Polypharmacy and older people in care homes – implications for oral health

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Polypharmacy

- Definition:
  - When a patient takes 5 or more medicines
  - Polypharmacy not necessarily a bad thing
    - Inappropriate polypharmacy vs.
    - Appropriate polypharmacy

Polypharmacy - a prescribing challenge

- Care home patients in England take an average of 8 medicines
  - 69% of these patients have had one or more prescribing error
- Increases the risk of
  - drug interactions
  - adverse reactions
- May affect compliance.
- Additional over-the-counter medicines increase the potential to cause harm
**Medication Without Harm:**

WHO’s Third Global Patient Safety Challenge

- **Goal** - to reduce the level of severe, avoidable harm related to medications by 50% over 5 years, globally
- **Three priority target areas:**
  - high-risk situations
  - Polypharmacy
  - transitions of care
- **Four domains:**
  - health care professionals’ behaviour
  - systems and practices of medication
  - medicines
  - patients and the public.

**Elderly patients – prescribing medicines**

- The most important effect of age is **reduced renal clearance**.
- Many elderly patients excrete drugs slowly, and are **highly susceptible to nephrotoxic drugs**.
- Acute illness can lead to rapid reduction in renal clearance, especially if accompanied by dehydration.
- The hepatic metabolism of lipid soluble drugs is reduced in elderly patients because there is a reduction in liver volume. This is important for drugs with a narrow therapeutic window.

**Managing medicines in care homes**


- **Prescribe using clear instructions on how a medicine should be used including:**
  - how long the resident is expected to need the medicine
  - how long the medicine will take to work and what it has been prescribed for (if important)
- **Avoid using ‘as directed’**
- **Record prescribing in the practice patient record and resident care record**
- **Provide any extra details the resident and/or care home staff may need about how the medicine should be taken**
- **When prescribing variable dose and ‘when required’ medicine(s) note in the resident’s care record the instructions for:**
  - when and how to take or use the medicine
  - the effect they expect the medicine to have
  - include dosage instructions on the prescription so that this can be included on the medicine’s label
  - liaise with care home staff to see how often the resident has had the medicine and how well it has worked.
- **Care home staff (registered nurses and social care practitioners working in care homes) should update records of medicines administration to contain accurate information about any changes to medicines**

**GP prescribing of dental items**
BNF changes

Online via

- https://www.medicinescomplete.com/mc/
- Free access to all NHS employees
  - Automatically via N3
  - Register for access
  - Open Athens

BNF App
Amoxicillin dose change from BNF 68 (September 2014)

- **Dose by mouth**
  - Adult: 500 mg every 8 hours, dose doubled in severe infection;
  - Child 1 month–1 year: 125 mg 3 times daily; increased if necessary up to 30 mg/kg 3 times daily
  - Child 1–5 years: 250 mg 3 times daily; increased if necessary up to 30 mg/kg 3 times daily
  - Child 5–12 years: 500 mg 3 times daily; increased if necessary up to 30 mg/kg (max. 1 g) 3 times daily
  - Child 12–18 years: 500 mg 3 times daily; in severe infection 1 g 3 times daily

[BNF 65 – dose for adults and children over 5 years, 250mg every 8 hours, dose doubled in severe infections
BNF 66 – adult dose increased, BNF 68 paediatric doses increased]

Metronidazole dose change

- **FGDP - Antimicrobial Prescribing For General Dental Practitioners (28/6/16)**
- **BNF 72 – online (Dec/Jan 2016/17)**
  - Adult
    - 400 mg every 8 hours for 3–7 days.
  - Child 1–2 years
    - 50 mg every 8 hours for 3–7 days.
  - Child 3–6 years
    - 100 mg every 12 hours for 3–7 days.
  - Child 7–9 years
    - 100 mg every 8 hours for 3–7 days.
  - Child 10–17 years
    - 200–250 mg every 8 hours for 3–7 days.

