatives:

- TORCH
- GPSC Res Care
- Physicians Data Collaborative
- CIHI Data Project
- Tools-ADAPT, Med Stopper.

**Community**

- Professional Academic Detailing in GP offices - *Medication knowledge*
- Polypharmacy RR - *Medication review*

Transition in Care

Transition in Care

**Patient**

**Hospital**

- MedRec - *Best possible medication history*
- 48/6 - *Assess 6 areas w/in 48 hr*
- Polypharmacy RR - *Medication review*

Transition in Care

**Residential Care**

- MedRec - *Best possible medication history*
- CLeAR - *Appropriate antipsychotic use*
- Polypharmacy RR - *Medication review*

# What Will Help You To Make Effective Decisions About Medications?

# Evidence-Based Approach

# What about in Residential Care ?

- ◆ Garfinkel, Zur-Gil, Ben-Israel; IMAJ (Vol 9), June 2007
- ◆ 190 patients in 6 geriatric nursing departments on 7.09 regular meds/pt.
- ◆ 119 pts; after careful review, 2.8 regular meds/pt stopped (4.3 meds/pt)
- ◆ 71 pts in control group on same wards with same doctors, with meds unchanged, studied for one year.

# Results

- ◆ No significant adverse events
- ◆ 1 in 10 drugs eventually needed to be restarted
- ◆ One year mortality rate was 45% in controls and 21% in the study group ( $P < 0.001$ )
- ◆ Annual referral rate to acute care was 30% in controls and 11.8% in the study group ( $P < 0.002$ )



