Safe handling of oral anticancer agents

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What do we mean by safe handling?

Exposure with IV chemo

Many Oral Agents in Clinical Use

<table>
<thead>
<tr>
<th>Chemotherapy</th>
<th>Targeted agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Busulfan</td>
<td>Dasatinib</td>
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<tr>
<td>Capetabine</td>
<td>Erlotinib</td>
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<td>Chlorambucil</td>
<td>Gefitinib</td>
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<td>Chlorophosphamide</td>
<td>Imatinib</td>
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<td>Cyclophosphamide</td>
<td>Lapatinib</td>
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<tr>
<td>Etoposide</td>
<td>Sorafenib</td>
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<tr>
<td>Fludarabine</td>
<td>Sunitinib</td>
</tr>
<tr>
<td>Hydroxyurea</td>
<td>Thalidomide</td>
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<tr>
<td>Idarubicin</td>
<td>Lenalidomide</td>
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Patients prefer oral administration

- Avoids invasive procedures required for IV access (may cause discomfort & anxiety for patients)
-given in the patient’s home - avoids hospital admission or waiting in busy day centres for IV chemotherapy administration
- offers patient a sense of control over treatment & interferes less with their daily lives


Bordunjeer HA et al. The oral route for the administration of cytotoxic drugs. Invest New Drugs 2000; 18: 231-41

Medication Errors Involving Oral Chemotherapy

99 adverse drug events: 20 serious or life-threatening, 52 significant, 25 minor

Most common medication errors involved:
- wrong dose (38.8%), wrong drug (13.6%), wrong number of days supplied (11.9%), and missed dose (10.0%)

Majority of errors (322) resulted in a near miss
- 39.3% of reports involving the wrong number of days supplied resulted in adverse drug events.
Prescribing errors - temozolamide

- physician order writing - 59.4% of errors
- death of a patient on a research protocol whose physician accidentally wrote a 10-fold overdose
- a covering physician misinterpreted the daily dose of temozolomide as the dose per square meter
  - overdose resulted in bone marrow suppression requiring blood product and factor support

Dispensing errors - overdose

- prescription written for lomustine single dose every 6 weeks
  - misread by pharmacist who dispensed 190 mg lomustine daily
  - patient died of complications of bone marrow suppression
- pharmacist dispensed a pack of 20 x 40mg lomustine capsules
  - instructions to take a single 160mg dose (ie only 4 capsules)
  - patient misunderstood instructions and took 4 capsules daily for 5 days

Dispensing errors - underdose

- Capecitabine errors common - various pill sizes and dosing algorithms
- prescription for 500 mg tablets, take “4 tablets twice daily for Days 1-14” was dispensed as 150 mg tablets, take 4 twice a day
- order for 1800 mg twice a day was dispensed as 800 mg twice a day
- Temozolomide - patient given 3 separate prescriptions & instructions to take every day 1x 100mg capsule, 2x 20mg capsules, and 3x 5mg capsules (total daily dose 155 mg)
  - pharmacist filled only the 5mg script (daily dose 15mg)

Risk

- oral chemotherapy is an expanding area of risk in oncology practice
- Need to develop safer practices for:
  - ordering
  - dispensing
  - administering
  - monitoring

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112 errors found
  - 7% adult patient visits had medication error
  - 18.8% paediatric patient visits had medication errors.
  - 15 errors lead to harm
  - Most common errors were administration – confusion between order written at diagnosis, and adjusted dose

COMMUNICATION issues

Program to Support Safe Administration of Oral Chemotherapy

- 2001 multidisciplinary group set up to evaluate use of oral chemo in all settings
- RN led telephone contact program for all adult oncol & haem pts on oral CT
- Reviewed progress, dosing comprehension, ADR, supply issues etc
2007 – practice standards for oral chemotherapy hits the headlines

UK alert

The “ideal” oral chemo patient

- good communications skills (or have responsible, committed family member who can communicate on behalf of the patient)
- willingness & ability to adhere to instructions
- intellectual discipline & emotional wherewithal to commit fully to the program

Patients should be assessed

- understanding the importance of the therapy to their disease
- potential treatment side effects
- how they will fit therapy into their schedule
- can they swallow pills and/or liquids
- do they normally miss doses of other meds
- where they obtain their meds, & how they pay
Patients' perspectives & safe handling of oral anticancer drugs at an Asian cancer center
Alexandre Chan, Yumei Cynthia Leow, Mui Hian Sim, Singapore

• capecitabine (~40%), tamoxifen (23%), aromatase inhibitors (18%), gefitinib (9%), imatinib (3%)
• > 90% pts self-administered
• 94% reported no difficulties in adherence
• 48% habitually washed hands after taking their anticancer drugs but only 2 patients on capecitabine habitually used gloves
• need to improve patients' understanding of storage, handling & safe administration of oral anticancer drugs

