Expanding the Role of the Pharmacy Technician
Tech Check Tech

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North Dakota State University
Objectives

• Discuss the role of the pharmacy technician in tech-check-tech and continuous quality improvement.
• Evaluate filled prescriptions in community, LTC, and institutional settings.
• Discuss the application of policies and procedures for tech-check-tech in various pharmacy practice settings.
Question 1

You are preparing daptomycin 330 mg in NS 100 mL. If you reconstitute a 500 mg vial with 10 mL of sodium chloride, how many mL will you add to the bag?

A. 6.6 mL
B. 0.7 mL
C. 3.3 mL
D. 10 mL
You are preparing daptomycin 330mg in NS 100mL. If you reconstitute a 500mg vial with 10mL of sodium chloride, how many mL will you add to the bag?

A. 6.6mL
B. 0.7mL
C. 3.3mL
D. 10mL

\[
\frac{500mg}{10mL} = 50mg/mL
\]

\[
330mg \times \frac{1mL}{50mg} = 6.6mL
\]

A. 6.6mL
Tech Check Tech

- Instrumental in the growth of pharmacy technicians working to the top of their practice setting
- Further build the role of the pharmacy technician and exemplify best practices for engaging our valued pharmacy technicians
Tech Check Tech

• Tech-check-tech(tct) offers a great opportunity to provide a productive workflow in the pharmacy

• The North Dakota Board of Pharmacy administrative code 61-02-07.1-12 supports tct process and allows pharmacy technicians to conduct the technical work within workflow and redistributes pharmacist time to provide clinical care for the patients

• Advantageous in providing safe and patient-center quality care
North Dakota Board of Pharmacy TCT Rule

• 61-02-07.1-12. Technicians checking technicians. Activities allowed by law to be performed within a licensed pharmacy by a registered pharmacy technician in the preparation of a prescription or order for dispensing or administration may be performed by one registered pharmacy technician and verified by another registered pharmacy technician working in the same licensed pharmacy, under the following conditions:

• 1. The licensed pharmacy where the work is being conducted has policies and procedures specifically describing the scope of the activities to be verified through this practice, included in the policy and procedure manual required under section 61-02-01-18.
  • a. Training for the specific activity is reflected in a written policy.
  • b. A record of the individuals trained is maintained in the pharmacy for two years.

• 2. The pharmacy has a continuous quality improvement system in place to periodically verify the accuracy of the final product, including:
  • a. Recording any quality related events leading up to the final dispensing or administration of the drug prepared.
  • b. Recording any errors which actually reach the patient as a result of these activities.
  • c. Specific limits of acceptable quality related event levels before reassessment is required.
  • d. Consideration must be made for high-risk medications on the institute for safe medication practices (ISMP) list and specific monitoring, review, and quality assurance parameters must be instituted if any of these products are included in the pharmacy’s technicians-checking-technicians program.

• 3. Any error must trigger pharmacist review of the process. This review and subsequent recommendations must be documented.

• 4. The pharmacy has a system in place to review all quality related events and errors recorded and takes corrective action based on the information to reduce quality related events and eliminate errors reaching the patient.

• 5. As always, the pharmacist-in-charge and the permitholder are jointly responsible for the final product dispensed or released for administration from the pharmacy.
Question 2

You are bulk packaging piperacillin/tazobactam 3.375g in NS 50mL bags. How many IV bags will you make from a 40.5g vial.

A. 9
B. 10
C. 11
D. 12
You are bulk packaging piperacillin/tazobactam 3.375g in NS 50mL bags. How many IV bags will you make from a 40.5g vial.

A. 9
B. 10
C. 11
D. 12

• $40.5\text{ g vial} / 3.375\text{ mg desired dose} = 12\text{ bags of 3.375g dose}$

D. 12
Outcomes

• Tech-check-tech implementation in the community pharmacy setting is profitable and has the potential to be preferred over traditional community pharmacy workflow models

• In the hospital setting, TCT was able to significantly reduce times to fill automated medication supply systems billable services beyond prescription fills


Outcomes

- Trained and validated technicians were at least as accurate as pharmacists at the product check step as validated by statistical analysis. Therefore, patient safety is maintained in a community TCT program, and it may be a valid tool to increase pharmacist time available for patient care activities

- TCT was just as or more accurate than pharmacists checking techs

- TCT was as accurate as pharmacists checking techs, however the additional time freed up for pharmacists did not result in an increase in billable services, but a large increase in overall services


Andreski M, Myers M, Gainer K, Pudlo A. The Iowa new practice model: Advancing technician roles to increase pharmacists time to provide patient care services. *Journal of the American Pharmacists Association*. 2018;58(3).
Outcomes

• Overall, both pharmacists and technicians felt TCT was safe and effective. However, some populations were more certain of this than others- hospital pharmacists were more likely to think TCT was low or no risk than community pharmacists, and both community and hospital technicians were more likely to think TCT was no or low risk than pharmacists across the board.

