



Addressing forecasted oncologist shortage:
A Cancer Education Program for Pharmacy Students (CEPPS)

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SUNY School of Pharmacy & Pharmaceutical Sciences

Founded in 1886, second oldest school of the University at Buffalo, United States of America



SUNY School of Pharmacy & Pharmaceutical Sciences

Mission & Vision

- To provide *innovative education*, research, practice and service
- To be *responsive to society's health care needs* and improve health, wellness, and health care outcomes
- To *advance pharmacy practice* in new and emerging practice and care models
- To provide a collaborative and productive academic environment that *promotes effective mentoring, professional growth and development*, and life-long learning

SUNY School of Pharmacy & Pharmaceutical Sciences

Doctor of Pharmacy Program (PharmD) – total ~125 students/yr

- **Accelerated Program** (2-yr undergraduate pre-pharmacy + 4-yr PharmD)
- **Traditional Program** (Bachelor + 4yr PharmD)
- **Joint Degree Program**
 - *PharmD /MSc, PharmD/MBA (Bachelor + 6yr)*
 - **Job target:** pharmaceutical industry or insurance carriers
 - *PharmD/PhD, PharmD/JD (Bachelor + 8yr)*
 - **Job target after 2-4yr fellowship:** Academia, Government or Regulatory Affairs



Current facts in global health care

Forecast: 1 in 2 individuals will be diagnosed with cancer by 2030



- Growing aging population approaches retirement
- Increasing number of cancer survivors
- Obesity and diabetes pandemics



- 80% increase in cancer population by 2020
- 14% increase in the number of medical oncologists
 - Unprecedented shortage
 - Projected timeframe: 10-20 years

Current oncology care practice

The pharmacist and the physician



- **Medical oncologist**
 - Diagnosis, restaging and acute chemo treatment
 - Chemotherapy order prescribing
 - Clinical trials and routine cancer treatment follow-up
- **Medical oncologist together with oncology pharmacist**
 - Chemotherapy order check-up, lab monitoring and dose adjustments based on lab changes
 - Management of nausea/vomiting, anemia, parenteral nutrition, electrolyte and vitamin supplementation
- **Oncology pharmacist**
 - Evaluation of chemo- interaction with new drugs
 - Compliance evaluation and counseling
 - Side-effect monitoring & referral for evaluation of potentially new organ function changes
 - Chronic chemotherapy surveillance and cost evaluation

Oncology care shifts outpatient to decrease cost

Hospital care
(admitted
patient)



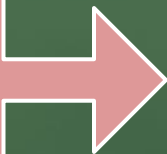
➤ Medical oncologist

- Diagnosis, restaging and acute chemo treatment
- Chemotherapy order prescribing and clinical trials

➤ Oncology pharmacist under supervision of medical oncologist

- Chemotherapy order check-up, lab monitoring and dose adjustments
- Management of nausea/vomiting, anemia, parenteral nutrition, electrolyte and vitamin supplementation

Community
care
(ambulatory)



➤ Internal medicine physician

- Routine cancer drug monitoring and refills

➤ Community pharmacist

- Evaluate chemo-drugs interaction with new drugs
- Compliance evaluation and counseling
- Side-effect monitoring & referral for evaluation of potentially new organ function changes
- Chronic chemotherapy surveillance and cost evaluation

Teaching partnership

- **SUNY Buffalo Center of Excellence**
School of Pharmacy and Pharmaceutical Sciences

