CARDIOVASCULAR MEDICINES – INTRODUCTION & ADHERENCE

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National Heart Institute (IJN)
INTRODUCTION

- Cardiovascular drugs
  - Benefits
  - Effect of CV drugs on HR, BP & exercise capacity

- Adherence
  - Definition
  - Significance of adherence
  - Adherence & long-term SEs to CV medications
  - Local data
  - Reasons for non-adherence
  - Factors promoting adherence
  - Interventions that improve adherence
WE'VE GOT: ALLEGRA, LUNESTA, LEVITRA, BONIVA, AVANDIA, ABREVA, BYETTA, SPIRIVA, ZETIA, LYRICA, VIAGRA, CONCERTA, AMITIZA, JANUVIA, HUMIRA, Cymbalta, ZOMETA, EVISTA, RELENZA, ORENCIA, ZYPREXA, LOVAZA, ONGLYZA, MERIDIA, PRADAXA...
ACEIs

- Prescribed in everyone with CHD:
  - High risk of recurrent events; unless contraindicated
- ACEIs:
  - Limit progression of HF
  - ↓ mortality
  - ↓ risk of reinfarction (esp. large infarcts, HF or sig. LV dysfunction; EF <40%)

<table>
<thead>
<tr>
<th>Effect on HR</th>
<th>Effect on BP</th>
<th>Effect on exercise capacity</th>
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<tbody>
<tr>
<td>Nil</td>
<td>↓ BP</td>
<td>Nil</td>
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ARBs

- Improve prognosis & suitable alternative in patients unable to tolerate ACEIs
- Treatment with a ARB & ACEI may be beneficial with low LV EF but ↑ risk of side effects

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β-BLOCKERS

- Prescribed in all patients with STEACS & high-risk patients with NSTEACS unless contraindicated
- ↓ CV mortality & morbidity
- Carvedilol, bisoprolol & metoprolol in patients with CHF

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</tr>
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<tbody>
<tr>
<td>↓ HR</td>
<td>↓ BP</td>
<td>↓ if fatigued (SE)</td>
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<tr>
<td></td>
<td></td>
<td>↑ if angina</td>
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</table>
CCBs

- Prescribed in patients with HT & angina
- Verapamil for SVTs, AF & atrial flutter
- CR Verapamil:
  - ↓ incidence of CV events in patients with stable angina
  - May ↓ risk of reinfarction & death after MI
  - Avoid in HF; worsens outcome
- Amlodipine/felodipine can be used in patients with HF & HT

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<tbody>
<tr>
<td>↓ HR</td>
<td>↓ BP</td>
<td>Nil</td>
</tr>
<tr>
<td>↑ HR (Reflex tachycardia Nifedipine)</td>
<td>↑ BP (Nifedipine)</td>
<td></td>
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</tbody>
</table>
DIURETICS

- Loop diuretics:
  - Relieve symptoms of fluid retention; diuretics of choice in HF

- Thiazide diuretics:
  - Mild to moderate HT; Oedema associated with HF or hepatic cirrhosis
  - Combination products with ARBs, ACEIs, amiloride

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<th>Effect on exercise capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil (see below)</td>
<td>↓ BP</td>
<td>↓ in CHF patients</td>
</tr>
</tbody>
</table>

- Cause electrolyte imbalances:
  - Drastic increase in HR during exercise
  - Muscle cramps, fatigue & weakness
  - Post-exercise hypotension & dehydration → caution
ALDOSTERONE ANTAGONISTS

- Spironolactone in NSTEMI patients with severe HF:
  - ↓ mortality & hospitalisation & improve symptoms

- Eplerenone:
  - ↓ mortality & morbidity when added to standard therapy within 3 – 14 days of MI complicated by HF (LV EF <40%)
  - Has less sex-hormone related SEs than Spironolactone

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NITRATES

- Long-acting nitrate:
  - Prevent & treat angina
  - Isosorbide dinitrate (with hydralazine) in HF – ↓ mortality

- Short-acting nitrates:
  - All patients should be prescribed short-acting nitrates unless contraindicated
  - Provided with written action plan for chest pain

- Chest pain action plan:
  - Rest & self-administration of short-acting nitrates
  - Calling an ambulance/going to nearest emergency department if chest pain not relieved within 10 mins.
  - Rural areas – individualised action plan

