



Penn Medicine
Abramson Cancer Center

CELLICONE VALLEY '21: THE FUTURE OF CELL AND GENE THERAPIES COVID MANAGEMENT OF LIQUID ONCOLOGY PATIENTS

Abbey Walsh, MSN, RN, OCN – Clinical Practice Lead, Outpatient Infusion Therapy

Angela Rubin, BSN, RN, OCN – Clinical Nurse III, Outpatient Infusion Therapy

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Disclosures:

- ▶ **Both** presenters have disclosed no conflicts of interests related to this topic.

Objectives:

- ▶ Describe the evolution of COVID management for oncology patients being treated in ambulatory care.
- ▶ Identity the role of EUA monoclonal antibody treatments for COVID + oncology patients.
- ▶ Review COVID clearance strategies: past and present.
- ▶ Explain Penn Medicine's role in COVID vaccinations for oncology patients.
- ▶ Explain COVID – 19 special care considerations for oncology patients:
 - Emergency Management
 - Neutropenic Fevers/Infectious Work-ups
 - Nurse-Driven Initiatives
 - Cancer Center Initiatives to enhance patient safety and infection risk

Evolution of COVID Management for Oncology Patients in Ambulatory Care



Late March – Early April 2020: COVID Testing Strategies

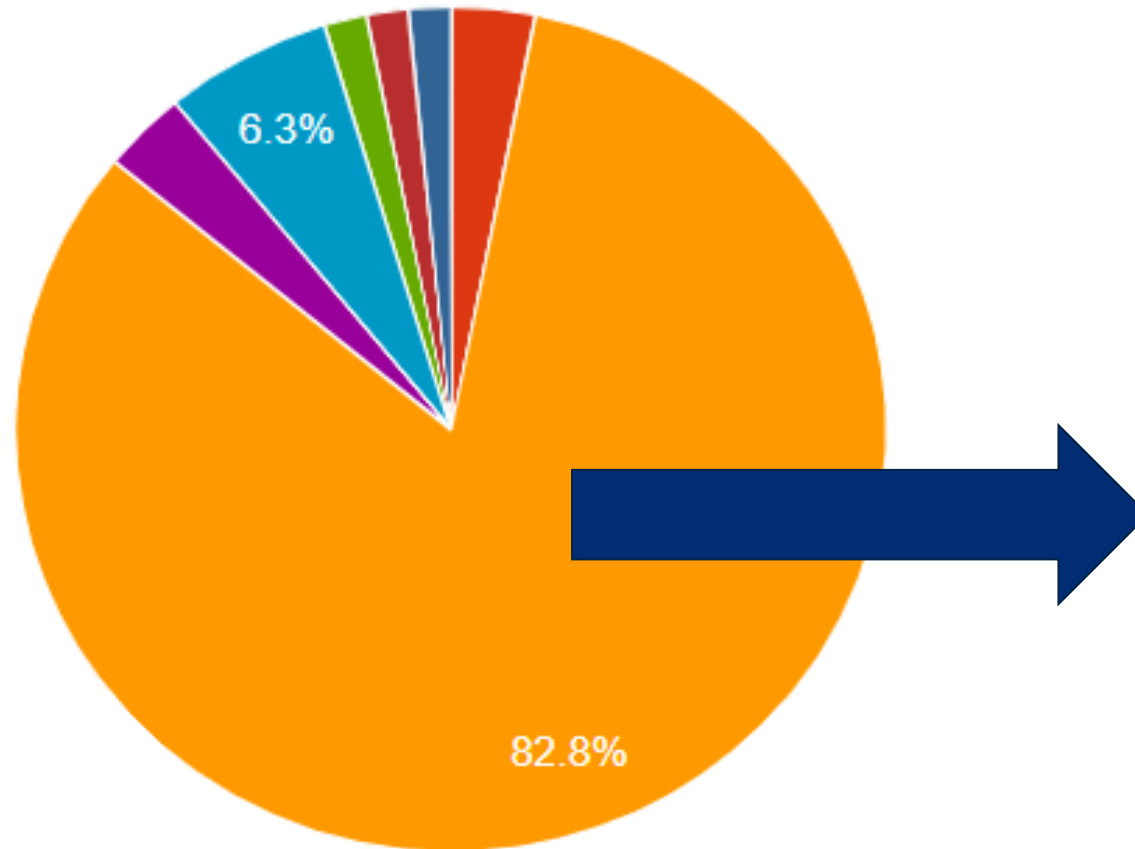
“COLD” Testing

- Assume these patients are COVID Negative.
- No need for escort in and out of the building
- Maintain Droplet Precautions:
 - Enhanced PPE for COVID swab only
- Patients who are asymptomatic but require COVID testing:
 - Pre-admission
 - Pre-procedural
- **Examples:** Port placement, starting radiation treatment, CarT therapy, Stem Cell/Bone Marrow Transplant patients
- **Exclusion:** pre-treatment outpatient anti-cancer treatment

“HOT” Testing

- Actively COVID + or suspicious for COVID/PUI (Patient under investigation)
- Require RN/CNA escort in and out of building.
- Enhanced precautions:
 - (Enhanced) Droplet + Contact
 - Upgrade to N95 during aerosolizing procedures
- (PUIs)-COVID testing indicated because of:
New Symptoms, Recent Travel, Recent known exposure to Covid + individual
- **Example:** Liquid oncology patient arrives for chemo treatment, but reports new cough and fevers up to 101 over the last few days.

“COLD” Testing: 07/10/2020 - 4/16/2021



**82.8% of COLD
Testing is done in
liquid oncology
patients**

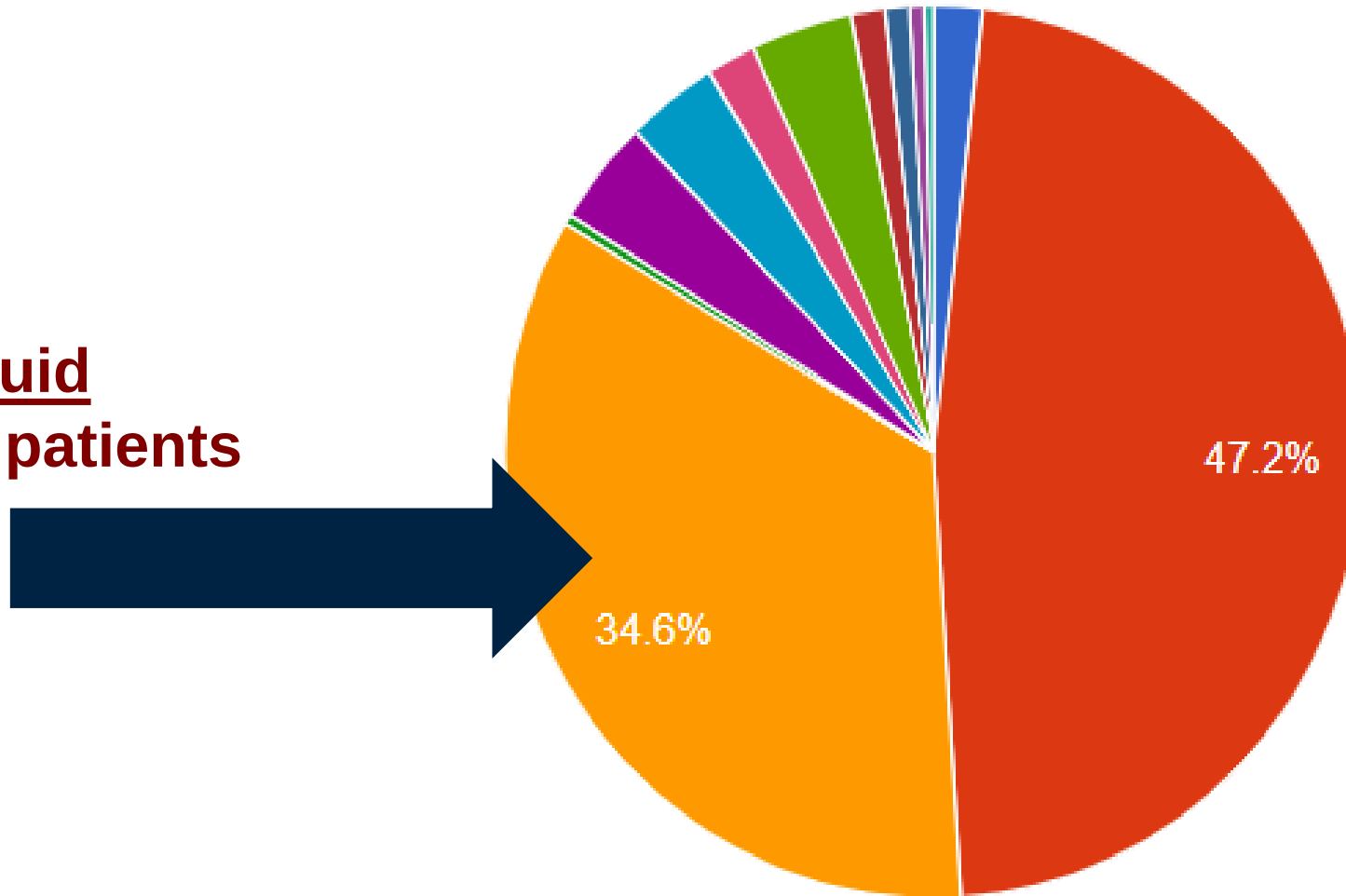
Pre-Admission testing: Scheduled Hospital Admissions

