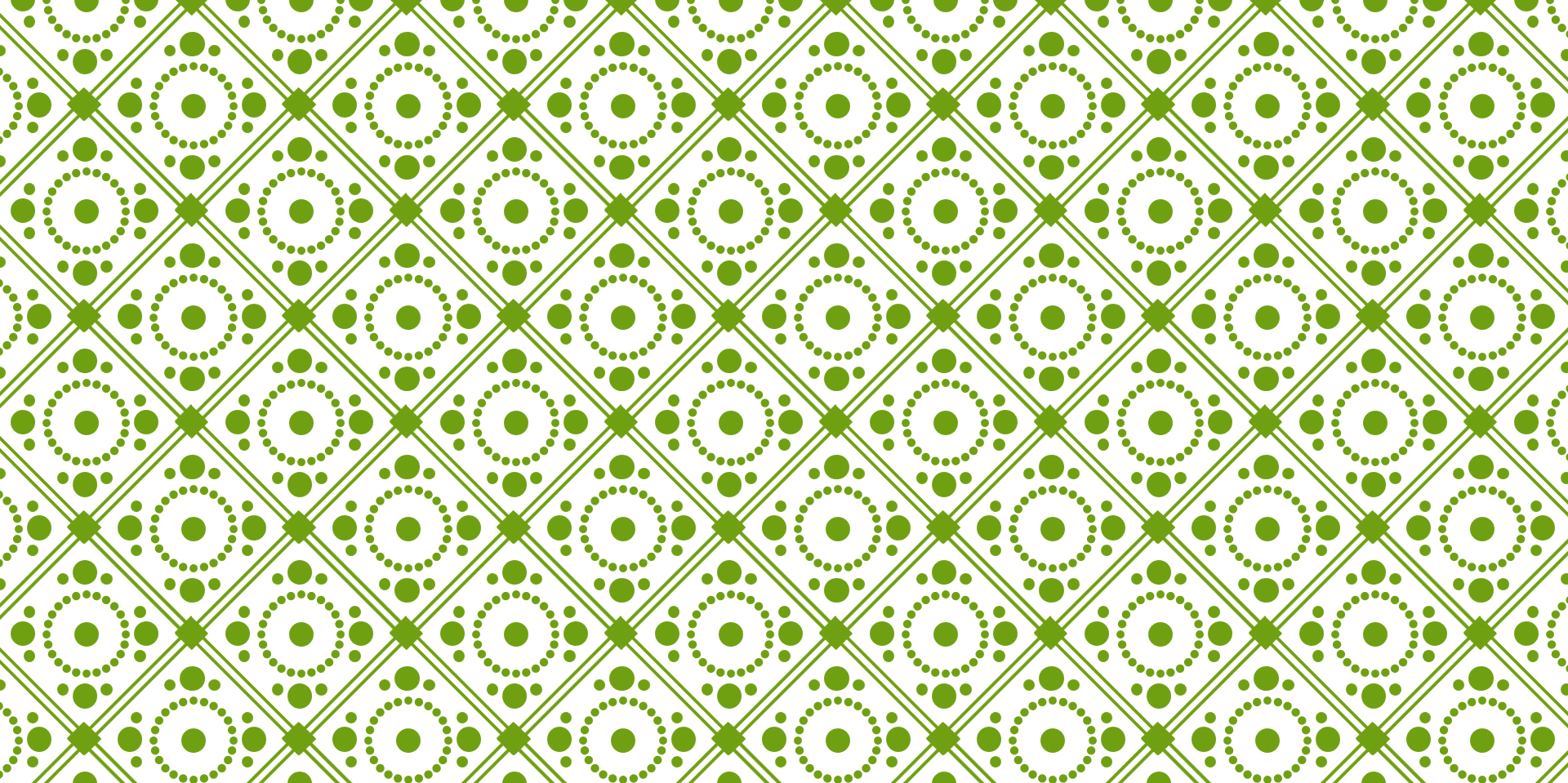




REHABILITATION OF ORTHOPEADIC PATIENTS – **priorities and pitfalls**

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31.8.2016

ORTHOPAEDIC SUBGROUPS

Elective joint replacements for lower limb DJD:
hip/knee/ankle/metatarsal

Shoulder arthroplasty/other UL procedures

Fractured Neck of Femur

Other osteoporotic fractures: pelvis, sacrum, humerus, wrist, ribs, vertebrae

Multi-trauma

Spinal surgery

Bread and Butter....

