

COMPLEX ONCOLOGY FIELD AND THE IMPACT ON HOSPITAL PHARMACISTS

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Objectives

- Explain the oncology drug development
- Identify ways for hospital pharmacists to impact patient care
- Analyze the various resources available for pharmacists
- Illustrate different methods to improve work flow in oncology setting

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Disclosure


The author of this presentation has nothing to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation

Overview

- Cancer statistics
- Complex Pathways
- Various Treatments
- Role of Pharmacists
- Resources

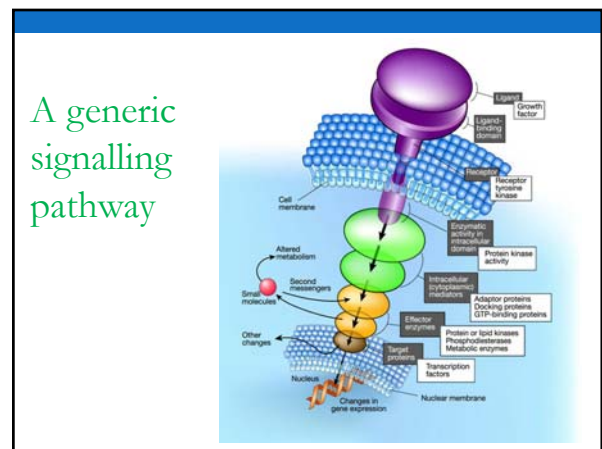
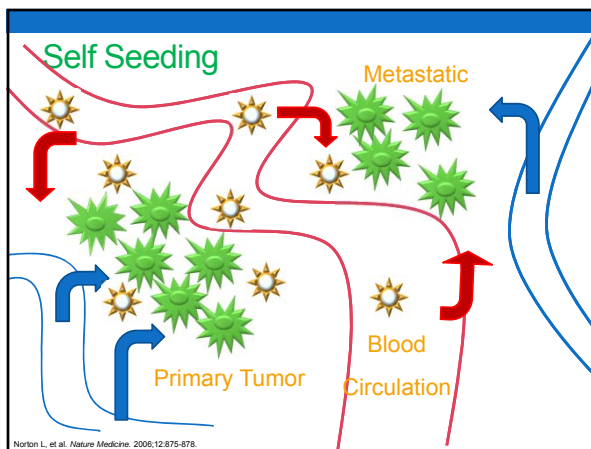
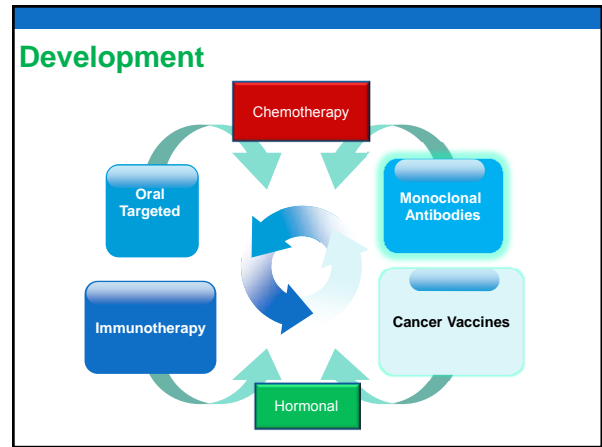
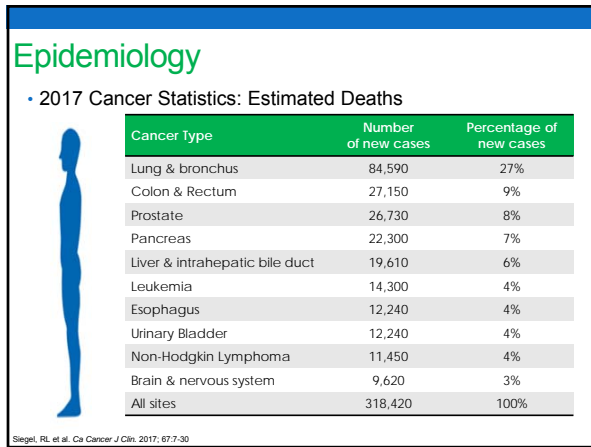
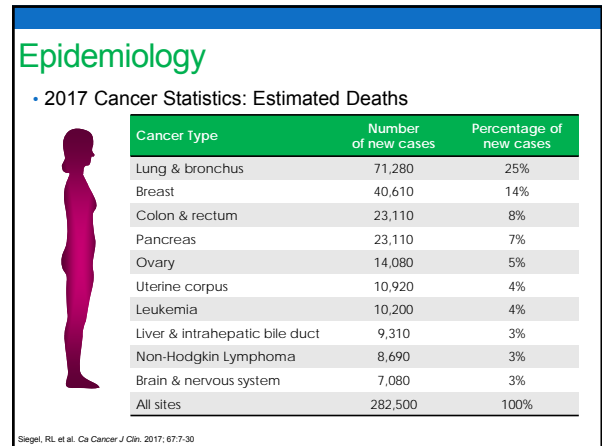
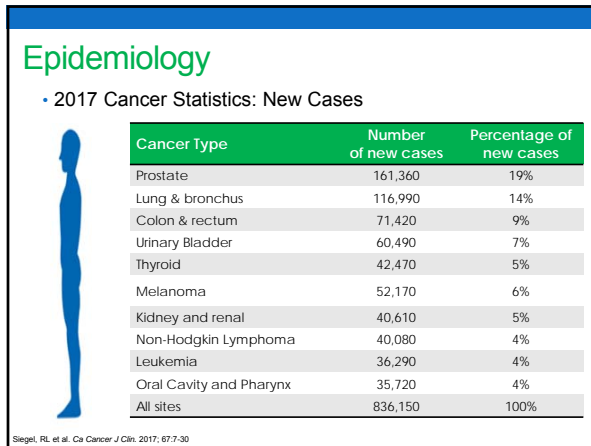
Epidemiology