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<tr>
<td>↑ HR</td>
<td>↓ BP</td>
<td>↑ if HF or angina present</td>
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</table>
OTHER ANTI-ANGINALS

- **Ivabradine:**
  - ↓ HR → ↓ cardiac workload & myocardial oxygen demand
  - Stable angina, normal SR
  - ↓ hospitalisation with worsening CHF (SHIFT; patients on 50% of B-blocker target dose)

- **Trimetazidine:**
  - Anti-ischemic (anti-anginal) metabolic agent
  - Improves myocardial glucose utilization through inhibition of fatty acid metabolism
  - ↑ coronary flow reserves & ↓ incidents of anginal attacks & ↓ the need for use of nitrates

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<tr>
<td>↓ HR (Ivabradine)</td>
<td>Nil (Trimetazidine)</td>
<td>↑</td>
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DIGOXIN

- Prescribed in HF, AF or atrial flutter & SVT with AV nodal re-entry
- In HF:
  - Digoxin does not reduce overall mortality in patients with HF receiving diuretics & ACE inhibitor therapy
  - ↓ the absolute risk of hospitalisation
- In the PROVED study:
  - subjects with heart failure not on ACEIs, there was a 20% increase in the absolute risk of worsening HF, including the need for increased diuretic therapy, emergency room treatment, or hospital admission, when digoxin was withdrawn

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<td>↓ HR</td>
<td>Nil</td>
<td>↑ capacity if AF or HF is present</td>
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</table>
ANTIPLATELETs

- Aspirin, clopidogrel, ticlopidine, ticagrelor, prasugrel:
  - ↓ mortality, risk of reinfarction & stroke

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ANTICOAGULANTs

- Warfarin:
  - After MI for those at high risk of systemic thromboembolism
  - AF, mural thrombosis, CHF or previous embolisation
  - May be used in combination with aspirin but monitor closely for signs of bleeding

- Dabigatran (Direct Thrombin Inhibitor)
- Rivaroxaban (Factor Xa inhibitor)

- Avoid activities that may cause bumps, bruises, falls or other injuries that could cause hemorrhage

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STATINS

- Prescribed for all patients with CHD:
  - ↓ progression of atherosclerosis, improve survival & ↓ risk of MI & stroke
  - ↓ premature CV morbidity & mortality in high risk patients
  - Muscle aches & pains are a common SE
  - Stop statin if:
    - Aminotranferase persistently elevated to >3x ULN
    - CK concentration is >10x ULN
    - Persistent unexplained muscle pain (even if CK is normal)
- Treatment may be resumed after at least 4 weeks if myopathy/myositis was mild & CK, if raised, has returned to normal
- Use an alternative statin (although there are few data comparing risk between agents)
- If the problem recurs on rechallenge → stop statins permanently

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<td>Nil</td>
<td>Nil</td>
<td>Nil (myalgia, myositis, weakness, fatigue are SEs)</td>
</tr>
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</table>
**FIBRATES & EZETIMIBE**

- Fibrates reduce CV risk in patients with:
  - Type 2 diabetes
  - High TG or low HDL
  - Overweight

- Combine statin & fibrate with caution

- Reduce risk of myopathy with concomitant therapy, use fenofibrate vs. gemfibrozil

- Ezetimibe reduces concentration of LDL by 15 – 20% as monotherapy; also when added to statin

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CV MEDICINES & EXERCISE MODIFICATION TIPS

- Encourage patients to stay well hydrated before, during & after exercise – potential for dehydration with antihypertensive medications coupled with fluid loss
- Note the times when medications are administered, so you can anticipate dosage effect influences
- Should the need arise, allow participants to take prescribed medications to control symptoms
- Enquire re dosage changes – repeat exercise testing if needed
- Try to organise exercise sessions with as few positional changes as possible – to ↑ safety & ↓ the likelihood of orthostatic-hypotension episodes
- Provide gradual, longer-than-usual warm-ups and cool-downs for all individuals on CV medications, to allow the body to acclimate to exercise and prevent the occurrence of post-exercise hypotension
THINGS TO CONSIDER

- Complementary & alternative medicines (CAMs):
  - Use is common amongst patients with CHD
  - Specific use of CAM for cardiac condition alone is uncommon
  - When taking medication history, ask patients re use of CAMs – to avoid drug – CAM interaction & SEs