In a general rehabilitation units elderly females with orthopaedic diagnoses are the norm

WHAT DOES A REHABILITATION REGISTRAR NEED TO KNOW?

Post-operative care

Tertiary prevention

Complications

Secondary prevention

Geriatric medicine

Rehabilitation – just how important it is to restore movement and strength and function as soon as possible

POST OPERATIVE CARE - PAIN MANAGEMENT

Acute: PCA

Subacute

PRN? Pain relief never: still frequently the practise in private surgical hospitals so often you are admitting a patient with no regular analgesia charted

Paracetamol = platform pain relief BUT beware toxicity in elderly, nutritional extremes, acute illness, liver dx. Give 60mg/kg/day normally.

Opiates – more potent but small quantities minimise side effects. Check with stat dose, then give SR twice daily. Half hour RR prior to physio optional, depends on staff. Always aperients.

Co-analgesia – NSAIDS, pregabalin (assess for neuropathic quality especially in TKR)

Non-pharmacological pain relief - reassurance, exercise, ice packs

WHICH OPIATE?

Oxycontin

Targin

oxycodone

tramadol

Norspan patch

Morphine

Always warn patient not to stop anything suddenly – opiate withdrawal symptoms are much more common than you might think! By the same token tolerance and potential for dependence are very real so prescribe with a view to the longer term and manage patient expectations regarding pain. Best to normalise pain during movement but they should be comfortable at rest and they should be able to sleep at night.

POST OPERATIVE CARE - WOUND

Use hand hygiene ++

Always look first time – at the whole limb! Especially under the top and bottom of those wretched TED stockings... Watch out for pressure areas too in the frail

Don't take off the dressing unless discharge visible

Note bruising, swelling, fluctuance, discharge (colour), cellulitis

Wound swab on arrival to rehab if any discharge

Use dressings through which it is easy to assess wound progress (e.g. "Opsite post-op", "Comfeel")

In most cases can leave original dressing on and remove at 14 days to find a perfectly healed wound

POST OPERATIVE CARE - WOUND INFECTION

Swab if not done already

FBC, CRP

Blood cultures if febrile

Oral AB's empirically or according to admission swab

If septic, IV antibiotics

Notify surgeon if septic/dehiscence

POST OPERATIVE CARE - PRECAUTIONS

Hip precautions – check pt understanding

Knee “precautions” – no pillows under knee, sit out of bed with knee bent, sit in bed with knee straight

Shoulder precautions

Weight bearing status: NWB, TWB, PWB, WBAT, FWB....bear in mind that only WBAT and NWB apply to most patients >75years.

TERTIARY PREVENTION

Is the prevention of all the complications of being immobilised:

DVT/PE

Collapse/consolidation/pneumonia

Urinary retention

UTI

Constipation/bowel obstruction

Pressure areas

De-conditioning

Depression/de-moralisation



DVT PROPHYLAXIS

See part 2 of talk

CHEST PHYSIO

incentive spirometry

Deep breaths, huffs, coughs, vibes, percussion.....

Saline/ventolin nebulisers

And the best chest physio is.....WALKING!

BLADDER CARE

Routine urinalysis

MSU if positive

Post void bladder scan (low index of suspicion)

Avoid bed pans and bottles – sit on toilet

Avoid constipation

Encourage fluid intake

BOWEL CARE

Always ask: BO? Nausea? Anorexia?

Check with junior nursing staff

Hydration/diet

Mobilise

Diarrhoea is always spurious until proven otherwise.

Abdominal palpation

PR and AXR

Regular aperients, avoid stimulants in all except patients on them long term pre adm

ADEQUATE HYDRATION AND NUTRITION

Culturally appropriate food

Dietician review

Check serum albumin

Don't be fooled by those with high BMI

Drinks within reach, appropriate cup/cutlery

Nutritional supplements – some can be given as 'medication' e.g. 2-Cal 60ml qid.