- **Roswell Park Cancer Institute**
World's 1st cancer hospital

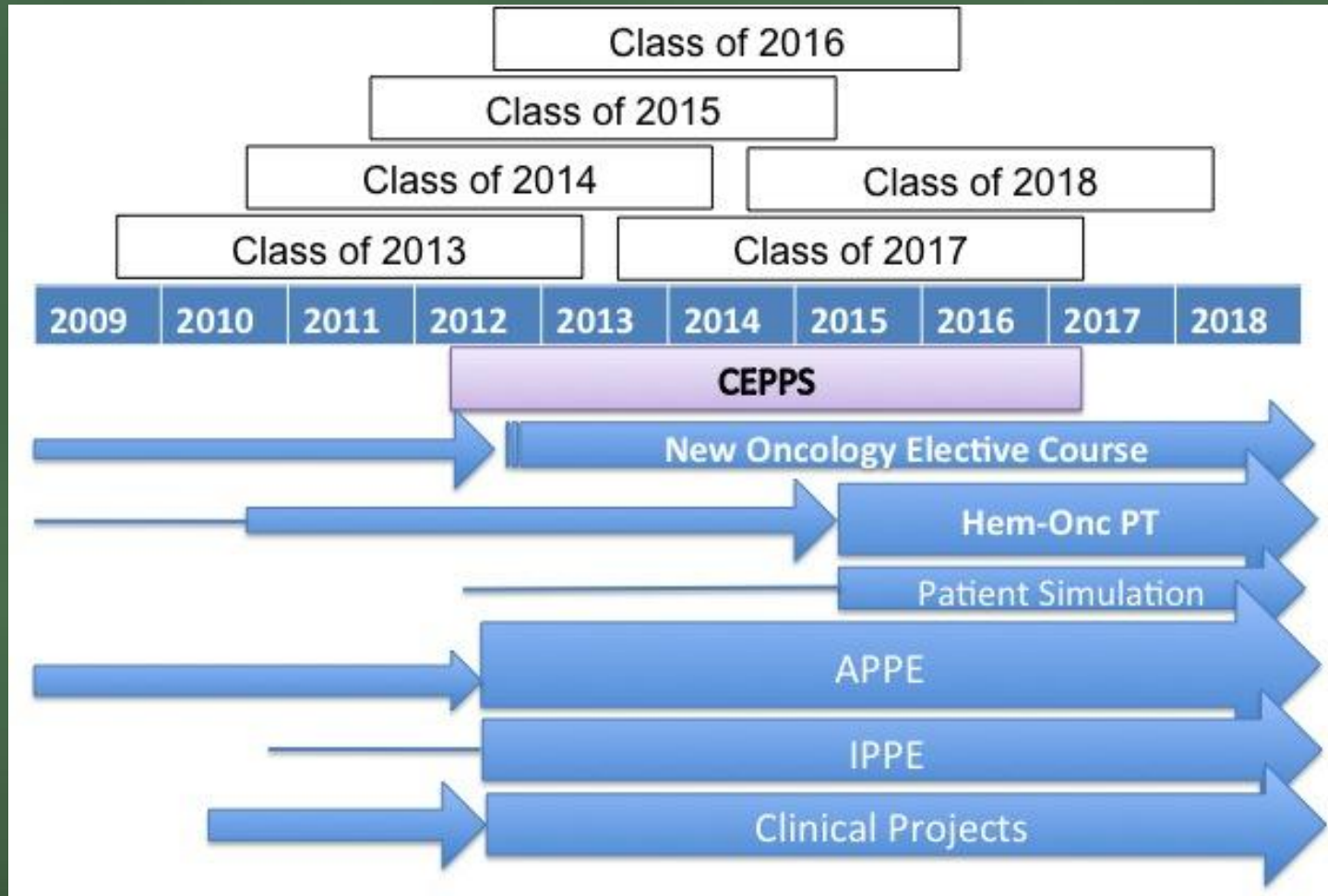


Buffalo Niagara Medical Campus – 40,000 m²



CEPPS Timeline

Teaching pilot and future plans



Teaching strategy to introduce cancer education

➤ Increase awareness (inside classroom)

- *Cancer disease*
- *Global and national cancer impact*
- *Cost of cancer care*
- *Need for cancer care*
- *Job opportunity (most sought after specialization)*
- *Oncology elective course - 30h of real cancer cases discussions with the actual oncology pharmacist or physician that treat each respective case*
- *Oncology Pharmacotherapeutics required course (20h of cancer disease teaching)*



➤ Experiential oncology (outside classroom)

- *Introductory Pharmacy Practice Experience (IPPE) in oncology – 55h direct patient care*
- *Advanced Pharmacy Practice Experiences (APPE) in oncology – 6, 12 or 18 weeks direct patient care*
- *Oncology Research Project – 18 weeks clinical & translational research*

Pharmacy students are much NEEDED!