Community Pharmacy Practice

- What is currently being done?
Institutional Pharmacy Practice

• What is currently being done?
Long Term Care Pharmacy Practice

• What is currently being done?
Question 3

A patient comes into the pharmacy with a prescription that reads: Place 1 drop of latanoprost 0.005% eye drops into each eye at bedtime daily. What is the day supply for a 2.5mL bottle? (note: 1mL = 20 drops)

A. 10  
B. 25  
C. 20  
D. 50
Question 3 answer

A patient comes into the pharmacy with a prescription that reads: Place 1 drop of latanoprost 0.005% eye drops into each eye at bedtime daily. What is the day supply for a 2.5mL bottle? (note: 1mL = 20 drops)

A. 10
B. 25
C. 20
D. 50

\[
\frac{2.5\text{ mL}}{1\text{ bottle}} \times \frac{20 \text{ drops}}{1\text{ mL}} = 50 \text{ drops/bottle}
\]

\[
50 \text{ drops} / 2 \text{ drops daily} = 25 \text{ day supply}
\]

B. 25
Role of TCT in Practice

• Unit dosing verification
• Filled Rx verification
  • New OR refill
Tips for Success

- Advocate for the role of the pharmacy technician
- Leave all clinical judgement to RPh
  - No role in DUR

- Contact Board of Pharmacy with any questions!
  - Discuss boundaries of specific site
  - Liaison support
Tech Check Tech Pilot Project

• Create policies and procedures for various practice settings that will be supported by the North Dakota Board of Pharmacy.
  • Institutional pharmacy
  • Community Pharmacy
  • LTC pharmacy

• Design of a toolkit to practice at the top of his or her capacity
Current Pilot Sites

- Altru Hospital-Grand Forks
- Wahl's Pharmacy-Grand forks
- Central Pharmacy-New Rockford
- Irsfeld Pharmacy-Dickenson
- Churchill pharmacy-Bismarck
- Sanford Hospital Pharmacy-Bismarck

- All are welcome!
  - Have your PIC contact Dhalvorsonrphtech@gmail.com to become a pilot site pharmacy
# Quality Related Event Form

**Today's Date:**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>WHERE, WHAT AND WHEN</th>
<th>REACHED THE PATIENT?</th>
<th>DRUGS INVOLVED</th>
<th>PHARMACY NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHERE was the GRE DISCOVERED?</th>
<th>WHERE did the GRE Occur?</th>
<th>Severity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Receipt of Rx</td>
<td>A. Receipt of Rx</td>
<td>Level 0 = Internal, reached patient but didn't leave pharmacy</td>
</tr>
<tr>
<td>B. Data entry</td>
<td>B. Data entry</td>
<td>Level 4 = Moderate harm, bodily or psychological</td>
</tr>
<tr>
<td>C. Entry check</td>
<td>C. Assembly of Packaging</td>
<td>Level 1 = Reached patient, inconvenience</td>
</tr>
<tr>
<td>D. Assembly of Packaging</td>
<td>D. Bagging</td>
<td>Level 2 = Mild anxiety, emotional distress</td>
</tr>
<tr>
<td>E. Product Verification</td>
<td>E. Post-discharge delivery to patient</td>
<td>Level 3 = Mild harm, additional monitoring</td>
</tr>
<tr>
<td>F. Bagging</td>
<td>F. Intervention/provider Error</td>
<td>Level 5 = Severe harm, bodily or psychological</td>
</tr>
<tr>
<td>G. Pharmacy Reconciliation</td>
<td></td>
<td>Level 6 = Death</td>
</tr>
<tr>
<td>H. Mailing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WHAT TYPE of GRE OCCURRED?**

| 1. Calculation or decimal point error | 10. Technique or precision |
| 2. Verification of computer error   | 11. Wrong container        |
| 3. Discrepancy between order and prescription | 12. Wrong data |
| 4. Incorrect administration order | 13. Wrong packaging        |
| 5. Inappropriate administration order | 14. Wrong drug store   |
| 6. Inappropriate order for auxiliary drugs | 15. Wrong directions  |
| 7. Order mix-up                    | 16. Wrong dosage form     |
| 8. Safety stop issue               | 17. Wrong drug             |
| 9. Shipping/packaging error        | 18. Wrong generic formulation |