PRESSURE AREA CARE

Nursing Risk Assessment Tool

Document areas in existence...your job to check heels, sacrum, kyphotic spines, malleoli, trochanters etc.

Mattress matched to level of risk

May need cushion for chair

Check posture habits in sitting – sacral sitting?

Check all wound healing parameters

Get them OUT of bed

DE-CONDITIONING

1. Muscle weakness, shortening, atrophy

- Loss of 10-15% strength per week (50% after 4 wks)
- Changes to metabolism and blood flow

2. Cardiovascular changes

- Increase in resting HR by 0.5 beats/min/day and increased HR in response to minimal load
- Decrease in SV of 15% after 2 weeks
- Postural hypotension and tachycardia on standing



MOTIVATION AND ACTIVATION

Kindness/empathy

Firmness

Explanation

Encouragement

Praise

Impart confidence in their power to heal

Manage their expectations regarding pain/pain relief

COMPLICATIONS

Don't be lulled into a false sense of security. Rehabilitation patients can also become acutely unwell.

Baseline EUC,CMP,LFT,FBC,CRP, ECG

Closely monitor co-morbidities

Prompt workup of symptoms

Geriatric patients don't manifest illness in the same way

COMMON COMPLICATIONS

When tertiary prevention fails

Sepsis (UTI, LRTI, wound/skin)

DVT/PE

ACS

Acute renal impairment

Constipation and urinary retention

Bowel obstruction

Delirium

**MOST COMMON COMPLICATION IS CAUSED BY US – PAIN
MEDICATION SIDE EFFECTS AND DRUG INTERACTIONS**

SECONDARY PREVENTION

Osteoporosis: investigate and start treatment or refer to a bone clinic

Vit D deficiency: do level, replace adequately (Vit D guidelines)

Muscle retraining

Falls risk assessment and reduction

Maintenance of exercise/activity levels after discharge

Aim for the person having greater OA pain management skills at discharge than they did on admission

GERIATRIC MEDICINE

Know your geriatric syndromes and how to start investigation and treatment

Keep poly-pharmacy to a minimum and organise Webster Pack or a Home Medicines Review

Always assess cognition. Don't forget the frontal lobes. Develop a nose for impairment. Dementia work-up if appropriate



REHABILITATION

All of the above PLUS

WHOLE team approach

Good rehab nursing essential

Setting patient specific and patient appropriate goals – involve family/carer

Maximising functional independence despite residual impairments

Education and empowerment of patient and family

EARLY INTENSE PHYSIO IN #NOF

HIP4Hips (High Intensity Physiotherapy for Hip fracture in the acute hospital setting) a randomised controlled trial

92 patients >65 with isolated hip # (excluding subtroch and NWB)

Usual care (daily physio) vs intensive (x3 per day)