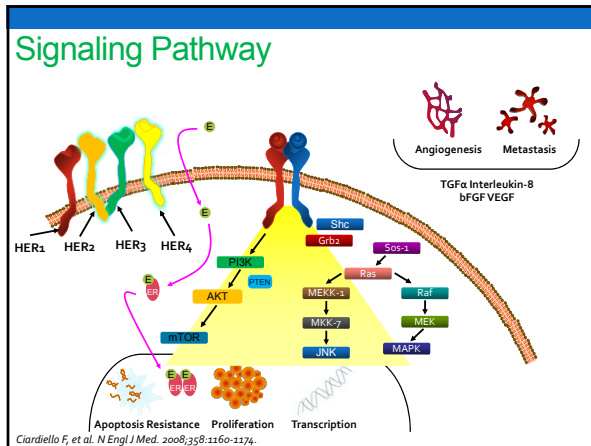
- 2017 Cancer Statistics: New Cases



Cancer Type	Number of new cases	Percentage of new cases
Breast	252,710	30%
Lung & bronchus	105,510	12%
Colon & rectum	64,010	8%
Uterine corpus	61,380	7%
Thyroid	42,470	5%
Melanoma	34,940	4%
Non-Hodgkin lymphoma	32,160	4%
Leukemia	25,840	3%
Pancreas	25,700	3%
Kidney & renal pelvis	23,380	3%
All sites	852,630	100%

Seigel, RL et al. Ca Cancer J Clin. 2017; 67:7-30





Goals of Therapy

- Curative vs Palliative
- Delay time to disease progression
- Palliate symptoms
- Minimize toxicity of therapy
- **Improve survival**

The Patient

▶ **YEAR 2010**

- ▶ RS is a 55 year old female who presents to clinic with newly diagnosed stage IV breast cancer, metastatic to the bone
- ▶ Upon further testing, biopsy-proven ER/PR+/HER2- disease

Past Medical History Non-contributory	Family History Father passed away from Lung Cancer	Social History Musician
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RS is interested in standard of care, what do you recommend as initial treatment?

The Patient

RS Received Letrozole

The Patient

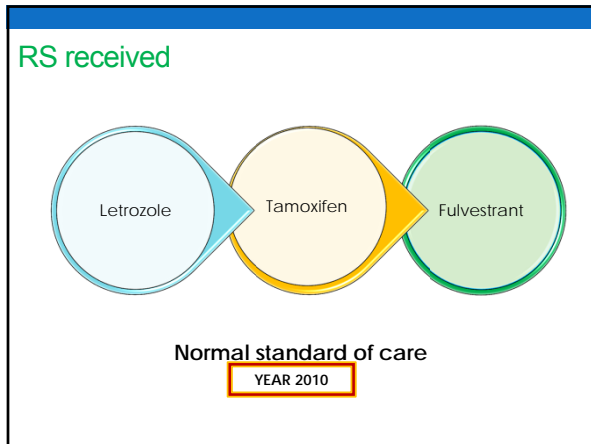
After few months RS presented with severe arthralgias

What treatment do you recommend for RS in this setting?