**Contributing Factors**

1. Environmental hazards (e.g., noise, distraction)
2. Human error (e.g., medication errors)
3. Product or equipment characteristics
4. Technology and information system defects
5. Work-around techiques

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This form is designed to capture information about quality-related events in a pharmacy setting, helping to identify and prevent future occurrences.
# Weekly TCT Audit

**Today's Date:** 

I certify that I have audited 20 filled Rxs and documented near misses or errors below: 

**Auditor's Name and credentials:** 

**Technician's name:** 

<table>
<thead>
<tr>
<th>CODE</th>
<th>Electronic DR</th>
<th>How or Why</th>
<th>WHERE, WHAT AND WHEN</th>
<th>REACHED THE PATIENT? (Yes – mark Severity Level)</th>
<th>DRUGS INVOLVED</th>
<th>PHARMACY NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Where was the ORE DISCOVERED?**

A. Receipt of Rx
B. Delivery
C. Entry check
D. Assembly of Filling
E. Product Verification
F. Filling

**Where did the ORE Occur?**

A. Receipt of Rx
B. Data entry
C. Assembly of Filling
D. Shipping
E. POS/Wellness/heels/medication/return
F. Intervention/Precompiler Error

**Severity Level**

- Level 0: No harm
- Level 1: Minimal harm (e.g., minor inconvenience)
- Level 2: Mild anxiety, emotional distress
- Level 3: Mild harm, additional monitoring
- Level 4: Moderate harm, bodily or psychological
- Level 5: Severe harm, bodily or psychological
- Level 6: Death

**WHAT TYPE of ORE OCCURRED?**

1. Calculation or dosage error
2. Classification error
3. Discovered prescribing error
4. Incorrect incident date
5. Left out important package numbers, patient numbers, patient demographics
6. Missing or inappropriate auxiliary labels
7. Other
8. Safety cap issues
9. Shipping/Shipping errors

**Contributing Factors**

- Environmental factors (e.g., lighting, noise, stress)
- Human error (e.g., calculation errors, mistakes)
- Medication profile (e.g., drug allergy, patient profile)
- Technology/Equipment/software defects
- Work environment

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Question 4

You are drawing up 1250mg doses of valproic acid 500mg/5mL liquid for a patient. How many mL will each dose contain?

A. 7.5
B. 12.5
C. 0.75
D. 1.25
You are drawing up 1250mg doses of valproic acid 500mg/5mL liquid for a patient. How many mL will each dose contain?

A. 7.5  
B. 12.5  
C. 0.75  
D. 1.25

• \( \frac{500\text{mg}}{5\text{mL}} = \frac{1250\text{mg}}{? \text{mL}} \)

• Cross multiply: \( \frac{500\text{mg}}{5\text{mL}} = \frac{1250\text{mg}}{x \text{mL}} \)

• \( 500x = 6250 \)

• Solve for \( x \): \( x = \frac{6250}{500} = 12.5 \text{mL} \)

B. 12.5
North Dakota Board of Pharmacy Practice Act
Common Causes of Medication Errors

- Ambiguous strength designation on packaging or labels
- Drug product nomenclature
- Illegible handwriting
- Improper transcription
- Inaccurate dosage calculation
- Inadequately trained personnel
- Inappropriate abbreviations
- Labeling errors
- Excessive workload
Common Causes of Medication Errors

- Ambiguous strength designation on packaging or labels
GEMFIBROZIL 600MG tablet now located on drug shelf behind PV1 because the NDC, packaging, and drug look just like GABAPENTIN 600MG tablet.