- NSAIDs & COX-II inhibitors (except low-dose aspirin):
  - Avoid; ↑ risk of recurrent MI & death
  - Also ‘triple whammy’ with diuretics & ACEIs/ARBs – renal failure

- Recognise & treat depression
- Maintain good glycaemic control
COMPLIANCE vs. ADHERENCE

"Whoa! — Adam and Eve are way out of compliance!"
COMPLIANCE vs. ADHERENCE

- Compliance:
  - “extent to which a patient’s actual history of drug administration, lifestyle and/or diet corresponds with the prescribed regimen”
  - concerns the timing, dosage and frequency of day-to-day treatment
  - used less and less, because of its paternalistic orientation & association with blame

- Adherence:
  - “extent to which a person’s behaviour - taking medication, following a diet, and/or executing lifestyle changes corresponds with agreed recommendations from a healthcare provider”
  - rather than obeying, patients collaborate with their health professionals
  - acknowledge the active role patients play in their healthcare, particularly in chronic disease management
CLASSIFICATION OF NON-ADHERENCE

- **Consistent under-doser**: patients who routinely skip scheduled doses or take lower doses than prescribed
- **Consistent over-doser**: patients who routinely take medicines more often or at higher doses than prescribed
- **Drug holiday taker**: patients who abruptly stop taking medicines for a short time and then restart
- **Pre-visit adherent**: patients who start taking medicines before visiting their health professional
- **Random adherent**: patients who take medicines whenever they remember
- **Proportional-to-the-most-recent-visit-to-the-health-professional adherent**: patients who take medicines for a time after visiting their health professional
- **Symptom-dependent adherent**: patients who take medicines when they have symptoms of their condition
SIGNIFICANCE OF ADHERENCE

- Poor adherence to a medicine regimen post-acute MI results in a 2 – 6x increase in the risk of death within a year of the event.
- Higher levels of adherence in hypertension and hypercholesterolaemia lower overall healthcare costs despite higher drug costs.
- Poor adherence in hypertension and hypercholesterolaemia results in higher rates of hospitalisation.
- Patients with hypertension who take their medicine <20% of the time are twice as likely to be hospitalised as those who take their medicine >80% of the time.
The ‘father of medicine’, Hippocrates (c. 460–370), told physicians to “keep watch for that fault in patients which makes them lie about the things prescribed”.

“This probably won’t work, but we do have medications that will take care of the side effects.”
# Adherence to CV Medicines

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Common Long-Term Adverse Effects of Drug Classes</th>
<th>Rates of Adherence/Persistence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angiotensin Converting Enzyme Inhibitors (ACEI)</td>
<td>• Cough (10–20% of patients)</td>
<td>• 45% of patients persisted with all ACEI at 33 months</td>
</tr>
<tr>
<td></td>
<td>• Headache</td>
<td>• Median persistence = 23 months</td>
</tr>
<tr>
<td></td>
<td>• Fatigue</td>
<td>• 18% failed to collect second prescription</td>
</tr>
<tr>
<td>Angiotensin II Receptor Antagonists (ARBs)</td>
<td>• Dizziness, Headache</td>
<td>• 47% of patients persisted with ARB at 33 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Median persistence = 26 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 18% failed to collect second prescription</td>
</tr>
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## ADHERENCE TO CV MEDICINES

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<td><strong>Beta-blockers</strong></td>
<td>• lethargy</td>
<td>• 46% of patients consistently took beta-blockers 6 – 12 months after diagnosis of CAD</td>
</tr>
<tr>
<td></td>
<td>• cold extremities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• decreased exercise tolerance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• depression</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• nightmares</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• erectile dysfunction</td>
<td></td>
</tr>
<tr>
<td><strong>Calcium channel blockers (CCB)</strong></td>
<td>• headache</td>
<td>• 31% of patients persisted with all CCBs at 33 months</td>
</tr>
<tr>
<td></td>
<td>• oedema</td>
<td>• median persistence = seven months</td>
</tr>
<tr>
<td></td>
<td>• constipation (not all CCBs, mainly verapamil)</td>
<td>• 28% failed to collect second prescription</td>
</tr>
<tr>
<td></td>
<td>• flushing</td>
<td></td>
</tr>
</tbody>
</table>
# ADHERENCE TO CV MEDICINES