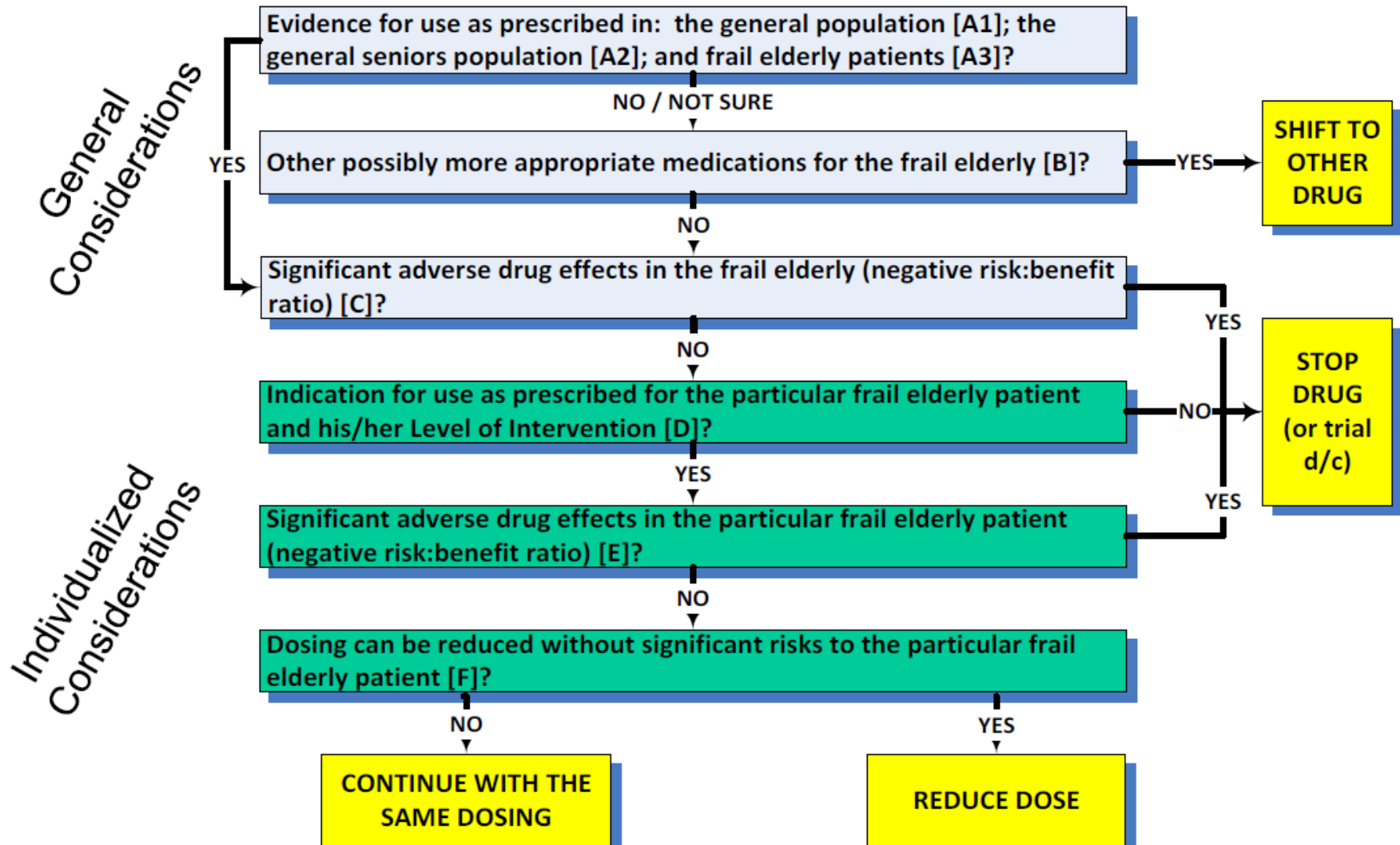
# Evidence-Based Approach and Tools

# What Approaches/Tools

- ◆ Beers Criteria; STOPP/START: Mix of specific drug/drug classes of concern plus specific drug interactions
  - ◆ Too many variables to remember/work with unless have an electronic system
- ◆ Our approach- Specific drug/drug classes of concern

# Drug Decision Algorithm

Adapts Garfinkel (2010) – evidence, risks, indications, etc.



# Priority *De- Prescribing* Drug List: Lower Doses, Trial Discontinuation

- ◆ Drugs associated with
  - ◆ Confusional States
    - ◆ antipsychotics, antidepressants, opioid analgesics, hypnotics, digoxin
  - ◆ Adverse Drug Event-related Falls
    - ◆ antipsychotics, antidepressants (tricyclics), hypnotics, antihypertensives, hypoglycemics, anticonvulsants, antiparkinson meds, antihistamines
  - ◆ Significant Anticholinergic Effects
    - ◆ antidepressants (tricyclics), antihistamines, bladder meds
  - ◆ Bleeding
    - ◆ warfarin, antiplatelet meds

# Priority *De- Prescribing* Drug List: Lower Doses, Trial Discontinuation

- ◆ Indications no longer present-Symptom Control
  - ◆ PPIs, analgesics, antianginals, antipsychotics, antidepressants
- ◆ Indications not present-Preventative
  - ◆ Statins, osteoporosis meds, antihypertensives

# Supports For Drug Review Decisions

- ◆ Guide individualized consideration of patient-at-hand
  - ◆ Drug Advisory Sheets [drafts] + One-page: “You Decide”\*\*  
PPIs ANTIPSYCHOTICS STATINS HYPNOTICS ANTIHYPERTENSIVES ANTIDEPRESSANTS  
BISPHOSPHONATES VITAMIN D & CALCIUM SUPPLEMENTS
  - ◆ Drug Brief: Calcium
- ◆ Understanding of clinical condition
  - ◆ Condition Advisory Sheets  
STROKE PREVENTION IN THE ELDERLY (DRAFT)  
DEPRESSION IN THE ELDERLY (DRAFT)  
TREATING DIABETES IN THE FRAIL ELDERLY (FORTHCOMING)

*Materials are aligned with GPAC and OPUS materials – and will be reviewed by a Clinical Advisory Team*

# What Statistical Tools Will Help With With Clinical Decision-Making?

# Stats

- ◆ *Distinguish by drugs for symptom control versus drugs for preventing a future event*
- ◆ Event rates- The proportion of patients in a group in whom the event is observed
- ◆ NOT Relative Risk Reduction- Used to compare the risk of an event happening in two different groups of people
- ◆ Absolute Risk Reduction- Risk of developing an event over a time period
- ◆ Number Needed To Treat (NNT)/Number Needed To Harm (NNH)