The Patient

Letrozole Tamoxifen

What treatment do you recommend for RS in the setting of progression of disease?



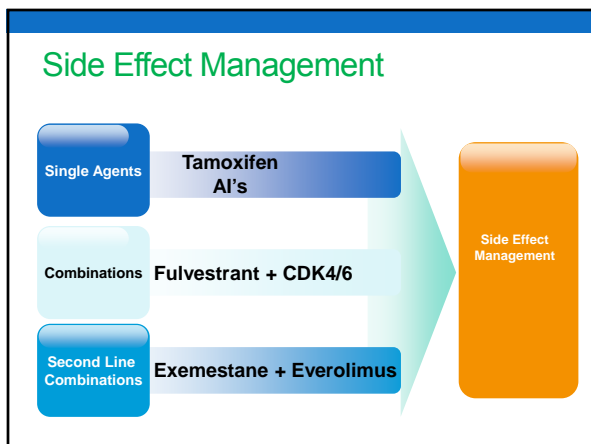
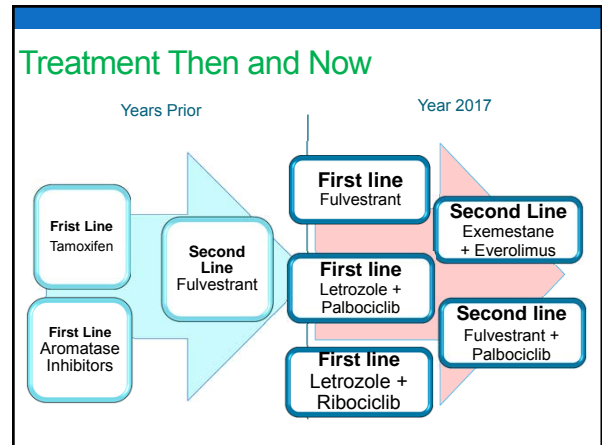
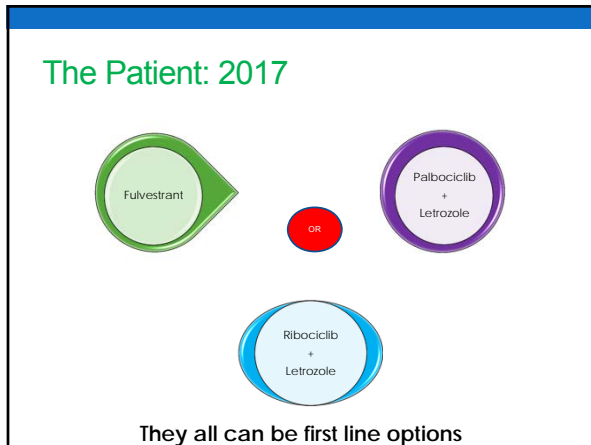
The Patient

YEAR 2017

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Tamoxifen/ AI's/ Fulvestrant Side Effects & Toxicity

- Hot flashes
- Irregular menses
- Endometrial cancer
 - 2-7 times greater than untreated women
- Thromboembolic events
 - DVT and pulmonary emboli
 - Increased risk of stroke
- Benign ovarian cysts
- Ocular toxic effects

- Hot flashes
- Joint pain
- Muscle pain
- Osteoporosis
- Arthralgias
- Fatigue

Fisher B, et al. J Clin Oncol. 1990;8:1005-1018.
Bentley CC, et al. BMJ. 1992;304:485-486.

Newer Agents Side Effects & Toxicity

- Stomatitis
- Noninfectious Pneumonitis
- Hyperglycemia
- Hot flashes
- Diarrhea
- Neutropenia
- Leukopenia
- Anemia
- Thrombocytopenia

Fisher B, et al. *J Clin Oncol*. 1990;8:1005-1018.
Bentley CR, et al. *BMJ*. 1992;304:495-496.