*DOUBLE CHECK CIPLA NDC*

GEMFIBROZIL 600 MG 69097-0821-12
GABAPENTIN 600MG 69097-0812-12
**Look-Alike/Sound-Alike (LASA) Medications**

<table>
<thead>
<tr>
<th>Drug name</th>
<th>Confused with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetazolamide</td>
<td>Acetohexamide</td>
</tr>
<tr>
<td>Bupropion</td>
<td>Buspirone</td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td>Chlorpropamide</td>
</tr>
<tr>
<td>Clomiphene</td>
<td>Clomipramine</td>
</tr>
<tr>
<td>Cycloserine</td>
<td>Cyclosporine</td>
</tr>
<tr>
<td>Daunorubicin</td>
<td>Doxorubicin</td>
</tr>
<tr>
<td>Dobutamine</td>
<td>Dopamine</td>
</tr>
</tbody>
</table>

ISMP and the FDA developed a list of generic medications approved with tall man letters. The complete list: [https://www.ismp.org/tools/tallmanletters.pdf](https://www.ismp.org/tools/tallmanletters.pdf)
<table>
<thead>
<tr>
<th>Drug Name With Tall Man Letters</th>
<th>Confused With</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetaZOLAMIDE</td>
<td>acetoHEXAMIDE</td>
</tr>
<tr>
<td>acetoHEXAMIDE</td>
<td>acetaZOLAMIDE</td>
</tr>
<tr>
<td>buPROPion</td>
<td>busPIRone</td>
</tr>
<tr>
<td>busPIRone</td>
<td>buPROPion</td>
</tr>
<tr>
<td>chlorproMACHINE</td>
<td>chlorproPAMIDE</td>
</tr>
<tr>
<td>chlorproPAMIDE</td>
<td>chlorproMACHINE</td>
</tr>
<tr>
<td>clomiPHENE</td>
<td>clomiPRAMINE</td>
</tr>
<tr>
<td>clomiPRAMINE</td>
<td>clomiPHENE</td>
</tr>
<tr>
<td>cycleSERINE</td>
<td>cycloSPORINE</td>
</tr>
<tr>
<td>cycloSPORINE</td>
<td>cycleSERINE</td>
</tr>
<tr>
<td>DAUNOrubicin</td>
<td>DOXOrubicin</td>
</tr>
<tr>
<td>dimenhyDRINATE</td>
<td>diphenhydrAMINE</td>
</tr>
<tr>
<td>diphenhydrAMINE</td>
<td>dimenhyDRINATE</td>
</tr>
<tr>
<td>DOBUTamine</td>
<td>DOPamine</td>
</tr>
<tr>
<td>DOPamine</td>
<td>DOBUTamine</td>
</tr>
<tr>
<td>DOXOrubicin</td>
<td>DAUNOrubicin</td>
</tr>
</tbody>
</table>
You receive a prescription for 15mg/kg of acetaminophen liquid for a 32kg child. How many tsps of acetaminophen 160mg/5mL will you dispense?

A. 0.3
B. 1
C. 3
D. 5
You receive a prescription for 15mg/kg of acetaminophen liquid for a 32kg child. How many tsps of acetaminophen 160mg/5mL will you dispense?

A. 0.3
B. 1
C. 3
D. 5

\[
\frac{15\text{mg}}{\text{kg}} \times 32\text{kg} = 480\text{mg}
\]

\[
\frac{160\text{mg}}{5\text{mL}} = \frac{480\text{mg}}{x \text{mL}}
\]

Cross multiply: \[
\frac{160\text{mg}}{5\text{mL}} = \frac{480\text{mg}}{x \text{mL}}
\]

\[
160x = 2,400
\]

Solve for \(x\): \(x = 15\text{mL}\)

\[
15\text{mL} \times \frac{1\text{tsp}}{5\text{mL}} = 3\text{ tsp}
\]

C. 3
Continuous Quality Improvement

• “Each pharmacy permittee shall establish continuous quality improvement program for the purpose of detecting, documenting, assessing, and preventing incidents, near misses, and unsafe conditions.”
  • North Dakota Pharmacy Statute 61-02-9-01
  • Effective April 2, 2016
Establish a Process – Outpatient Rx

Checking Prescriptions:
1. Review the prescription (written or electronic)
2. Compare the prescription label to the prescription
3. Compare the dispensed medication to the prescription
4. Check the NDC number of the medication
5. Check the cap vial.
Name: Ben Wolters
Date: 05/30/14
Address: 884 7th St W. West Fargo, ND 58078