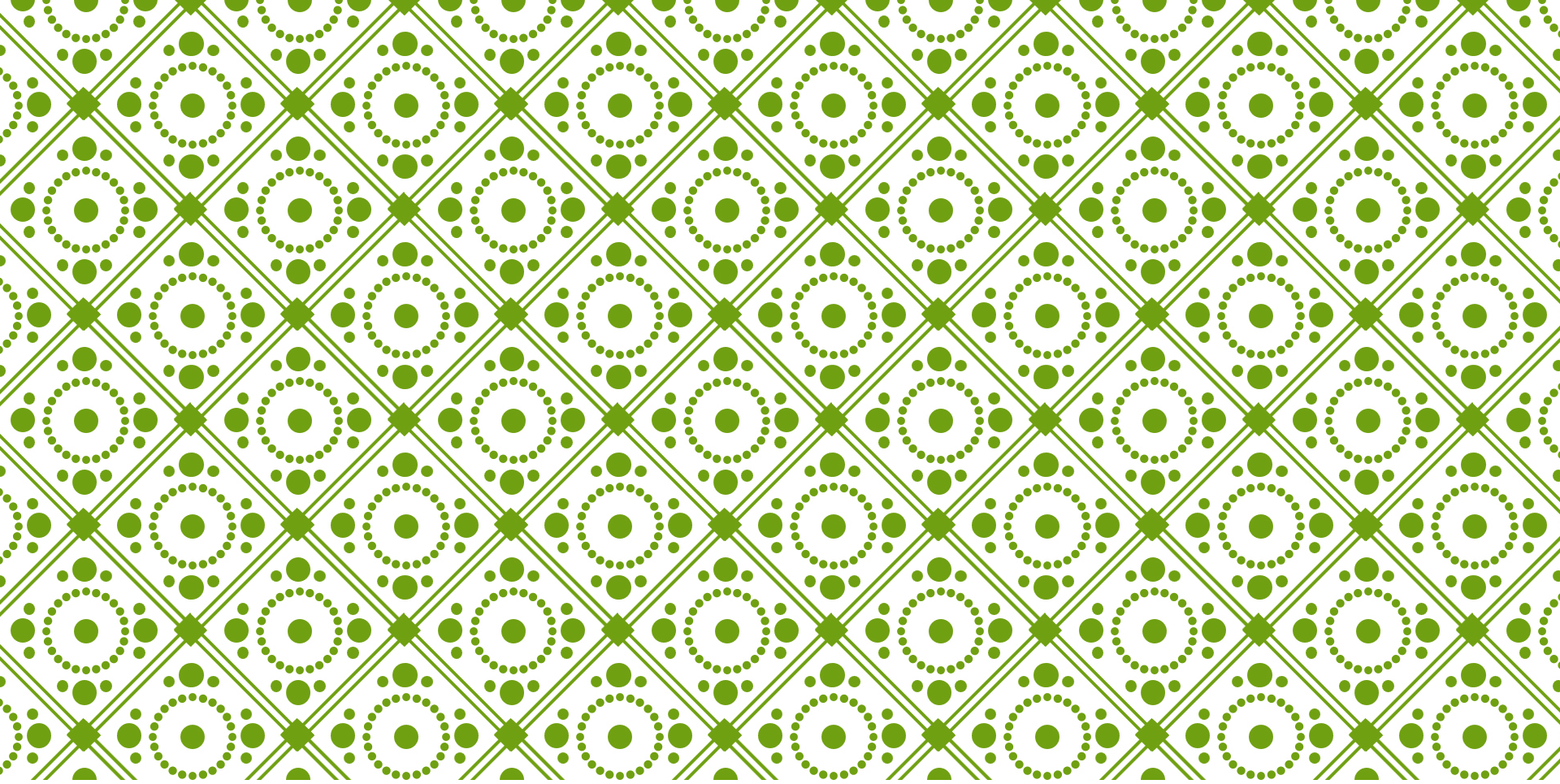
Outcomes at 5 days, at discharge, at 6 months mLOA, TUG, LOS

mLOA better in intervention group at day5

LOS shorter (median 24 days vs 35 days; $p=0.01$)

Probability of discharge was greater for intervention group at all time points post surgery; $p=0.001$

Kimmel LA et al, MJA 18 July 2016, Vol 205, No 2



VTE PROPHYLAXIS IN ORTHOPAEDIC REHABILITATION

ACCP GUIDELINES

Clinical practice guidelines for the prevention of venous thromboembolism – American College of Chest Physicians

Prevention of VTE in Orthopedic Surgery Patients: antithrombotic therapy and prevention of thrombosis, 9th Edition, *Chest Journal*, February 2012, Volume 141, No. 2 supplement

Antithrombotic Therapy for VTE Disease: CHEST Guideline and Expert Panel Report, *Chest Journal*, February 2016, Volume 149, No.2

RISK CALCULATION

Not one size fits all

Ask: what is the risk profile of my patient?

What is the risk of thrombosis? Bleeding?

Quick calculator: e.g. 'Padua Prediction Score' determines anticoagulation need in hospitalised patients by VTE risk

VTE RISK STRATIFICATION

1 point for each of the following: 41-60 years, Minor surgery, major surgery within 1 month, pregnancy, postpartum within 1 month, Varicose veins, IBS, Swelling of legs, BMI $>25 \text{ kg/m}^2$, OCP, HRT

2 points: >60 yrs, cancer/chemo/DXRT, Major surgery (>45 min), Laparoscopic surgery (>45 min), bedrest >72 hours, Immobilizing cast <1 month, Central venous access <1 month, Tourniquet time >45 minutes