Nystatin dose BNF 72 (September 2016)

- **Oral and perioral fungal infections**
  - ADULT and CHILD over 2 years
    - 400 000–600 000 units 4 times daily (half dose in each side of the mouth);
  - INFANT and CHILD 1 month–2 years,
    - 200 000 units 4 times daily (half dose in each side of the mouth)

BNF – nystatin dose update

- **From MARCH 2017**
  - Dose 1ml (100,000 units 4 times a day)
- ‘**Update to nystatin dose in BNF and BNF for Children**’
  - The nystatin dose for oral candidiasis in the BNF has historically reflected the posology recommendations in the Nystan® Summary of Product Characteristics (SPC). Following discussions with the MHRA the dose has been updated (live in digital versions of the BNF from March 2017) and now reflects current posology recommendations for generic nystatin products.
Nystatin dose – BNF 73 and online March 2017

- Oral candidiasis
- Child
  - 100,000 units 4 times a day usually for 7 days, and continued for 48 hours after lesions have resolved.
- Adult
  - 100,000 units 4 times a day usually for 7 days, and continued for 48 hours after lesions have resolved.

Patient Specific Directions (PSDs)

- Written instructions, signed by a doctor, dentist, or non-medical prescriber for a medicine to be supplied and/or administered to a named patient after the prescriber has assessed the patient on an individual basis.
- Writing a PSD is a form of prescribing.

Patient Group Directions (PGDs)

- Written instructions for the supply or administration of medicines to groups of patients who may not be individually identified before presentation for treatment.
- Working under a PGD is NOT prescribing

DCPs & Patient Group Directions (PGDs)

- When working under a PGD named hygienists and therapists are able to
  - Independently choose and administer medicines e.g. local anaesthetics
  - Issue named medicines directly to patients e.g. fluoride preparations including Duraphat toothpaste
  - All PoM supplies must be labelled as dispensed medicines

PGDs – when are they needed?

- In medicines legislation (The Human Medicines Regulation 2012, The Misuse of Drugs Regulations 2001) PGDs are required for:
  - the administration of all parenteral Prescription only Medicines (PoMs)
  - the administration of midazolam (a controlled drug)
  - the supply directly to patients of all PoM and Pharmacy (P) medicines
- Medicines legislation does not require PGDs for:
  - administration of non-parenteral PoMs
  - administration of P or General Sales List (GSL) medicines
  - supply of GSL meds directly to a patient.
Direct Access

- PGDs can be used by dental therapists and dental hygienists treating patients via Direct Access
- DCPs do not have prescribing rights and can only use medicines if they have been prescribed by a dentist OR they are working under a PGD.
- In a Direct Access service:
  - DCPs MUST use PGDs to administer LAs and midazolam if required in an emergency
  - DCPs MUST use PGDs to issue PoM and Pharmacy Medicines e.g. Difflam mouthwash, chlorhexidine gel, Duraphat
  - Administration of non-parenteral PoMs and Pharmacy Medicines does not require a PGD BUT use of protocols is strongly recommended
  - DCPs CANNOT independently order medicines (PoM and P), only dentists may order medicines

Duraphat toothpaste

Prescription only Medicine

High strength sodium fluoride toothpaste - generic

- DPF
  - Sodium Fluoride Toothpaste 0.619%
  - Sodium Fluoride Toothpaste 1.1%
    - Pharmacist may issue Duraphat OR generic
  - Sodium Fluoride Toothpaste 1.1% (Duraphat)
    - Pharmacist must issue Duraphat
- Colgate ‘stamp’
  - ‘Colgate Duraphat 5000ppm’
    - Pharmacist must issue Duraphat

Prescribing high strength fluoride toothpaste
Dose amendments in elderly patients

Prescribing in the elderly - topical fluoride

- Duraphat 50 mg/ml Dental Suspension
- Duraphat 5000 ppm Fluoride Toothpaste

- Elderly
  - No dose adjustment is necessary
- Renal impairment
  - No dose adjustment is necessary

