# 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

#### School of Pharmacy

### **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 3<sup>rd</sup> 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 3<sup>rd</sup> year pharmacy students. The exam was conducted same time of the day at all of four Texas Tech campuses.

Sachin R. Shah, Cole Kildow, Iverlyn Peng Texas Tech University Health Sciences Center – School of Pharmacy, Dallas, Texas.

(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

	8		1	ABATACEPT	51	DAPTOMYCIN
dalanene	insulin detemis	eimuostatio	2	ABIRATERONE	52	DARBEPOETIN
alapene	insuli determi	sinivastatin	з	ACETAMINOPHEN	53	DARUNAVIR
iteroi	insulin glargine	spironolactone	4	ADALIMUMAB	54	DENOSUMAB
onate	ipratropium	sulfamethoxazole / trimethoprim	5	ALBUMIN	55	DEXAMETHASONE
purinol	IV potassium	tacrolimus	0 7	ALBUTEROL ALENDRONATE SODIUM	50	DEXLANSOPRAZOLE
lodipine	lansoprazole	tadalafil	1	ALENDRONATE SODIOM	57	AMPHETAMINE
oxicillin	latanoprost	tamsulosin	8	ALLOPURINOL	58	DIAZEPAM
zole	levalbuterol	topiramate	9	ALPRAZOLAM	59	DIGOXIN
n	levofloxacin	tramadol	10	AMIODARONE	60	DIPHENHYDRAMINE
nolol	lisinopril	trazodone	12	AMITRIPTYLINE HCL	62	DOLUSATE
	isinoprii	u azodone	13	AMOXICILLIN	63	DONEFEZIL DOXYCYCLINE HYCLATE
vastaun	insulin iispro	valsartan	14	AMOXICILLIN TRIHYDRATE/	64	DULOXETINE
romycin	levothyroxine	vancomyicin		CLAVULANATE POTASSIUM		
codyl	loperamide	vardenafil	15	AMPHETAMINE SALTS	65	EFAVIRENZ/EMTRICITABINE/TE
edilol	lorazepam	venlafaxine	16	AMPICILLIN	66	EMTRICITABINE/TENOFOVIR
halexin	losartan	warfarin	17	AMPICILLIN/SULBACTAM	67	ENALAPRIL
rizine	memantine	zolpidem	18	ARIPIPRAZOLE	60	EDINEDURINE
lopram	mesalamine		20	ATAZANAVIR	70	EPOETIN ALPHA
thromycin	metformin		21	ATENOLOL	71	ERTAPENEM
- montychi	methotroute		22	ATORVASTATIN	72	ESCITALOPRAM
damycin	methotrexate		23	AZITHROMYCIN	73	ESZOPICLONE
zepam	metoclopramide		24	BACITRACIN	74	ETANERCEPT
mazole	metoprolol		25	BEVACIZUMAB	75	ETHINYL ESTRADIOL/ETONOGE
ugated estrogen	montekulast		20	BORTEZOWIB	76	NORETHINDRONE PLUS IRON
roamphetamine	naproxen		27	BUDESONIDE/FORMOTEROL	77	EZETIMIBE
xin	insulin NPH		28	BUPRENORPHINE/NALOXONE	78	EZETIMIBE/SIMVASTATIN
nepezil	olmesartan		29	BUPROPION HCL	79	FAMOTIDINE
www.line	oseltamivir		30	CAPECITABINE	80	FENOFIBRATE
lovatina	pantoprazolo		31	CARVEDILOL	81	FENTANYL
over the	partoprazore		32	CEFAZOLIN	82	FERROUS SULFATE
meprazole	phenytoin		33	CEFEPIME	83	FILGRASTIM
radiol	pimecrolimus		34	CEFTRIAXONE	84	FINGOLIMOD
radiol/drosperidone	pioglitazone		35	CEFUROXIME	85	FLUCONAZOLE
etimibe	piperacillin/tazobactam		36	CELECOXIB	86	FLUOXETINE HCL
tanyl	prednisone		3/	CETHALEAIN	82	FUITICASONE/SALMETEROL
ous sulfate	pregabalin		39	CHOLECALCIFEROL	89	FUROSEMIDE
oil	quetiapine		40	CINACALCET	90	GABAPENTIN
icasone	ramioril		41	CIPROFLOXACIN	91	GENTAMICIN
reasone	ranipin		42	CITALOPRAM	92	GLATIRAMER
osemide	raniudine		43	CLINDAMYCIN	93	GUAIFENESIN/CODEINE PHOSP
papentin	ritampin		44	CLONIDINE	94	HYDROCHLOROTHIAZIDE
ipizide	rofecoxib		46	CLOPIDOGREL	96	HYDROCODONE/ACETAMINOP
arin	rosuvastatin		47	CONJUGATED ESTROGENS	97	HYDROMORPHONE
rochlorothiazide	salmeterol		48	CYCLOBENZAPRINE	98	IBUPROFEN
profen	sertraline		49	CYCLOSPORINE (OPHTHALMIC)	99	IMATINIB
aiguimod	sildonafil		50	DABIGATRAN ETEXILATE	100	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 4<sup>th</sup> year of pharmacy curriculum.