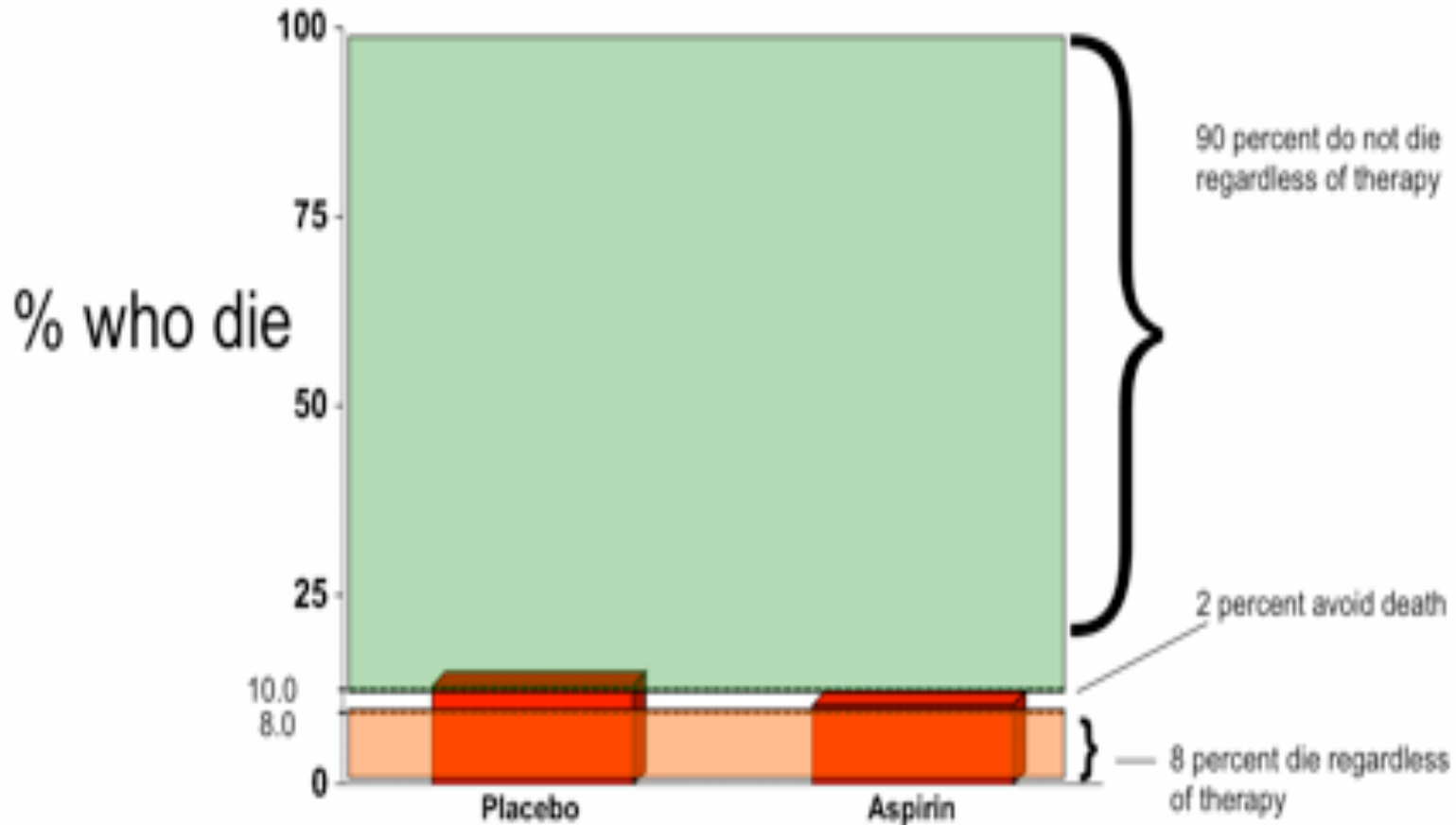
# Stats

- ◆ Time to Benefit (TTB)/Time to Harm (TTH)
- ◆ Time to Lose Benefit (TLB)/Time to Reduce Harm (TRH)
- ◆ Statistical benefit vs clinical benefit (harm)

# Number Needed To Treat-NNT

[www.thennt.com](http://www.thennt.com)

- ◆ Estimating the number of patients that need to be treated in order to have an impact on one person.
- ◆ The concept is statistical, but intuitive, for we know that not everyone is helped by a medicine or intervention — some benefit, some are harmed, and some are unaffected. The NNT tells us how many of each.



Deaths reduced 10% to 8%= 2% Absolute Risk Reduction

RRT (relative risk reduction)= 2%/10%=20%

NNT= 1/ARR=1/2=100/2=50=Treat 50, avoid 1 death

NNH-2% Additional Bleeds, Treat 50, 1 bleeds

## Statins- Before 'You Decide'

- ◆ **Discontinue if for primary prevention; if for secondary prevention, apply risk-benefit analysis and continue treatment only for demonstrated significant vascular risk: past MI/stroke**