3 points: >75 yrs, PHx VTE, FHx thrombosis, Factor V Leiden/activated protein C resistance, Medical patients with MI, CCF, COPD, Congenital or acquired thrombophilia

5 points: TKR or THR, Hip, pelvis, or leg fracture, Stroke, Multiple trauma, Acute spinal cord injury with paralysis: ALL within 1 month

Forsh DA et al, Deep Vein Thrombosis Prophylaxis in Orthopaedic Surgery, Medscape Online, 25 November 2015

VTE RISK STRATIFICATION

Interpretation of risk:

Risk Factor Score	0-1	2	3-4	5+
DVT Incidence	2%	10-20%	20-40%	40-80%
Risk Level	Low	Moderate	High	Very high

Forsh DA et al, Deep Vein Thrombosis Prophylaxis in Orthopaedic Surgery, Medscape Online, 25 November 2015

DVT PROPHYLAXIS FOR HIP FRACTURES

>16,500 hip fractures in >40 year olds in Australia in 2006-7

$\frac{3}{4}$ were female, average age 83 (81 years for men)

symptomatic VTE event rate of 15% to 30% without prophylaxis prior to 1980, and observational data suggest a further drop from around 5% to 1% to 2% in the years from 1989 to 2001

DVT PROPHYLAXIS FOR TOTAL KNEE/HIP

Incidence DVT without prophylaxis = 40-80%

VTE risk is highest close to surgery and the median time of diagnosis for thromboembolic events is 7 days after TKR and 17 days after THR

From: Prevention of VTE in Orthopedic Surgery Patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines

Chest. 2012;141(2_suppl):e278S-e325S. doi:10.1378/chest.11-2404

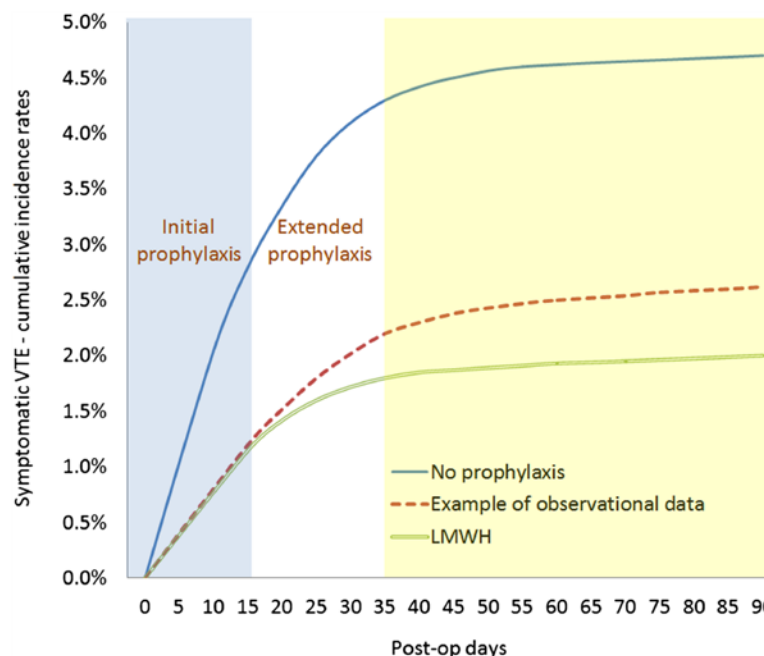


Figure Legend:

[Section 1.3.1] Schematic of estimated incidence rates for LMWH and no prophylaxis for major orthopedic surgery used for this guideline. Additional example data are from observational studies (dashed line), which usually represents a cumulative incidence rate resulting from high rates of prophylaxis in the first 7 to 14 days and low rates or no prophylaxis during the extended prophylaxis period. LMWH = low-molecular-weight heparin.

ACCP RECOMMENDATION — TKR/THR

2.1.1. In patients undergoing total hip arthroplasty (THA) or total knee arthroplasty (TKA), we recommend use of one of the following for a minimum of 10 to 14 days rather than no antithrombotic prophylaxis: low-molecular-weight heparin (LMWH), fondaparinux, apixaban, dabigatran, rivaroxaban, low-dose unfractionated heparin (LDUH), adjusted-dose vitamin K antagonist (VKA), aspirin (all Grade 1B), or an intermittent pneumatic compression device (IPCD) (Grade 1C).