<table>
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<th>Common long-term adverse effects of drug classes</th>
<th>Rates of adherence/persistence</th>
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</thead>
</table>
| Thiazide and related diuretics   | • dizziness  
• gout  
• muscle cramps  
• inconvenient timing of diuresis | • 38% of patients persisted with thiazides 12 months after initiation                          |
| Loop diuretics                   | • vertigo  
• tinnitus  
• gout  
• inconvenient timing of diuresis  
• hypokalaemia | n/a                                                |
# ADHERENCE TO CV MEDICINES

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| **Aldosterone antagonists** | • headache  
• nausea  
• mastalgia                                                             | n/a                           |
| **Nitrates**             | • headache  
• flushing  
• tolerance  
• contact dermatitis (patches)                                         | n/a                           |
## ADHERENCE TO CV MEDICINES

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<tr>
<td><strong>Statins</strong></td>
<td>• myalgia (0.1% of users) &lt;br&gt; • headache (4–9% of users) &lt;br&gt; • gastrointestinal disturbances (5% of users)</td>
<td>• 25% of patients were adherent after 2 years in 1° prevention &lt;br&gt; • 40% of patients with ACS were adherent after 2 years &lt;br&gt; • 36% of patients with chronic CAD were adherent after 2 years</td>
</tr>
<tr>
<td><strong>Fibrates</strong></td>
<td>• dyspepsia (20% of users) &lt;br&gt; • abdominal pain (10% of users) &lt;br&gt; • diarrhoea (7% of users)</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Ezetimibe</strong></td>
<td>• headache &lt;br&gt; • diarrhoea</td>
<td>n/a</td>
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<tbody>
<tr>
<td>Aspirin</td>
<td>• gastrointestinal irritation • bleeding</td>
<td>• 71% of patients persisted with aspirin use 6 – 12 months after diagnosis of CAD</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>• diarrhoea • bleeding</td>
<td>n/a</td>
</tr>
<tr>
<td>Warfarin</td>
<td>• bleeding • skin necrosis • Purple toe syndrome</td>
<td>• 33% of individuals randomised to warfarin discontinued therapy (BAFTA)</td>
</tr>
</tbody>
</table>
## ADHERENCE TO CV MEDICINES

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</table>
| **Amiodarone** | • nausea  
• constipation  
• disturbances to taste  
• skin pigmentation  
• headache  
• nightmares | n/a |
| **Digoxin** | • nausea  
• diarrhoea  
• visual disturbances  
• nightmares | n/a |
LOCAL DATA – CR-MTAC

Pharmacist – managed Cardiac Rehabilitation – Medication Therapy Adherence Clinic (CR-MTAC) UKM

Observational study; patients post-MI randomised:
CR-MTAC; n = 45; physician clinic & counselled on non/pharmacotherapy & medication dispensed in the clinic
Usual care (UC); n = 43; physician clinic & collection of medication from outpatient pharmacy

Medical data evaluated for >3 months & <2 years prior to appointment

2 years of follow-up from index event

Behaviour changes measured by medication & assessed using:
Modified Morisky Scale (MMS)
A Single Question (ASQ)
## Modified Morisky Scale (MMS)

<table>
<thead>
<tr>
<th>Medication adherence assessment</th>
<th>Motivation</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you ever forget to take your medicine?</td>
<td>Y (0); N (1)</td>
<td></td>
</tr>
<tr>
<td>Are you careless at times when taking your medicines?</td>
<td>Y (0); N (1)</td>
<td></td>
</tr>
<tr>
<td>Sometimes do you forget to refill your prescription medicine on time?</td>
<td>Y (0); N (1)</td>
<td></td>
</tr>
<tr>
<td>When you feel better do you sometimes stop taking your medicine?</td>
<td></td>
<td>Y (0); N (1)</td>
</tr>
<tr>
<td>Sometimes if you feel worse when you take your medicine, do you stop taking it?</td>
<td></td>
<td>Y (0); N (1)</td>
</tr>
<tr>
<td>Do you know the long-term benefit of taking your medicine as told to you by your doctor or pharmacist?</td>
<td></td>
<td>Y (0); N (1)</td>
</tr>
<tr>
<td>Total score (Scale &gt;1)</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
</tbody>
</table>
### A Single Question (AQS)

In the past month, how often did you take your medications as the doctor prescribed?