R  Glipizide 10 mg
Jrlore 1 tablet by mouth once daily
N 30

Refill: 0

UNIVERSITY CLINIC
123 South Hall, NDSU • Fargo, ND 58105
(701) 231-8000

GLIPIZIDE TABLETS, USP 10 mg
100 TABLETS

CONCEPT PHARMACY, INC.
South Dakota University • College of Pharmacy
Fargo, ND 58108 • 701-231-8000

MEDICATION INSTRUCTIONS
Take 1 tablet by mouth once daily

DR. YOUNG, K.A., MD
PRESCRIBED BY MOUTH

GLIPIZIDE TABLET

#60 EA
4 NO refills
Establish a Process – Inpatient IV Order

Checking IV preparations will have a similar process:
1. Review the medication order
2. Compare the IV label to the medication order
3. Compare the dispensed medication to the prescription
4. Check the expiration, storage requirements
University Hospital Pharmacy

Date: 2/16/12  Room: 147
Name: Tom Bryar
Medication: Biltiazem 125 mg
Dose: 125 mg
Date & time medication added: 2/16/12 1200
IV solution & volume: 0.9% NS 100 ml
Diluent solution & volume: N/A
IV total volume: 125 ml
Infusion time: 30 minutes
Route: IV
Frequency: every 24 hours
Date & time of expiration:
Room temperature: 2/16/12 1200
Refrigerated: 2/16/12 1200
Initialed: __________
Auxiliary labels:
Common Errors

- Prescriber’s signature is missing
- Date the prescription was written is missing
- Prescription is expired
  - Prescriptions for non-controlled medications are valid for 1 year from the date written
  - Prescriptions for controlled medications are valid for 6 months from the date written
- Strength of medication or directions for use are missing or inappropriate
Common Errors

- Incorrect quantity of medication prescribed
- Patient’s address is missing from the written or electronic prescription
- Prescription for a controlled medication is missing the prescriber’s DEA number
- Prescription for a controlled medication authorizes as needed (PRN) refills
- Prescription for a CII authorizes refills
- Medication prescribed is spelled incorrectly
Common Errors

- Information on the prescription label does not match information on the written or electronic prescription
  - Incorrect number of refills
  - Incorrect prescriber
  - Incorrect patient name
  - Incorrect quantity of medication
  - Incorrect medication or strength of medication
Common Errors

- Directions for use do not match those on the written prescription
- Medication route of administration is not required by law on a written or electronic prescription, but if it is included on the prescription, it must also be documented on the prescription label
- Date dispensed or the prescription expiration date on the prescription label does not match the date written on the prescription
Common Errors

- The medication dispensed does not match what was prescribed on the written prescription
  - Incorrect strength of medication
  - Incorrect dose form - ER, SR, IR
  - Incorrect medication
  - Incorrect quantity of medication
Common Errors

- Incorrect cap is used on the vial – child safe versus easy open
  - dispensed with a non-safety cap
- It is not required by law that topical preparations are dispensed with a child safety cap
You are compounding and unit dosing # 10 vitamin K 0.5mg/2.5mL syringes. How many mL of vitamin K 0.5mg/1mL solution will you need and how many mL of ora-sweet will you need to add to the vitamin K to get the correct concentration?

A. 25 mL of vitamin K, 0 mL of ora-sweet
B. 10 mL of vitamin K, 25 mL of ora-sweet
C. 10 mL of vitamin K, 15 mL of ora-sweet
D. 25 mL of vitamin K, 15 mL of ora-sweet
Question 6 answer

You are compounding and unit dosing # 10 vitamin K 0.5mg/2.5mL syringes. How many mL of vitamin K 0.5mg/1mL solution will you need and how many mL of ora-sweet will you need to add to the vitamin K to get the correct concentration?

A. 25mL of vitamin K, 0mL of ora-sweet
B. 10mL of vitamin K, 25mL of ora-sweet
C. 10mL of vitamin K, 15mL of ora-sweet
D. 25mL of vitamin K, 15mL of ora-sweet

• How many mL of vitamin K:
  • 0.5mg/dose x 10 doses = 50mg
  • 50mg x \( \frac{\text{1mL}}{0.5\text{mg}} \) = 10mL of vitamin K

• How many mL of ora-sweet:
  • 2.5mL/dose x 10 doses = 25mL of total solution
  • 25mL of total solution – 10mL of vitamin K = 15mL of ora-sweet

C. 10mL of vitamin K, 15mL of ora-sweet