

Towards Fidelity in Pharmacy Education with the Patient Care Process for Delivering Comprehensive Medication Management

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Background

- Sorensen and colleagues issued a call to teach the pharmacist patient care process with “greater consistency, specificity, and intentionality” using the comprehensive medication management (CMM) framework¹
- Livet and colleagues outline a design for implementing and practicing CMM including three core elements: context, content, and competence²
- Fidelity to these essential functions in clinical practice are crucial to give patients and other healthcare personnel clear expectations from the pharmacist^{1,2,3}
- To promote fidelity to CMM in education, pharmacy curriculum should promote mastery of CMM essential functions in the classroom, lab, and experiential rotations
 - Requires mapping of learning activities, offering formative and summative assessments of learning and ensuring student competency

Purpose

To evaluate fidelity to the CMM framework using CMM essential functions analyzing the domains of **content** and **competency** in a skills course

Methods

- Pharmacist’s Patient Care Process II (PPCP II) skills course was compared to CMM framework
- CMM curriculum content was mapped to framework
- Curriculum was evaluated and percentage of curricular omissions and deficiencies were calculated
- Student competency was analyzed using assessment scores in a mastery-learning model

Results

Table 1. Omissions and Deficiencies in Curriculum

Essential Functions	Omitted	Deficient
1b. Review of the patient’s medication experience		Cultural considerations and expectations (inconsistent content)
1b. Determine the patient’s personal goals of therapy.	Not asked during interview (in-class or on IPPE)	Patient’s personal goals (from 1b) not included
2a. Assess and prioritize the patient’s active medical conditions considering clinical and patient goals of therapy.		Initially mode not specified on rubric
3g. Determine the appropriate mode for follow-up.		
4a. Discuss the care plan with the patient.	Initial interview occurs with patient but no follow up No patient follow up occurs	
4b. Ensure patient understanding and agreement with the plan and goals of therapy.		
4d. Provide the patient with an updated, accurate medication list.		The medication list is included in the SOAP note but it is not communicated with the patient The follow up is stated in the SOAP note, but the student does not actually arrange a follow-up
4h. Arrange patient follow-up.		The follow up is stated in the SOAP note, but the student does not actually communicate this to the patient
4i. Communicate instructions for follow-up with the patient.		
5a. Provide targeted follow-up.	No patient follow up occurs	
5b. Repeat a comprehensive medication management visit.	No repeat CMM occurs with the same patient	
5c. If the patient is no longer a candidate for CMM, ensure that a plan is in place for continuity of care with other care team members.	After initial interview with the patient, no follow-up occurs	

Table 2. Formative and Summative Assessment of Learning, Scores and Competency

Academic Year	Formative Assessment of Learning			Summative Assessment of Learning			p-value
	Medical record note & PL assignment	Community based (IPPE patient) SOAP & PL project	OSCE Presenting a Patient	OSCE Patient SOAP note, & PL Before Remediation	OSCE Patient Interview, SOAP note, & PL After Remediation	Before Remediation	
2018-19							0.004*
% mean score (# of students in course)	85.0% (81)	93.1% (81)	96.6% (80) ^a	92.2% (80) ^a	94.7% (80) ^a		
Min score	50%	10%	91%	58.3%	85%		
Max score	95%	100%	100%	100%	100%		
# students remediating	8	7	2	10	1 ^b		
% and ratio achieving competency							
Before remediation	90.1% (73/81)	91.4% (74/81)	97.5% (78/80)	87.5% (70/80)			
After remediation	100% (8/8)		50% (1/2)		90% (9/10)		<0.01 ^b
2019-20							
% mean score (# of students in course)	86.7% (77)	88.1% (77)	94.2% (78) ^a	86.4% (78) ^a	91.6% (78) ^a		<0.01 ^b
Min score	63%	54.5%	90.3% ^d	28.6%	48.6%		
Max score	97%	100%	100%	97.1%	97.1%		
# students remediating	9	18	1	24	1 ^b		
% and ratio achieving competency							
Before remediation	88.3% (68/77)	76.0% (59/77)	98.7% (77/78)	69.2% (54/78)			
After remediation	100% (9/9)	100% (18/18)	0% (0/1)		95.8% (23/24)		0.08 ^b
Overall % and ratio of student competency							
2018-19	100% (81/81)	100% (81/81)	98.8% (79/80)	87.2% (70/80)	98.8% (79/80)		
2019-20	100% (77/77)	100% (77/77)	98.7% (77/78)	69.2% (54/78)	98.7% (77/78)		
2018-20 Combined	100% (158/158)	100% (158/158)	98.7% (156/158)	78.2% (124/158)	98.7% (156/158)		<0.01 ^b

^aStudent took 100% of 1-year and 100% of 2-year
^b% mean scores comparisons calculated using two-tailed paired t-test, comparisons of students achieving competency before and after remediation
^cusing Chi-square, all p-values < 0.05 are significant
^dOne student each year did not pass course
^eOne student received a score of 0, this number was excluded here to better show the score spread

Discussion

- Mapping CMM curriculum with CMM essential functions can uncover gaps in teaching, learning and assessment
- Omissions and deficiencies underscore opportunities for research investigations and highlight opportunities for growth and course improvement
- Competency with the CMM framework should be ensured in some manner to support fidelity, and remediation appears to be highly effective
- Barriers include lack of faculty expertise in CMM and its framework and time constraints in the curriculum
- This study only looked at one longitudinal patient care course; some essential functions may be presented elsewhere in the curriculum

Conclusion

- Over 70% of the CMM framework (context and competence domains) can be covered and mastered by students in roughly 40 curricular hours
- Opportunities for course improvement were identified via omissions and deficiencies in CMM framework
- Remediation resulted in a significant improvement in number of students achieving competence in CMM

References

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Disclosure

The authors have nothing to disclose.

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^aStudent took leave of absence for 1-year and then re-joined in the 2019-20 year

^b% mean scores comparisons calculated using two-tailed paired t-test; comparison of students achieving competency before and after remediation using Chi-square; all p-values <0.05 are significant

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