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Components of Patient Care

1. Safe
2. **Effective**
3. Efficient
4. Timely
5. Patient centered
6. Equitable



Components of Patient Care



Case Study in Quality Chemotherapy Care: Adjuvant BC

- 42-year-old woman
- 2.3-cm mass in left breast diagnosed with invasive ductal carcinoma (IDC)
- 6 of 23 lymph nodes positive
- Final diagnosis: Stage IIb breast cancer, estrogen receptor (ER)+, progesterone receptor (PR)-, HER₂ negative
 - No metastatic disease seen on staging CT scan
- Adjuvant chemotherapy
 - Dose-dense doxorubicin/cyclophosphamide followed by paclitaxel, followed by adjuvant hormonal therapy was recommended
- Patient will complete systemic treatment followed by a course of external beam radiation to left breast and axilla

Delivered Chemotherapy Dose Intensity and Treatment Outcomes

- A positive relationship between dose intensity and tumor response rate has been demonstrated in many common cancers:
 - Breast
 - Lymphoma
 - Lung
 - Colon
 - Ovarian
- In patients with these cancers, achieving improved clinical outcomes may depend on delivering chemotherapy above a certain threshold of dose intensity

Chiu E, DeVita VT Jr. In: DeVita VT, et al. *Cancer: Principles & Practice of Oncology*. 2001:289-306.

Suboptimal Dose Delivered is the Norm

- Dose reductions $\geq 15\%$: 36.5% of patients
- Treatment delays ≥ 7 days: 24.9% of patients
- RDI $< 85\%$: received by 55.5% of patients
- Nearly 2/3 patients received RDI $< 85\%$
 - When adjusted for differences in regimen dose intensity

Patients (%) Receiving Fewer than Reference Standard No. of Treatment Cycles

Chemotherapy Regimen	Patients (%)
AC21	2.2
CAF21	26.2
CAF28	26.2
CMF21	10.2
CMF28	10.3

J Clin Oncol. 2003;21:4524-4531.

Delivered RDI of $\geq 85\%$ Planned Dose Critical to Treatment Outcome in Adjuvant BC

% of planned dose

- ≥ 85 (n=42)
- 65-84 (n=94)
- < 65 (n=71)
- Control (n=179)

20-yr retrospective analysis; N=368.

Bonadonna G, et al. N Engl J Med. 1995;332:901-906.

Components of Quality Care

Outcome
Reduce Dose Delay And Reduction

Structure
Chemo Flowsheet to Track Outcomes
Appointment system to flag chemo delay

Process
Evidence-Based Risk Model & Guidelines

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Resources Available

- NCCN Guidelines
 - Treatment
 - Supportive Care
- ASCO Guidelines
 - Quality of Care
 - Supportive Care
- MASCC Guidelines
 - Antiemetic
 - Mucositis

Where to Start From?

Chemotherapy

- Narrow therapeutic-safety index
- Wide range of dosing
- Potentially lethal toxicities
- Complex regimens
- Various research protocols

Key Issues in Quality of Care

- Gaps in quality for many cancer patients
- Extent of problem is unclear
- Need for national quality monitoring system (currently none in place)
- Many quality indicators in place are not useful/relevant to patients
- Patients need quality measures they can use when making choices about their health care

Institute of Medicine 1999. <http://www.nap.edu/catalog/6467.html>.

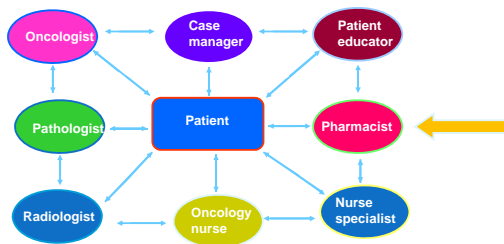
Steps to Ensure Quality of Care and Chemotherapy Performance Improvement

- Quality of Care (ASCO)
 - Access to screening and diagnosis
 - Timely referral for treatment
 - Direct access to cancer specialists
 - Access to state-of-the-art therapy including high quality clinical trials
 - Access to psychosocial and other supportive care services
 - Access to end-of-life care