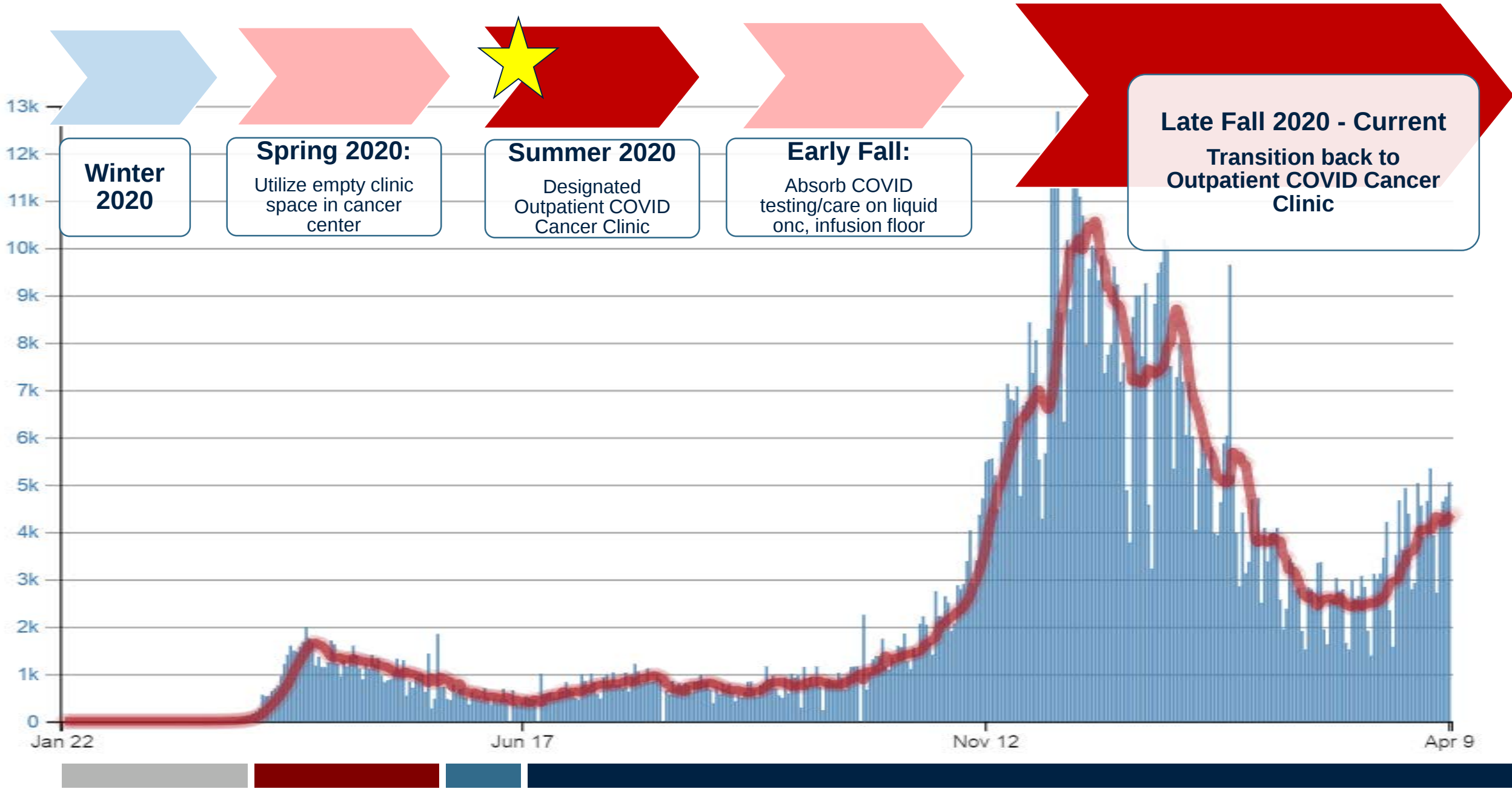
COVID Testing for Scheduled Oncology Hospital Admissions