Niches of time-consuming and costly health care

➤ Safe and routine tasks

- Medication reconciliation and evaluation of patient compliance, drug profile update/correction
- Evaluate the clinical significance of potential drug interactions, identify drug/class duplications and provider non-compliance with guidelines
- Ensured communication with off-site providers to clarify treatment changes
- Counseled patients for drug administration, incompatibilities and scheduling

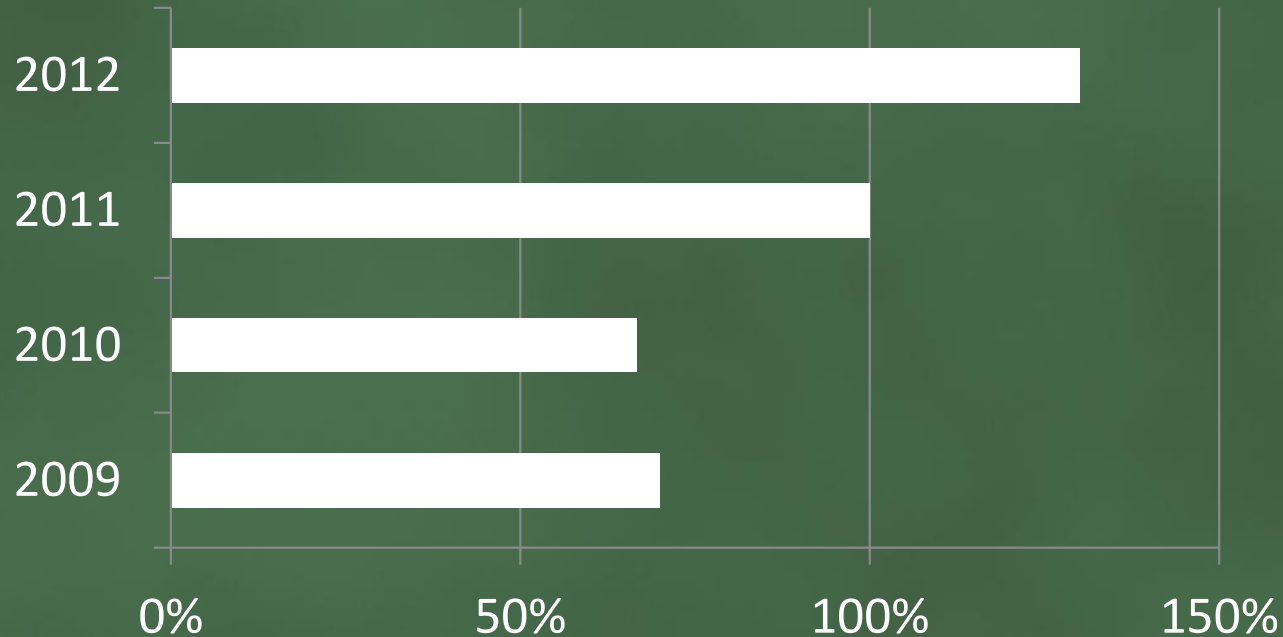
➤ Projects of common interest

- Data collection from medical records, medication utilization reviews, outcomes evaluation, clinical research protocols, applied patient questionnaires
- Analyzed patient specimens and developed animal models
- Performed data analysis

Oncology Elective Pilot (2009-2012)