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of the time</td>
<td>100%</td>
</tr>
<tr>
<td>Nearly all of the time</td>
<td>90%</td>
</tr>
<tr>
<td>Most of the time</td>
<td>75%</td>
</tr>
<tr>
<td>About half the time</td>
<td>50%</td>
</tr>
<tr>
<td>Less than half the time</td>
<td>&lt;50%</td>
</tr>
</tbody>
</table>

**Outcome**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 – 100%</td>
<td>Adherent</td>
</tr>
<tr>
<td>≤75%</td>
<td>Non-adherent</td>
</tr>
</tbody>
</table>
LOCAL DATA – CR-MTAC

Results:

- Higher percentage of adherent patients among CR-MTAC vs. UC:
  - MMS 86.7% vs. 41.9% (p<0.001)
  - ASQ 95.6% vs. 53.5% (p<0.001)

- Patients with high adherence had better reduction of LDL-c (p<0.001) post CR-MTAC

- Sig. high % of patients in the CR-MTAC vs. UC:
  - Knew long-term benefits of taking medications (88.9% vs. 25.6%; p<0.01)
  - Remembered to take their medications (70% vs. 30%; p<0.01)
  - Did not skip medications when they felt better (80% vs. 50%; p<0.01)
  - Remembered to refill prescriptions (5x higher; p<0.01)
  - Patients who were adherent also were more likely to quit smoking

- Pharmacist intervention showed improvements in medication use behaviour changes among post-MI patients
"I stopped taking the medicine because I prefer the original disease to the side effects."
REASONS FOR NON-ADHERENCE

- Health condition
  - No symptoms/no severe symptoms e.g. dyslipidaemia
  - Chronic disease & co-morbidities

- Treatment
  - Complex prescribed regime
  - Previous treatment failure
  - Frequent changes in treatment
  - Long duration of treatment
  - Lack of immediacy of beneficial effects
  - Side effects
REASONS FOR NON-ADHERENCE

- The healthcare system
  - Health professionals’ lack of time
  - Lack of continuity of care
  - Interprofessional collaboration & communication failure between doctors & specialists

- Socioeconomic context
  - Costs
  - Language barriers
  - Low levels of patient education and/or literacy (including health literacy)

- Individual patient characteristics
  - Actual or perceived side effects
  - Limited understanding of the importance of medicines
  - Physical barriers – poor eyesight or memory
  - Loss of faith in medicines
FACTORS PROMOTING MEDICINES’ ADHERENCE

- Faith in the physician or medicines
- Fear of cardiovascular complications (e.g. a heart attack)
- Desire to control their condition (more so in chronic disease states)
- Feeling of certainty gained through using medicines
- Personality type – some people believe that following a treatment regimen does not warrant a need for decision or reflection
- Motivation to manage their condition
- Confidence in their ability to manage their illness
- Expectations regarding the outcomes of the treatment
- Knowledge and understanding – e.g. about the rationale for treatment
- Beliefs – e.g. about the effectiveness of treatment
PATIENT KNOWLEDGE & UNDERSTANDING

“Misunderstandings about the patient’s disease & medicines occur in 80% of consultations between doctors and patients.”

- Gaps in the patient’s knowledge that influence his/her adherence to medicines
- May have limited knowledge of, or skills for managing, their condition and its treatment
- May also misunderstand or not accept their diagnosis
- May not understand the health risks associated with their condition, the treatment instructions, and/or receive mixed messages from different health professionals
- Health professionals should address patients’ limited knowledge, misinformation and misunderstandings, and give them easily understood information

Explaining to patients the concept of absolute CVD risk & the risks of non-adherence to treatment may help them to understand the benefits of taking their medicines and making lifestyle changes
PATIENT BELIEFS

- Exploring a patient’s beliefs can often provide worthwhile information, because patients’ perceptions of their treatment and condition can influence their decision to adhere to treatment.
“In a recent study, over half of the patients (57.1%) were found to be non-adherent. However, physicians failed to detect any non-adherence in these patients.”

