The High Risk Drug Knowledge Assessment exam to evaluate student readiness for **Advanced Pharmacy Practice Experience at Texas Tech University Health Sciences Center – School of Pharmacy**



TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER

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ABSTRACT

Background: The primary objectives of ACPE Standard 2016 are for pharmacy students to be ready for Advanced Pharmacy Practice Experience (APPE), practice, and patient care team contribution.

Objective: To develop a reliable assessment that evaluates pharmacy students' basic drug knowledge and readiness for progression to APPE.

Methods: A minimal competency High Risk Drug Knowledge Assessment (HRDKA) exam was developed to evaluate student basic knowledge of top 200 drugs (inpatient and out-patient) utilized in the APPE. The exam assessed student knowledge in seven key pre-defined drug knowledge areas. The HRDKA exam was administered annually in the month of January to 3rd year pharmacy students. Score of 75% or higher was required for student to progress in APPE of the P4 curriculum. Test of reliabilities including Kuder-Richardson 20 (KR-20) and Cronbach coefficient alpha were measured.

Results: This study evaluated the findings of HRDKA exams administered in 2014 and 2015. All together 312 student exam results were evaluated. Year 2014 exam consisted of 113 and year 2015 exam, 135 question items. The average student scores were 90.2% (SD 5.8%) and 89.9% (SD 6.2%) for year 2014 and 2015, respectively. All together 3 students failed the HRDKA exam. KR-20 and Cronbach coefficient alpha, both were 0.75 for year 2014, and 0.84 for year 2015.

Conclusions: The HRDKA exam provides a potentially reliable tool to evaluate student drug knowledge and readiness for APPE. It provides a reliable opportunity to identify students needing remediation prior to progression to the 4th year of pharmacy curriculum.

BACKGROUND

The primary objectives of ACPE Standard 2016 are for pharmacy students to be ready for Advanced Pharmacy Practice Experience (APPE), practice, and patient care team contribution. A reliable annual performance evaluation of students nearing completion of their didactic curriculum is lacking. There is drive within various national pharmacy programs to develop and implement competency assessment program to identify students at risk of underperforming during APPE. In addition, many pharmacy schools desire to develop a predictive assessment for passing a NAPLEX exam. High Risk Drug Knowledge Assessment (HRDKA) is a minimal competency exam developed at the Texas Tech University Health Sciences Center – School of Pharmacy. This is a high stake exam, which requires students to pass before progressing to APPE.

METHODS

A minimal competency HRDKA exam was developed to evaluate student basic knowledge of top 200 drugs (inpatient and out-patient) utilized in the APPE. The exam assessed student knowledge in seven key pre-defined drug knowledge areas. The seven key areas are:

- (2) Mechanism of Action [MA]
- (4) Dosing [DS]
- (5) Indication [IC]
- (7) Contraindications [CI]

The HRDKA exam was administered annually in the month of January to 3rd year pharmacy students. The exam was conducted same time of the day at all of four Texas Tech campuses.

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(1) Drug Name (Brand/Generic) [BG] (3) Drug Kinetics or interactions [KI]

(6) Adverse effects/monitoring parameters [AM]

METHODS

Score of 75% or higher was required for student to progress in APPE of the P4 curriculum. Significant measures were implemented in 2015 with intent to improve the validity and reliability of the HRDKA exam. Therefore, 2014 and 2015 exam data were compared for the purpose of this study. Descriptive analyses were conducted for baseline exam results as well as for seven pre-defined drug knowledge areas. Test of reliabilities including Kuder-Richardson 20 (KR-20) and Cronbach coefficient alpha were measured.