FINDINGS

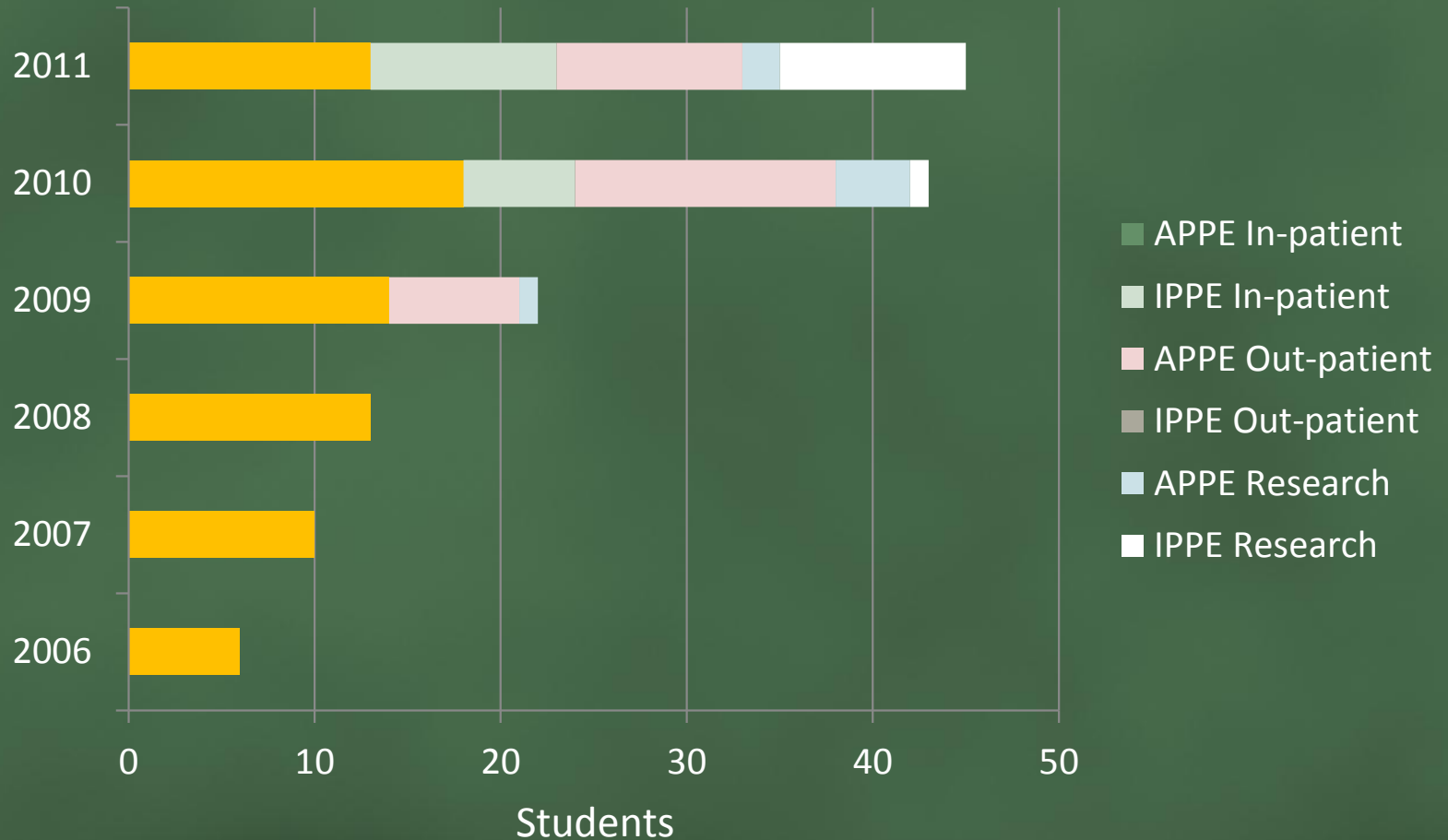
Oncology Elective Class Enrollment



- 92% reported that they are more likely to select oncology rotations
- 100% reported that they benefited from the class