Australian Standards

SHPA Standards of Practice for the Provision of Oral Chemotherapy for the Treatment of Cancer
SHPA Committee of Specialty Practice in Cancer Services

- prescription verification, dispensing and patient education
- by a pharmacist with appropriate training & skills in cancer chemotherapy as defined by SHPA Stds
- label with the total dose required
  - if patient to take 2 different strengths to make up the dose (e.g. capecitabine 150 mg and 500 mg) must be labelled with the number of each tablet to take and the total dose
- highlight different strengths aid patient understanding
- all boxes/bottles must contain a label
  - never taped together with a label on one box

SHPA - Prescription Verification

- chemotherapy must be prescribed in the context of a referenced protocol, ideally on a specifically designed chemotherapy prescription form
- prescriptions must state clearly for each course
  - the drug
  - dose
  - route & frequency
  - intended start date, duration of treatment, and where relevant, the intended stop date
- pharmacists must have access to a documented treatment plan and to full copies of the relevant protocol

Clinical check

• ensure prescribed doses, treatment intervals & administration details are appropriate to the patient’s demographics, tumour type, haematological & biochemical profile, organ function & treatment protocol;
• verify maximum & cumulative doses of all chemotherapy prescribed are not exceeded;
• check that all chemotherapy drugs listed in the protocol have been prescribed including those to be administered by other routes;

Clinical check

• check relevant supportive drugs are prescribed and are appropriate for the protocol, the length of the course and the patient e.g. antiemetics, GCSF etc
• be aware of the toxic and therapeutic effects of the medicine and identify interactions with other drugs;
• ensure supplied in timely manner according to the patient’s treatment plan;
• verify with original prescriber any anomalies identified during this checking process. Incorrect or missing details must be corrected by the prescriber prior to dispensing.
Second check

- a second independent check to verify all prescribing & dispensing details
- second check must include a clinical check, label check, contents check and a check to ensure the correct number of tablets has been supplied

The pharmacist

- Use a specialist pharmacist with ‘appropriate’ skills in cancer chemotherapy to supply and counsel the patient
- The pharmacist must be COMPETENT for the job
  - demonstrated knowledge, training and skills in cancer chemotherapy appropriate to the task
- Staff with insufficient knowledge or experience in cancer treatment must NOT be delegated to manage the supply of oral chemotherapy
- Restrict supply to ‘accredited’ hospitals

Do you meet these Standards?
Many Australian hospitals do not.

Australian public hospital study

- Oral Chemotherapy
  Compliance with Practice
  Standards in a General Dispensary

Robert McLauchlan
Austin Health
Melbourne

Australian public hospital study

- In Australia large public hospitals have general pharmacist staff in dispensaries
- survey to assess attitudes of dispensary staff to supply of oral chemotherapy
  - confidence and behaviour patterns
  - awareness of resources
  - education

Survey results

- Lack of Confidence Among Staff
- Significant Proportion of Staff Seek Advice/Reassurance from Specialist Pharmacist
- Handling of New vs Repeat Prescription Very Different
- 14% of Staff Would Not Dispense on Weekend
- Demand for Education

Strategy

- Educate Staff on Use of Resources
- Incorporate Checklist for Each Episode
- Documentation of Dispensing
- Assess Compliance and Refine Strategy

R. McLauchlan, Austin Health, Australia
Policy

- Drugs Included
- Restrict Staff
- Inpatient / Outpatient Supply
- Mandatory Checks
- Quantities Supplied
- Labelling
- Checking Procedures
- Counselling
- Documentation

Australian public hospital study

- Completed 100 dispensings
- Significant improvement
- Further resources and ongoing project planned
  - What happens in other large public hospitals or private hospital clinics?
  - What happens in Asia?

ASCO/ONS Chemotherapy Administration Safety Standards

17. All patients who are prescribed oral chemotherapy are provided written or electronic patient education materials about the oral chemotherapy before or at the time of prescription.
   A. Patient education includes the preparation, administration, and disposal of oral chemotherapy.
   B. The education plan includes family, caregivers, or others based on the patient's ability to assume responsibility for managing therapy.

   Patient education materials should be appropriate for the patient's reading level/literacy and patient/caregiver understanding.

Patient Counselling/Education

- patient on IV chemo has education by the ward/day chemo nurse or pharmacist
- patient on ORAL chemo needs:
  - specific, detailed instructions about what to do, what to expect, managing side-effects, who and when to call for help
  - written information - allows them (&/or carer) to re-read & absorb information later
  - adequate time to ask questions

What are the issues? Patient Education

- Even MORE essential as at home PATIENT is in charge NOT the oncology nurse
- Patients need effective, patient-focused education about their therapy
- e.g. written take-home information, diaries, guidelines for dose reduction in case of adverse events and side-effect support kits

What are the issues? Patient Education

- need to know:-
  - How many to take
    May be in 2 or more different containers, different strengths to combine to get correct dose
  - When to take
    Before/after food; Every day; twice a day; 2 weeks on 1 week off; one dose Day 8 only
What are the issues?