Prescribing in the elderly - Amoxicillin

- Elderly
  - No dose adjustment is considered necessary

- Renal impairment
  - No dose adjustment is considered necessary

<table>
<thead>
<tr>
<th>GRF (ml/min)</th>
<th>Adults and children ≥ 40 kg</th>
<th>Children &lt; 40 kg</th>
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<tbody>
<tr>
<td>Greater than 30</td>
<td>No adjustment necessary</td>
<td>No adjustment necessary</td>
</tr>
<tr>
<td>10 to 30</td>
<td>Maximum 500 mg twice daily</td>
<td>15 mg/kg given twice daily (maximum 500 mg twice daily)</td>
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<tr>
<td>Less than 10</td>
<td>Maximum 500 mg/day</td>
<td>15 mg/kg given as a single daily dose (maximum 500 mg)</td>
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# In the majority of cases, parenteral therapy is preferred.

Prescribing in the elderly - Metronidazole

- Elderly
  - No dose adjustment is considered necessary

- Renal impairment
  - No dose adjustment is considered necessary
Prescribing in the elderly

- **Erythromycin**
  - **Elderly**
    - No dose adjustment is considered necessary
  - **Renal impairment**
    - No dose adjustment is considered necessary

- **Clarithromycin**
  - **Elderly**
    - As for adults.
  - **Renal impairment**
    - Dosage adjustments are not usually required except in patients with severe renal impairment (creatinine clearance < 30 ml/min)
    - If adjustment is necessary, the total daily dosage should be reduced by half, e.g. 250 mg once daily or 250 mg twice daily in more severe infections. Treatment should not be continued beyond 14 days in these patients

Prescribing in the elderly

- **Local anaesthetics**
  - **Lidocaine (Lignospan Special)**
    - No specific dosage adjustment suggested for elderly patients
    - Tolerance to elevated blood levels varies with the status of the patient, debilitated, elderly patients, acutely ill patients, and children should be given reduced doses commensurate with their age and physical condition
  - **Lidocaine (Xylocaine)**
    - Children and elderly or debilitated patients require smaller doses.

- **Lidocaine (Xylestesin)**
  - **Elderly population**
    - Increased plasma levels can occur in older patients due to diminished metabolic processes and reduced distribution volume. Risk is increased after repeated administration. Reduce doses, taking into consideration any cardiac or liver disease.
  - **Renal impairment**
    - Lidocaine and its metabolites are mainly eliminated in urine. Lower doses of lidocaine may be required in patients with severe renal dysfunction due to prolonged effects and systemic accumulation.
Prescribing in the elderly - local anaesthetics

- Articaine (Septanest 1:100,000)
  - No dosing restrictions listed in the prescribing information for elderly patients or those with renal impairment

Pain and analgesics

- Most mild to moderate dental pain and inflammation is effectively relieved by NSAIDs (BNF Chapter 4, section 6)
- NSAIDs prescribable for NHS patients
  - Ibuprofen
  - Diclofenac
  - Aspirin
- Paracetamol has analgesic and antipyretic action but no anti-inflammatory effect
- [Dihydrocodeine – the only opioid analgesic on the DPF list.]

NSAIDs in elderly patients – BNF advice

- Bleeding associated with aspirin and other NSAIDs is more common in the elderly who are more likely to have a fatal or serious outcome.
- NSAIDs are a special hazard in patients with cardiac disease or renal impairment which put older patients at particular risk.
- Owing to the increased susceptibility of the elderly to the side-effects of NSAIDs recommendations are:
  - a low-dose NSAID (e.g., ibuprofen up to 1.2 g daily) may be given
  - for pain relief when either drug is inadequate, paracetamol in a full dose plus a low-dose NSAID may be given
  - if necessary, the NSAID dose can be increased or an opioid analgesic given with paracetamol
- Prophylaxis of NSAID-induced peptic ulcers may be required if continued NSAID treatment is necessary
Ibuprofen

- **Dose**
  - GSL/P packs
    - 200mg - 400mg up to three times daily.
    - Maximum 1200mg daily
  - PoM
    - 1200mg – 1800mg daily in 3-4 divided doses
    - Maximum 2400mg daily for acute conditions
- Take with or after food
- N.B. available as a P medicine with codeine or paracetamol
  - ibuprofen 200mg + codeine 12.8mg
  - Ibuprofen 200mg + paracetamol 500mg