Remarks: We recommend the use of only portable, battery-powered IPCDs capable of recording and reporting proper wear time on a daily basis for inpatients and outpatients. Efforts should be made to achieve 18 h of daily compliance. One panel member believed strongly that aspirin alone should not be included as an option.

ACCP RECOMMENDATION - #NOF

2.1.2. In patients undergoing hip fracture surgery (HFS), we recommend use of one of the following rather than no antithrombotic prophylaxis for a minimum of 10 to 14 days: LMWH, fondaparinux, LDUH, adjusted-dose VKA, aspirin (all Grade 1B), or an IPCD (Grade 1C).

Remarks: We recommend the use of only portable, battery-powered IPCDs capable of recording and reporting proper wear time on a daily basis for inpatients and outpatients. Efforts should be made to achieve 18 h of daily compliance. One panel member believed strongly that aspirin alone should not be included as an option.

DON'T USE LMWH WITHIN 12 HOURS SURGERY

2.2. For patients undergoing major orthopedic surgery (THA, TKA, HFS) and receiving LMWH as thromboprophylaxis, we recommend starting either 12 h or more preoperatively or 12 h or more postoperatively rather than within 4 h or less preoperatively or 4 h or less postoperatively (Grade 1B).

LMWH PREFERRED, LONGER DURATION SUGGESTED

2.3 In patients undergoing TKR, THR, HFS, irrespective of the concomitant use of an IPCD or length of treatment, we suggest the use of LMWH in preference to the other agents we have recommended as alternatives: fondaparinux, LDUH (Grade 2B), adjusted-dose VKA, or aspirin (all Grade 2C).

2.4. For patients undergoing major orthopedic surgery, we suggest extending thromboprophylaxis in the outpatient period for up to 35 days from the day of surgery rather than for only 10 to 14 days (Grade 2B).

2.5. In patients undergoing major orthopedic surgery, we suggest using dual prophylaxis with an antithrombotic agent and an IPCD during the hospital stay (Grade 2C).

WHY LMWH IN FAVOUR OF RIVAROXABAN?

“The best estimates suggest that five fewer symptomatic DVT per 1,000 achieved with rivaroxaban over LMWH will be offset by nine more major bleeding events. In summary, based on moderate-quality evidence, both the possibility of increased major bleeding events and the availability of long-term safety data for LMWH makes LMWH more appealing than rivaroxaban in spite of the inconvenience of subcutaneous administration”

ACCP RECOMMENDATIONS

2.7. In patients undergoing major orthopedic surgery and who decline or are uncooperative with injections or an IPCD, we recommend using apixaban or dabigatran (alternatively rivaroxaban or adjusted-dose VKA if apixaban or dabigatran are unavailable) rather than alternative forms of prophylaxis (all Grade 1B).

2.8. In patients undergoing major orthopedic surgery, we suggest against using inferior vena cava (IVC) filter placement for primary prevention over no thromboprophylaxis in patients with an increased bleeding risk or contraindications to both pharmacologic and mechanical thromboprophylaxis (Grade 2C).

2.9. For asymptomatic patients following major orthopedic surgery, we recommend against Doppler (or duplex) ultrasound (DUS) screening before hospital discharge(Grade 1B).

3.0. We suggest no prophylaxis rather than pharmacologic thromboprophylaxis in patients with isolated lower-leg injuries requiring leg immobilization (Grade 2C).

4.0. For patients undergoing knee arthroscopy without a history of prior VTE, we suggest no thromboprophylaxis rather than prophylaxis (Grade 2B).

A REASONABLE APPROACH IS THEREFORE:

Assess DVT risk

Assess bleeding risk

Some orthopaedic surgeons a specific protocol they want you to follow so make sure you know – especially if you are in the private sector

Enoxaparin 40mg daily SCI for 10-14days minimum, and extend to 35 days if high risk remains at 14 days (hips>knees)

If can't self inject or decline injections rivaroxaban instead

Don't forget to investigate for DVT/PE despite prophylaxis if symptomatic

THE BEST PREVENTION IS TO GET THEM MOVING!!!