		EVENT RATES - 3.5 years		
	<b>Outcome</b>	Placebo (%)	Statin (%)	<b>NNT (over 3.5 years)</b>
Primary prevention (over age 65)  JACC 2013;62:2090-9 and <a href="http://content.onlinejacc.org/article.aspx?articleID=1847582">http://content.onlinejacc.org/article.aspx?articleID=1847582</a>	MI*	3.9	2.7	83
	Stroke*	2.8	2.1	142
	Overall mortality	Not statistically different		-
	<b>Outcome</b>	EVENT RATES - 5 years		<b>NNT (over 5 years)</b>
Secondary prevention (typically previous coronary heart disease)(over age 65)  JACC 2008;51:37-45	Non-fatal MI*	10	7.5	40
	Stroke*	7	5	50
	Overall mortality	19	16	33

# Statins- 'You Decide'

- ◆ Harms- Major Uncommon:
  - ◆ Asymptomatic liver enzyme elevations by 0.4%;  
Rhabdomyolysis: ?
  - ◆ Risk of type2 diabetes by 0.5%, in 'pre-disposed', < CV risk in many people
  - ◆ Memory loss/'confusion'-?
- ◆ Harms- 'Minor' side effects
  - ◆ Muscle-related symptoms-10-50%?, residents cumulative causes aches and pains
  - ◆ Nausea, gas, diarrhea or constipation

# Statins- 'You Decide'

- ◆ Review the use of a statin in the residential care environment in the context of life expectancy and goals of care, as well as from the perspective of the potential aggregation of adverse effects from multiple meds that may affect mobility/function and quality of life. Is the benefit greater than the potential harm?