**Patient Education**

- How to store
  - fridge, room temp, car glovebox
  - SAFE storage away from kids
- Is blood result required BEFORE they take dose
- Do they phone someone, or does someone phone them
- Side effects – what are they and how to manage
- Do they continue or stop if develop side effects
- WHEN and WHO to call if they run into problems

Patient Education: The patient needs to know

- When and how to obtain further supplies
- What role their GP/community nurses play in their treatment
- Possible interactions with other drugs, supplements or herbal remedies

Medication Adherence

- Patient compliance to any medication regimen is variable & not easily predicted
- A number of factors identified as leading to non-compliance
  - Complex treatment regimens
  - Side effects of medication
  - Chronic long term administration
  - Inadequate supervision

Unintentional non-adherence

- Patient problems
  - cannot open packaging
  - cannot take tablets or capsules e.g. swallowing difficulties in patients with head & neck cancer
  - nausea & vomiting
  - confused, or forgetful

Minimising unintentional non-adherence

- Ensure unintentional non adherers are given minimal opportunity for misadventure
  - Use a pharmacist with ‘appropriate’ skills in cancer chemotherapy to supply and counsel
  - Ensure the provision of appropriate education and information with follow up
  - Provide minimal supplies

Patient information & education

- Clear unambiguous labels on containers
  - Drug name, dose, frequency, duration of treatment
  - Containers of the same strength CLEARLY annotated
  - Containers of the same drug but different strength CLEARLY annotated
- Expected adverse effects & how to manage
- What to do about missed doses
- Use of antiemetics & other therapy
- Drug interactions
- Provision of verbal AND written information
**Written & verbal information**

- Consider the patient's needs, abilities, literacy, and culture.
- Are there any daily rituals that may help them remember to take the medication?
- Provide written medication guides and instructions.
- Labelling on the container may be insufficient space to be used alone as an instruction.

**Minimise Supplies**

- **DO NOT ISSUE** repeats
  - Adds to the confusion if drug is stopped or dose is changed.
  - Give the patient only what is needed for that cycle and don't dispense a repeat UNLESS you are absolutely certain it is appropriate.

**Written & verbal information**

- Many people identify with pictures rather than text.
- Provide customised instructions such as a calendar or diary.
  - eg highlighted dates to help patients remember the schedule & a diary with a symptom management log.
- Many patients like a reminder system.

**Minimising Supplies**

- **DO NOT ISSUE** whole patient packs
  - Doses and quantities vary according to BSA, the specific protocol, side effects, etc.
  - For patients requiring less than whole pack, supply of original container can lead to confusion & potential overdosing.
  - In Australia PBS encourages original pack & repeats.
  - SHPA Standards say:
    - If a whole pack is issued then the following label must be added: You will have xxxx number of tablets remaining at the end of this course. Please return unused tablets to your pharmacist for destruction or for use for your next course of chemotherapy.

**Monitoring adherence**

- Discuss the diary record with the patient on subsequent visits.
- Ask patients to return medication containers for 'pill' counting.
- Monitor for unexpected toxicities and no toxicities.

**Reasons for non-adherence**

- Side effects.
- Patients want a 'drug holiday'.
- Patients do not believe in the treatment.
- Patients think they know better - may take more or less than the prescribed dose.
- Regimen doesn’t fit in with lifestyle, rituals or culture.
- Deliberate overdose.
Deliberate non adherence

- Pay attention to the person, their perceptions, their understanding of their illness and their medicines
  - Don’t just tell, discuss
  - Question the patient about themselves and family life
  - Explain the consequences of non compliance
  - Re-question patient understanding
  - Look for signs of potential non compliance

Oral Chemotherapy: Adherence Strategies

- Prescriptions
  - reviewed by clinical pharmacist
  - Medication given by clinical pharmacist to patient
    - Reduce potential for patients not collecting medication due to access barrier
  - Medications supplied in dose administration aids if needed
  - Dispensed sufficient quantities for single cycle only

Oral Chemotherapy: Adherence Strategies

- Patient education
  - Completed by clinical pharmacist
  - Chart format with 14 languages available
  - Written protocol specific information provided
- Medication reconciliation
  - Performed by clinical pharmacist for all inpatient and outpatient oncology patients

Oral Chemotherapy

- Patient sees oncologist in OPD
- Prescription written by oncologist
- Prescription given to patient
- Dispensed by community pharmacy
- Self-administered by patient/caregiver along with other meds

Adherence Strategies

- Patient consultation
- Prescription written by oncologist
- Prescription given to patient
- Clinical pharmacist
- Adherence review & medicate
- Dispensed by pharmacy
- Self-administered by patient/caregiver
- All patients education by clinical pharmacist
- Medication supply limited to time of review
- Dose administration aids