Distribution of Pharmacy Practice Experiences

Roswell Park Cancer Institute, Buffalo, NY



Medication Reconciliation Pilot

Original nursing model vs. pharmacy student model

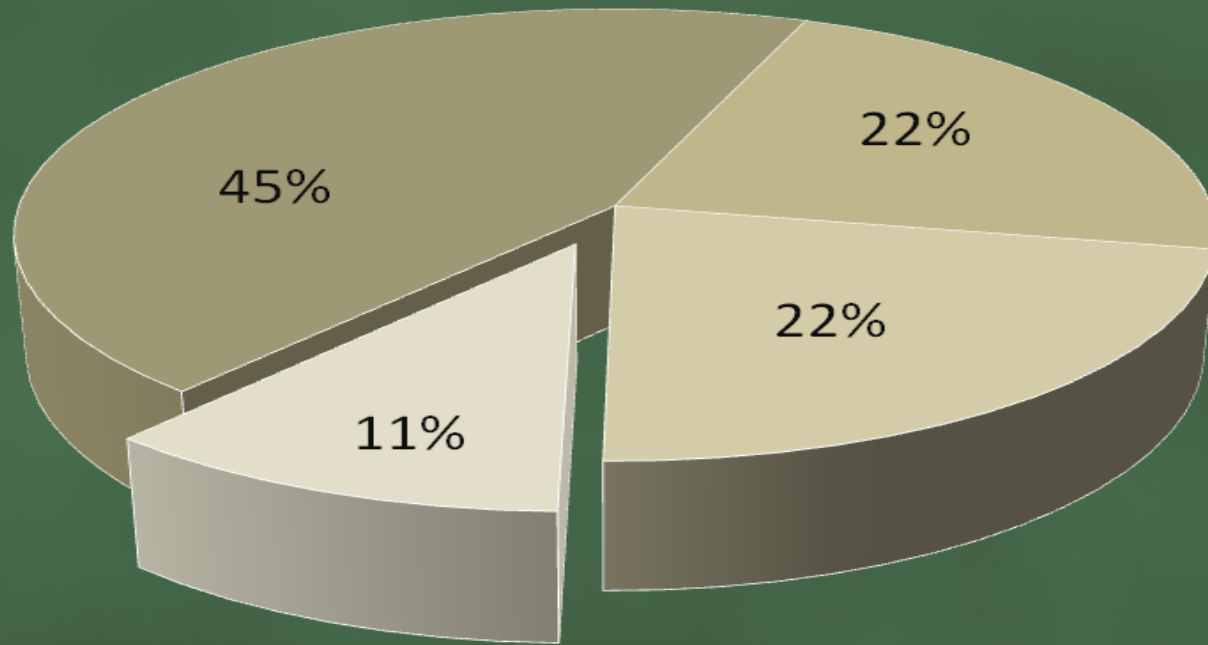
Model	Cases	% Error	Missing strength	Missing dose	Missing route	Missing frequency
Original	362	4 %	352	395	231	32
Student	368	2.45 %	131	63	59	6

- Actual patient-cases reviewed during clinic hours
- Randomly selected nurse-reconciled drug profile and student-reconciled drug profiles over 1 and respectively 3 months
- Original and reconciled drug profile were filed
- Audit performed double-blinded by students not involved in the study
- Errors still existing on the drug profile were documented

Oncology Elective Class Personality Profile

Oncology Elective, Class of 2012

Doer Feeler Thinker Watcher



CEPPS pilot conclusions

Continue program development, assess and tailor accordingly

- Increase awareness of
 - Physicians
 - Pharmacy students
- Design for
 - Patient needs
 - Physician needs
 - Societal needs
- Document experience
- Publish findings
- Share knowledge
- **BILL for services!**



THANK YOU!