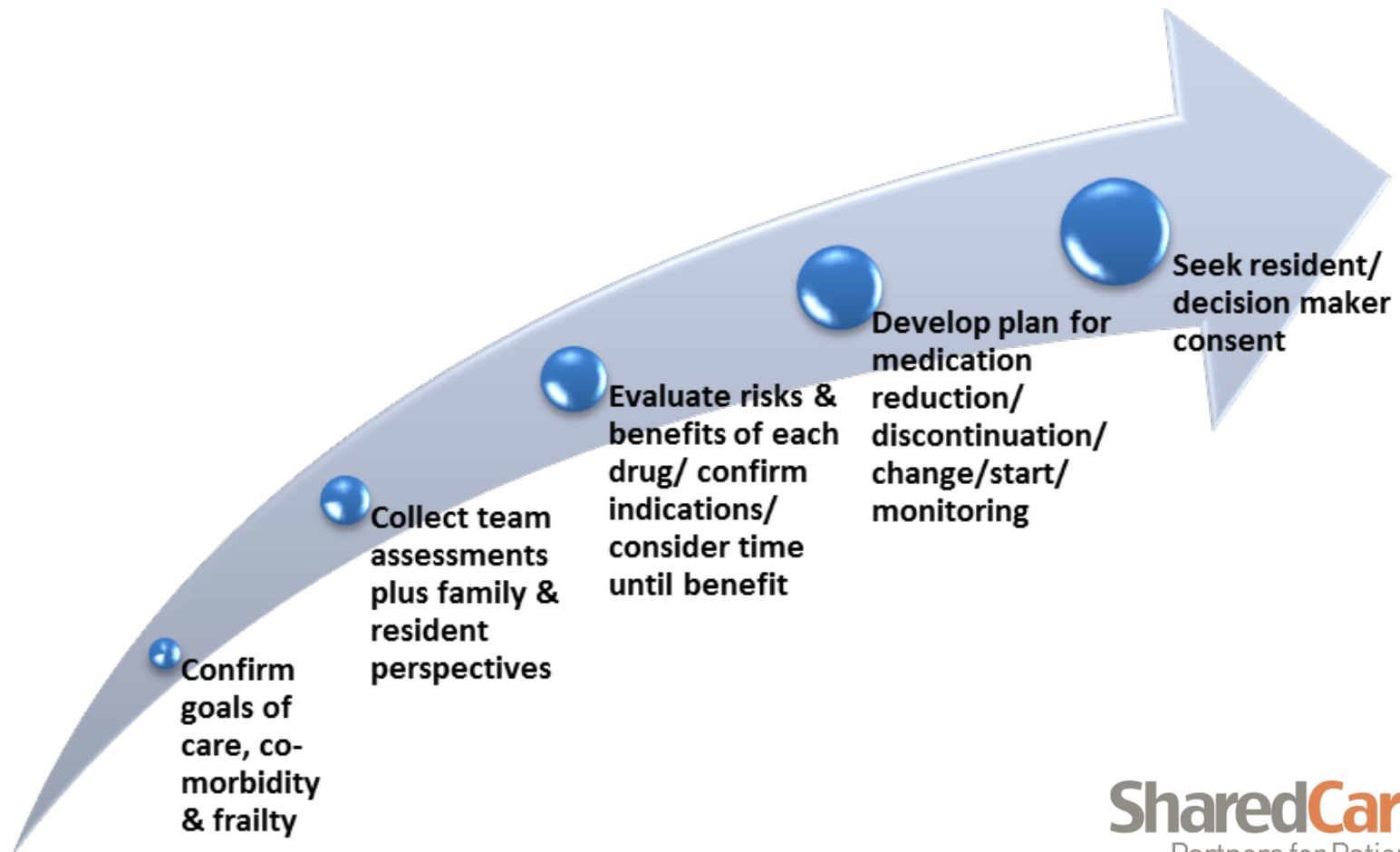
# PPIs- You Decide

- ◆ Symptomatic control- Stats not as helpful: PPIs somewhat more effective than H2RA
- ◆ Many patients are on long term PPIs without clear ongoing indication/benefit, and the more drugs, the more potential for side effects/adverse events and time taken to administer:
  - ◆ For GERD- Use 4-8 weeks then trial discontinuation
  - ◆ May have been started for 'stress ulcers' in hospital but can stop when discharged, unless major ongoing bleeding risk



Moving From Focus on Single Drugs/  
Drug Classes to  
Whole Drug Profile  
In Complex Residents

# Fraser Health Guide To Person-Centered Medication Decisions



- ◆ Starts with your own goals (beliefs, values)- for meds:
  - ◆ only those 'warranted', quality of life (active symptoms), function
  - ◆ Management- Not always or only with meds: non-pharmacologic approaches- pain, constipation, mild depression, BPSD etc.

- ◆ Utilize **Comprehensive Geriatric Assessment** and (Repeatedly) **Communicate Prognosis** with patients families and community workers

- ◆ Estimate Remaining Lifespan- Life-limiting conditions
  - ◆ Interested in prognosis, trajectory of decline to set context for goals of care and decision-making
  - ◆ In most will be dementia as an end of life condition (Dr. Rosenberg: 'Palliation for Advanced Dementia')
  - ◆ In some may (also) be chronic-exacerbating conditions- CHF, COPD, neurologic-Parkinson's, MS etc.
- ◆ 'Surprise question'- 'would you be surprised if this person is still alive in 6 months': *Frailty*, triggers- reduced nutritional intake, febrile illness, pneumonia, repeat 'exacerbations', progressive CRF, low BP, low Na

# Use of Medications of Questionable Benefit in Advanced Dementia

Tjia et al JAMA Int. Medicine Sep. 8<sup>th</sup> 2014

- ◆ **N= 5406** nursing home residents with advanced dementia (MMSE-5)
- ◆ **54%** were on medications with questionable benefit
  - ◆ **22.4%** statin drugs
  - ◆ Lower likelihood
    - ◆ Not having an Eating problem
    - ◆ DNR
    - ◆ Enrollment in Hospice
- ◆ **35%** of all medication expenditures were for medications of questionable benefit
  - ◆ Cost \$553/\$816/90 days

- ◆ Determine what impacts quality of life and function
  - ◆ This will usually be the main focus of the care plan
  - ◆ May be 'hidden' and require Tx (not always or only with drugs)- pain, constipation, depression
  - ◆ BPSD with Dementia (<http://www.bcbpsd.ca>)
  - ◆ Current
  - ◆ Potential
    - ◆ Exacerbating conditions, neurologic-Parkinson's, etc.
  - ◆ Broader- Emotional, social, activities

# Goals of Care

- ◆ With that background/context, apply a 'goals of care' approach: Drs. Christine Jones and Ted Rosenberg
- ◆ **Document conversation in the following categories:**
- ◆ Function improvement/maintenance
- ◆ Symptom reduction
- ◆ Place of care
- ◆ Caregiver burden
- ◆ Transfer to acute care
- ◆ Wishes for survival (long as possible, or not, CPR, Antibiotics, etc)



# Goals of Care

- ◆ Get direction on medication use from the goals of care discussion
  - ◆ Survival
  - ◆ Qof L and Function and Symptom control
  - ◆ Transfer to acute care- Tx in facility, coming back on more meds
- ◆ Trade-offs- benefit versus harm-particularly important for medications discussions/decisions