RESULTS

2014 & 2015 Drug list

	2014 HRDKA Drug I	List	_		_	2015 HRDKA 1
			1	ABATACEPT		DAPTOMYCIN
adalapene	insulin detemir	simvastatin	2	ABIRATERONE ACETAMINOPHEN		DARBEPOETIN DARUNAVIR
albuterol	insulin glargine	spironolactone	4	ADALIMUMAB		DENOSUMAB
edronate	ipratropium	sulfamethoxazole / trimethoprim	5	ALBUMIN		DEXAMETHASONE
lopurinol	IV potassium	tacrolimus	6	ALBUTEROL	56	DEXLANSOPRAZOLE
lodipine	lansoprazole	tadalafil	7	ALENDRONATE SODIUM		DEXTROAMPHETAMINE/
moxicillin	latanoprost	tamsulosin	8	ALLOPURINOL		DIAZEPAM
	levalbuterol	topiramate	9	ALPRAZOLAM		DIGOXIN
ripiprazole			10	AMIODARONE	60	DIPHENHYDRAMINE
pirin	levofloxacin	tramadol	11			DOCUSATE
tenolol	lisinopril	trazodone	12			DONEPEZIL DOXYCYCLINE HYCLATE
orvastatin	insulin lispro	valsartan	13	AMOXICILLIN AMOXICILLIN TRIHYDRATE/		DOXYCYCLINE HYCLATE DULOXETINE
thromycin	levothyroxine	vancomyicin		CLAVULANATE POTASSIUM	04	DOLOXETINE
isacodyl	loperamide	vardenafil	15	AMPHETAMINE SALTS	65	EFAVIRENZ/EMTRICITABINE/TENO
rvedilol	lorazepam	venlafaxine	16			EMTRICITABINE/TENOFOVIR
ephalexin	losartan	warfarin	17			ENALAPRIL
etirizine	memantine	zolpidem	18 19			ENOXAPARIN EPINEPHRINE
italopram	mesalamine		20			EPOETIN ALPHA
arithromycin	metformin		21			ERTAPENEM
ndamycin	methotrexate		22	ATORVASTATIN	72	ESCITALOPRAM
			23			ESZOPICLONE
onazepam	metoclopramide		24	BACITRACIN BEVACIZUMAB		ETANERCEPT ETHINYL ESTRADIOL/ETONOGESTR
otrimazole	metoprolol		25			ETHINYL ESTRADIOL/ETONOGESTR
njugated estrogen	montekulast		20	BORTEZOWID		NORETHINDRONE PLUS IRON
xtroamphetamine	naproxen		27			EZETIMIBE
oxin	insulin NPH		28	BUPRENORPHINE/NALOXONE		EZETIMIBE/SIMVASTATIN
onepezil	olmesartan		29	BUPROPION HCL CAPECITABINE		FAMOTIDINE FENOFIBRATE
oxycycline	oseltamivir		30	CARVEDILOL		FENTANYL
uloxetine	pantoprazole					
omeprazole	phenytoin		32			FERROUS SULFATE
stradiol	pimecrolimus		33	CEFEPIME		FILGRASTIM FINGOLIMOD
stradiol/drosperidone	pioglitazone		35	CEFUROXIME		FLUCONAZOLE
zetimibe	piperacillin/tazobactam		36	CELECOXIB		FLUOXETINE HCL
entanvl	prednisone		37	CEPHALEXIN		FLUTICASONE
			38			FLUTICASONE/SALMETEROL
errous sulfate	pregabalin		39 40			FUROSEMIDE GABAPENTIN
ish oil	quetiapine		40			GENTAMICIN
luticasone	ramipril		42			GLATIRAMER
urosemide	ranitidine		43	CLINDAMYCIN		GUAIFENESIN/CODEINE PHOSPHA
gabapentin	rifampin		44	CLONAZEPAM		HEPARIN
glipizide	rofecoxib		45	CLONIDINE CLOPIDOGREL		HYDROCHLOROTHIAZIDE HYDROCODONE/ACETAMINOPHEN
eparin	rosuvastatin		46	CLOPIDOGREL CONJUGATED ESTROGENS		HYDROCODONE/ACETAMINOPHEP HYDROMORPHONE
nydrochlorothiazide	salmeterol		48	CYCLOBENZAPRINE		IBUPROFEN
buprofen	sertraline		49	CYCLOSPORINE (OPHTHALMIC)		IMATINIB
			50	DABIGATRAN ETEXILATE		IMIPENEM/CILASTATIN

Table 1: HRDKA Baseline

Year Number of Students	2014 N=151		
Campus Coordination	4		
Exam type	Paper/scantron		
Mean score	90.20%		
Standard Deviation	5.80%		
Median score	91.50%		
Minimum score	71.30%		
Maximum score	100%		
Number of students <75%	1		





RESULTS





Table 2: Reliability Coefficients

Year	Number of Items	Number of Students	Cronbach Alpha	Kuder-Richardson 20
2015	135	161	0.84	0.84
2014	113	151	0.75	0.75
2013	93	152	0.77	0.77
2012	181	122	N/A	N/A
2011	166	131	0.82	0.82

CONCLUSIONS

The HRDKA exam provides a potentially reliable tool to evaluate student drug knowledge and readiness for APPE. It provides a reliable opportunity to identify students needing remediation prior to progression to the 4th year of pharmacy curriculum.