Diclofenac

- **Dose**
  - PoM
    - 75mg – 150mg daily in 2 or 3 divided doses
    - Maximum 150mg daily
- Take with or after food

Assessing/reducing risk

- Consider the cardiovascular risk (IHD, HF, PAD) of diclofenac and ibuprofen at does >1200mg daily
- Consider GI risks - age, gender, smoking, drinking, *H.pylori*, history GI ulcer/bleeding
- For patients needing a NSAID and on an SSRI or aspirin or who have other risk factors for GI adverse effects consider:
  - Using a NSAID with a lower risk i.e. ibuprofen vs. diclofenac
  - Co-prescription of a **Proton Pump Inhibitor (PPI)** e.g. omeprazole, lansoprazole.

Diclofenac

**June 2013**

- Diclofenac is now contraindicated in patients with established:
  - ischaemic heart disease
  - peripheral arterial disease
  - cerebrovascular disease
  - congestive heart failure (New York Heart Association [NYHA] classification II–IV)
- Diclofenac treatment should only be initiated after careful consideration for patients with significant risk factors for cardiovascular events (eg, hypertension, hyperlipidaemia, diabetes mellitus, smoking)
Paracetamol

- Dose – GSL/ P/ PoM
  - 500mg – 1000mg every 4-6 hours,
  - Maximum 4000mg (8 tablets) in 24 hours

- Care is advised in the administration of paracetamol to patients with renal or hepatic impairment.
- In the elderly, the rate and extent of paracetamol absorption is normal but plasma half-life is longer and paracetamol clearance is lower than in young adults.

N.B. available (GSL/P) in combination preparations with ibuprofen, dihydrocodeine (7.46mg), codeine (12.5mg), aspirin

Combining Paracetamol + ibuprofen

- If both are required should they be
  - Given separately and alternately?
  - Given at the same time?
- E.g.
  - ibuprofen 600mg/paracetamol 1000mg – alternating every 2 hours
  - Ibuprofen 600mg + paracetamol 1000mg together every 4 to 6 hours

Paracetamol overdose secondary to dental pain: a case series

British Dental Journal, published online: 25 September 2015

- ‘Dental pain is the single most common cause of acute medical admission secondary to unintentional paracetamol overdose’
Dihydrocodeine

- Dose
  - P – only as Co-dydramol - dihydrocodeine 7.46 mg + paracetamol 500 mg
    - 1-2 tablets every 4-6 hours
    - Maximum 8 tablets in 24 hours
  - PoM
    - 30mg every 4-6 hours (or at the discretion of the prescriber)
    - Maximum recommended 180mg
- Elderly
  - Dosage should be reduced
- Moderate to severe renal impairment
  - Dosage should be reduced

[NB PoM co-dydramol can be 10/500, 20/500 or 30/500]

Management of severe dental pain?

- Ensure full doses of paracetamol plus ibuprofen/diclofenac are being taken
- Add dihydrocodeine to paracetamol plus NSAID – the combination is effective for some people

Adverse Drug Reactions

What is an Adverse Drug Reaction (ADR)?

“an unwanted or harmful reaction that arises from using medicinal products within or outside* the terms of the marketing authorisation or from occupational exposure. The reaction may be a known side effect of the drug or it may be new and previously unrecognised”

*off-label use, overdose, misuse, abuse and medication errors.
Who is most at risk from ADRs?