# Medication Decision-Making in Complex Health Situations

- ◆ No direction from the literature as ‘multi-morbidity’ is a new area of study-SO Let’s discuss with the cases and analyze how we are making those decisions
- ◆ Starts with medication reconciliation identifying ‘indication’ for each medication
- ◆ For med review-Can go medication by medication but more likely to be ‘on balance’ thinking within the context of lifespan/prognosis/goals of care
- ◆ Be aware of changing drug tolerability with aging/frailty

# Medication Decision-Making in Complex Health Situations

- ◆ Often start with the drugs used to ‘prevent’ a future event, incorporating the individual risk of having such an event (primary versus recent secondary): Time to Benefit/Harm
- ◆ Be more careful with drugs for ‘exacerbating’ conditions (CHF, COPD) and neurologic control

# Care Planning

- ◆ Set the medication plan into the overall care plan- Collaborative care
- ◆ Tapering and monitoring with review are important to specifically include-involving staff (care aids), family (resident directly or by observation)

# Goals of Care



- ◆ **His Goals (82 y.o. commercial pilot; Dr. Rose)**
  - ◆ **Symptom Control**
    - ◆ Less dopey
    - ◆ Stronger - sit up longer and read paper, talk with family
    - ◆ -Less Dizzy
    - ◆ alleviate pain in legs and back
    - ◆ Improve Appetite
    - ◆ Relieve constipation
    - ◆ Nocturia hourly
    - ◆ -relieve uncomfortable edema.
  - ◆ **Function**
    - ◆ ADL-Alleviate Tremor – can feed self and brush teeth/AM Care; get out of diapers
    - ◆ Social: Stay up long enough to visit with Daughter without severe fatigue
    - ◆ not be so dependent on wife

# Goals of Care

- ◆ **Medical Interventions:**
  - ◆ No CPR, Not go to hospital, No tubes etc....
  - ◆ Doesn't want to go out for medical appointments
  - ◆ Blood tests OK if done at home.
  - ◆ Antibiotics OK if I will feel better
- ◆ **Survival / Residence** - Die at home – “I am ready to go”,
- ◆ **Caregiver Burden-** Reduce Strain on his wife
- ◆ **Wife's Goals**
  - ◆ Delay his death as long as possible
  - ◆ Improve his comfort
  - ◆ Care for him at home

## GOC Outcomes- Symptoms, Function Health Care CG burden

Goals	Agents	Actions	Impact of Change/ Goal
<b>Fatigue/Dopey/ weak</b>	Hypotension Sedation	Taper off zopicone Taper off dilantin Taper off all BP pills/ nitrofur Stop Zoladex/bicalut. Treat Thyrotoxicosis	Sleep OK Can stay up 3 hours Ramipril 5mg od FU BP 142
<b>Less Dizzy</b>	BP Psychoactive meds	“ ”	<b>Gone</b>
<b>Back and Leg Pain</b>	<b>Statin Sertraline RLS? Chair and Bed</b>	<b>Stop Statin Stop Sertraline Add Reg TES PT- ROHO Cushion</b>	<b>Leg Pain gone Back pain manageable</b>
<b>Anorexia Constipation</b>	Meds Hydration	Stop OTC, ca Iron, ASA, Alend , etc Dietician	Enjoys food again  Edema +1
<b>Edema and Nocturia</b>	Meds	Stop amlod. + lasix	Nocturia x2
<b>Social : visit with family Read Paper ADL: Feed Self, A.m. Care Get out of pads Not be dependant on wife</b>	Tremor Fatigue	“ ”  Taper off Sertraline Rx Thyrotoxicosis tapazole	Can eat with left hand, brush teeth Visits with Daughter in PM, reads paper Still in pads GDS 0, sleep better
<b>Health Care burden-</b>	<b>Multiple specialists</b>	<b>Call and cancel</b>	<b>Wife and him more</b>

# You will really know when...

- ◆ 78 y.o. married man, 7 children, mild Alzheimer dementia, 2 strokes in one month, hospital multiple complications, comfort care/no meds, to res care
- ◆ The neurologic “As’-apraxia, agnosia, aphasia
- ◆ Psychotic-danger to self and others, distress→ antipsychotic, Trazodone
- ◆ Physically strong-live ‘years’
- ◆ Family don’t want other meds (mild hyperglycemia and hypertension), care in facility only
- ◆ The decision-making journey...



# Follow-up

- ◆ Dr. Chris Rauscher:  
[rauscherchris50@gmail.com](mailto:rauscherchris50@gmail.com), 604-908-2461
- ◆ <http://www.sharedcarebc.ca/initiatives/polypharmacy/Clinical%20Support>