Malin JL, et al. J Clin Oncol. 2006;24(4):626-634

Quality of Care Team

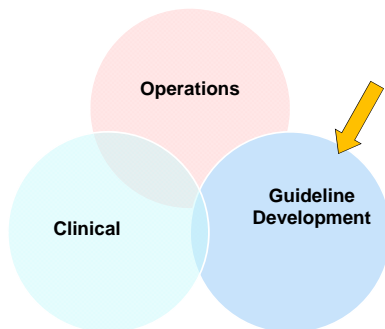
Quality Care Requires the Entire Health Care Team



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Pharmacists Interventions




Operations

- Pharmacy Operations
- Storage
 - Chemotherapy bins (High Alert Medications)
 - PO vs IV
 - Separation (TALLMAN Lettering on storage areas)
 - CISplatin or CARBOplatin
- Clean Room
 - 797
- Electronic system
- Infusion standards
- Bar Code



Operations


- Use Fail Safes
 - Infusion Pump/Set Design
- Use Forcing Functions
 - Vincristine cannot be ordered Intrathecally
 - Oral liquids cannot be injected into IV line
- Centralized Processes
 - Only use commercially available IV admixtures
 - Mandate review by pharmacy before dispensing
- Improve Access to Information
- Standardize & Simplify



Operations

Chemotherapy Standard Order Form

- Should be used for all oral & parenteral drugs
- Should be approved by P&T
- Includes:
 - Protocol #, cycle #
 - age, weight, height, BSA
 - pertinent lab data (e.g., WBC, platelets, serum creatinine)
 - hydration fluids
 - antiemetics
 - supportive meds
- Standard format: generic name only, daily dose, route of administration, frequency, administration guidelines




Guideline Development

- Gain interdisciplinary consensus for a consistent approach whenever possible
- Standardize
 - Orders
 - Calculation methods
 - Supportive therapies
 - Antiemetics
 - Hydration
 - Protectants & rescue medications
 - Emergency management of reactions

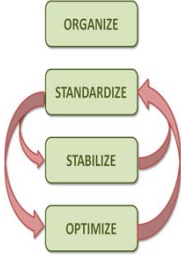
Guideline Development

- Success through team work
- Safety as a unifying goal
- Mutual respect
- Examine the whole process
- Encourage willingness to change




Guideline Development

- Multidisciplinary group
- Experienced, highly trained experts
- Create center-wide policies and guidelines
- Work out processes to implement changes
- Provide feedback to & from various experts
- Implement uniform changes across the institution



Clinical Role

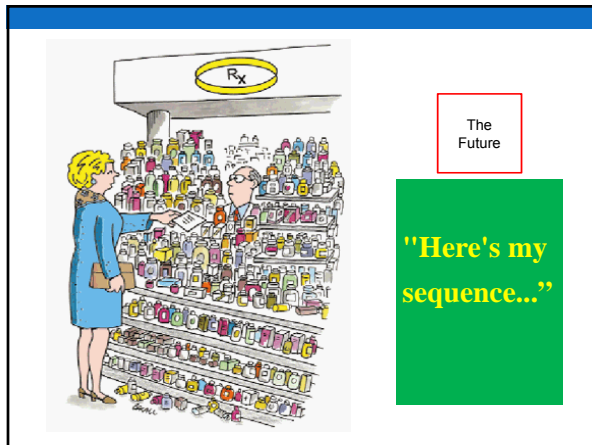


Clinical Role

- Empower your pharmacists
- Identify time during the day where they can do clinical work
- Analyze the top 10 problematic “chemo agents” and work through them.
- Start with the supportive care issues

Clinical Role

- Antiemetic guidelines
- Colony stimulating factors
- Supportive care in general (hydration, anaphylaxis kits, etc..)
- Mucositis guidelines
- Radio protectants (agents favored to be used)
- Tumor Lysis guidelines
- Oral chemotherapy safety processes
- Standardizing the monitoring plans for poral chemotherapy
- Supportive medications for CAR-T cells, PDL-1 and Cancer Vaccines



Summary

- Progress in drug development is introducing various complex treatment options
- Consider the patient's entire clinical presentation when selecting therapy and consider side effect profile of drugs
- Role of pharmacists can expand tremendously in oncology setting, from improving operations, organizing the chemotherapeutic prescribing processes, developing guidelines to expanding clinical services
- There are plenty of resources that could be utilized to advance practice

Questions?