- The elderly
- Co-existing diseases
- Children
- Females
- Atopic individuals
- Polypharmacy
  - 50% of patients on 5 drugs or more

Electronic cigarette

Electronic cigarette – necrotic ulcer

- Painful area appeared after inhaling strongly on his e-cigarette
- Intra-oral burns caused by e-cigarettes should be considered a differential diagnosis in non-healing oral ulceration

Consumers and HCPs should report side effects and safety concerns with e-cigarettes or refill containers to the MHRA through the Yellow Card Scheme

Reporting e-cigarettes ADRs via the Yellow Card web portal

http://yellowcard.mhra.gov.uk/
Elderly patients – taking medicines

- Elderly patients may have difficulty swallowing tablets
  - tablets left in the mouth may cause ulceration (e.g. bisphosphonates)
  - Tablets or capsules should be taken with enough fluid and in an upright position to avoid the possibility of oesophageal ulceration
Drug Interactions

Identifying potential drug interactions between drugs prescribed in dental practice and the patient’s current medication is increasingly important as patients get older, retain their teeth longer and take an increasing number of long-term medications.
What is a drug interaction?

- A drug interaction occurs when
  - The effects of one drug are changed by the presence of another drug (or food, drink or other agent)
- Drug interactions can involve a variety of mechanisms

Drug interactions

- Many drugs will interact in the body
- Clinical significance depends on
  - The therapeutic range – wider range – fewer problems
  - The enzymes involved in activation/metabolism – the more involved, the less likely that changes involving one enzyme will be significant
  - Genetic polymorphisms and population variability – some individuals are susceptible due to their genetic make up
- Many listed interactions are theoretical extrapolations

Warfarin + antifungals

- Miconazole and fluconazole inhibit metabolism of warfarin in the liver (via CYP2C9)
- An established and clinically important interaction
- Monitor the INR

Patricia Thomas, collapsed after the 15-day course of the mouth gel - after her dentist failed to flag up she was already prescribed the blood-thinning drug warfarin by her GP.
Azole antifungals + ‘statins’

- Simvastatin + miconazole
  - CONTRAINDICATED
  - No reports of interaction
  - Combinations with other statins not contraindicated but warnings apply
  - Atorvastatin should only be used with fluconazole/miconazole if the benefits outweigh the risks
  - Pravastatin does NOT interact

[See UKMi Q&A - Can miconazole oral gel be used by patients taking a statin? for further detail]
In October 2017 new interactions content for the BNF was launched.

The following changes were introduced:
- Increased coverage and a greater focus on the clinical relevance of the interactions
- A consistent style and terminology across all BNF Publications
- A new grading system for both severity of the interaction and the evidence to support it

**BNF – new interactions text**

- Importance of an interaction/level of severity
  - **SEVERE** – the result may be a life-threatening event or have a permanent detrimental effect.
  - **MODERATE** – the result could cause considerable distress or partially incapacitate a patient; they are unlikely to be life-threatening or result in long-term effects.
  - **MILD** – the result is unlikely to cause concern or incapacitate the majority of patients.
  - **UNKNOWN** – used for those interactions that are predicted, but there is insufficient evidence to hazard a guess at the outcome.

- Evidence base for the interaction:
  - **STUDY** – for interactions where the information is based on a formal study including those for other drugs with the same mechanism (e.g., known inducers, inhibitors, or substrates of cytochrome P450 isoenzymes or P-glycoprotein).
  - **ANECDOTAL** – interactions based on either a single case report or a limited number of case reports.
  - **THEORETICAL** – interactions that are predicted based on sound theoretical considerations. The information may have been derived from in vitro studies or based on the way other members in the same class act.
Scottish Dental Clinical Effectiveness Programme (SDCEP)

SDCEP guidance
- Scottish Dental Clinical Effectiveness Programme (www.scottishdental.org/cep)
- Oral Health Management of Patients at Risk of Medication-related Osteonecrosis of the Jaw
- Published March 2017

SDCEP Management of Dental Patients Taking Anticoagulants or Antiplatelet Drugs

Management of Dental Patients Taking Anticoagulants or Antiplatelet Drugs

Published August 2015

Downloads
- Anticoagulation
- Antiplatelet
- Supporting notes
NWMIC

- Contact us:
  - Telephone: 0151 794 8206
  - Email: nwmedinfo@nhs.net
- Online resources:
  - https://www.sps.nhs.uk/articles/uk-dental-medicines-advice-service-ukdmas/