“Take the pills from the bottle without the cap to ease your arthritis enough to get the caps off your other medications.”
IDENTIFYING NON-ADHERENCE

- Most health professionals overestimate their patients’ adherence to medicines
- Patients are generally reluctant to admit their non-adherence to medicines, unless health professionals regularly make specific efforts to ask about it
- When suspected essential to examine

Objective tools:
- Pharmacy refill records, pill counts, medication event monitoring system (MEMS)

Subjective tools:
- Brief medication questionnaire (BMQ), Morisky Scale, patient interview, diary
CONCORDANCE & SHARED DECISION MAKING

Concordance:
- the cooperation between the patient & health professional
- measure of their interaction
- encompasses all relationships between patients, doctors, nurses & pharmacists

Frames patients as active and equal to health professionals
- aims to help patients make informed decisions
- forming a partnership to develop solutions

Why is it important?
- Reasons for non-adherence are more likely revealed when the patient’s perspectives are considered & the information exchanged between the patient and health professional is unprejudiced
- Patients will develop a better understanding of their disease & medicines
- Can result in improved patient satisfaction with care, increased adherence & better health outcomes
CONCORDANCE & SHARED DECISION MAKING

- To reach concordance 4 essential elements need to be addressed:
  - Building a partnership
  - Establishing effective communication with patients
  - Information giving – patient education
  - Agreement – establishing a treatment plan
- The goals set with the patient in the treatment plan should be specific, measurable, achievable, realistic & timely
“Drugs don’t work in patients who don’t take them.”

– C. Everett Koop, MD
INTERVENTIONS THAT IMPROVE ADHERENCE

- **Information giving:**
  - Patient-centred verbal instructions & written information about medicines
  - More doses of HF medications were taken resulting in fewer exacerbations of HF

- **Information:**
  - of medicines they are taking for which disease, the importance of taking them, what to expect from each medicine, how to monitor the impact of each medicine, what side effects to look for, and what to do if they experience side effects
  - Fact cards, specific information leaflets, face-face discussions, information in other languages
INTERVENTIONS THAT IMPROVE ADHERENCE

- Information giving; SEs:
  - Regularly assess & manage SEs
  - Explain to patient how SEs can be recognised & managed
  - Give alternative medicine from a different class
  - Establish it is SE not coincidental
  - Discuss with patient risk vs. benefits of each medicine
  - Encourage discussion/feedback so that patient won’t discontinue or choose when not to take medicine
INTERVENTIONS THAT IMPROVE ADHERENCE

- Behavioural interventions:
  - Regimen simplification – 11% more doses of statins & CV medications taken resulting in significant reduction in lipid levels
  - Regimen simplification:
    - Remove unnecessary medicines
    - Consider non-pharmacological alternatives
    - Coordinate administration times with routine daily activities
    - Decrease administration frequency by using sustained-release or long-acting medicines
    - Reduce the number of medicines by using formulations that combine two or more medicines in one tablet or capsule
    - Prescribe alternative formulation e.g. patch vs. tablet
INTERVENTIONS THAT IMPROVE ADHERENCE

- Behavioural interventions:
  - Home BP measuring – 18% more patients were adherent with anti-hypertensives
  - Home BP measuring:
    - The patient’s insight into his/her condition – home BP monitoring can motivate patients to change their lifestyle & to take their medicines
    - It gives health professionals more BP measurements – easier to adjust medications doses
    - It can prevent ‘white-coat hypertension’
INTERVENTIONS THAT IMPROVE ADHERENCE

- Combined interventions:
  - Reinforcing adherence plus education – 10% fewer patients stopped taking their medications resulting in HF & CV hospital admission
  - Combines educational & behavioural features; based on 5 main objectives:
    - adherence to diet
    - adherence to medicines
    - monitoring of symptoms (especially progression of dyspnoea and fatigue)
    - controlling signs of salt retention (daily weight & oedema)
    - daily physical activity
INTERVENTIONS THAT IMPROVE ADHERENCE

- Combined interventions:
  - Adherence packages e.g. dosettes & education
  - Percentage of patients who took their medications ≥80% of their medicines improved from 5 to 98.7%
  - Educate patients about their condition, medicines and lifestyle
  - Dosettes make it easier for patients to take multiple medicines
SUMMARY

- Non-adherence to risk-reducing lifestyle changes & CV medicines has a direct impact on patients’ absolute CVD risk levels.
- Health professionals have an important role to play in identifying and addressing non-adherence to therapy.
- Health professionals are placing increasing emphasis on the importance of respecting patient beliefs and thoughts about their condition and medicines, and their ability to take medicines, when making a treatment plan.
- ‘Patient-centred care’, ‘concordance’ & ‘therapeutic alliances’ are fundamental to best practice for patient treatment & health management.
- Involve in CR & CR-MTAC.
THANK YOU FOR YOUR KIND ATTENTION