Admission Type	Pre-Admission Testing	Pre-Admission Testing Window	Outpatient Testing Location	Inpatient Testing
Elective Chemotherapy	COVID swab	24-48 hours PTA preferred (max 72 hours PTA)	UPHS facility preferred; local facility acceptable	None
Allogeneic Transplant	COVID swab	24-48 hours PTA preferred (max 72 hours PTA)	UPHS facility preferred; local facility acceptable	Routine Covid Swab (12-24 hour turnaround) prior to chemotherapy initiation
Autologous Transplant	COVID swab	24-48 hours PTA preferred (max 72 hours PTA)	UPHS facility preferred; local facility acceptable	Auto Admissions Before 1700: URGENT Covid Swab (6 hour turnaround) prior to chemotherapy initiation
				Auto Admissions After 1700: STAT Covid Swab prior to chemotherapy initiation
CAR T	RPP swab (includes COVID)	24-48 hours PTA preferred (max 72 hours PTA)	PCAM Infusion Suite for RPP	Routine Covid Swab (12-24 hour turnaround) on day prior to CAR T infusion
Patients with resolved COVID-19 infection *Please discuss w/ HUP Infection Control by sending a Cureatr message to "COVID-Isolation - Infection Control (HUP)"	Consideration for test based clearance will be made for: Patients with active leukemia, lymphoma, or undergoing CAR-T cell therapy, B cell-directed therapies, or stem cell transplantation.	Refer to admission type above	Refer to admission type above	Depends on pre-admission test results & Infection Control input
	If considered true COVID-resolved, refer to admission type above			
For STAT inpatient Covid swabs, select "same-day procedure IP" for order rationale				
DO NOT select "inpatient admission screen" as this will be converted to a routine test				

“HOT” Patients: 7/10/2020 - 4/16/2021

34.6% Liquid
oncology patients





Daily Trends in Number of COVID-19 Cases in Pennsylvania Reported to CDC

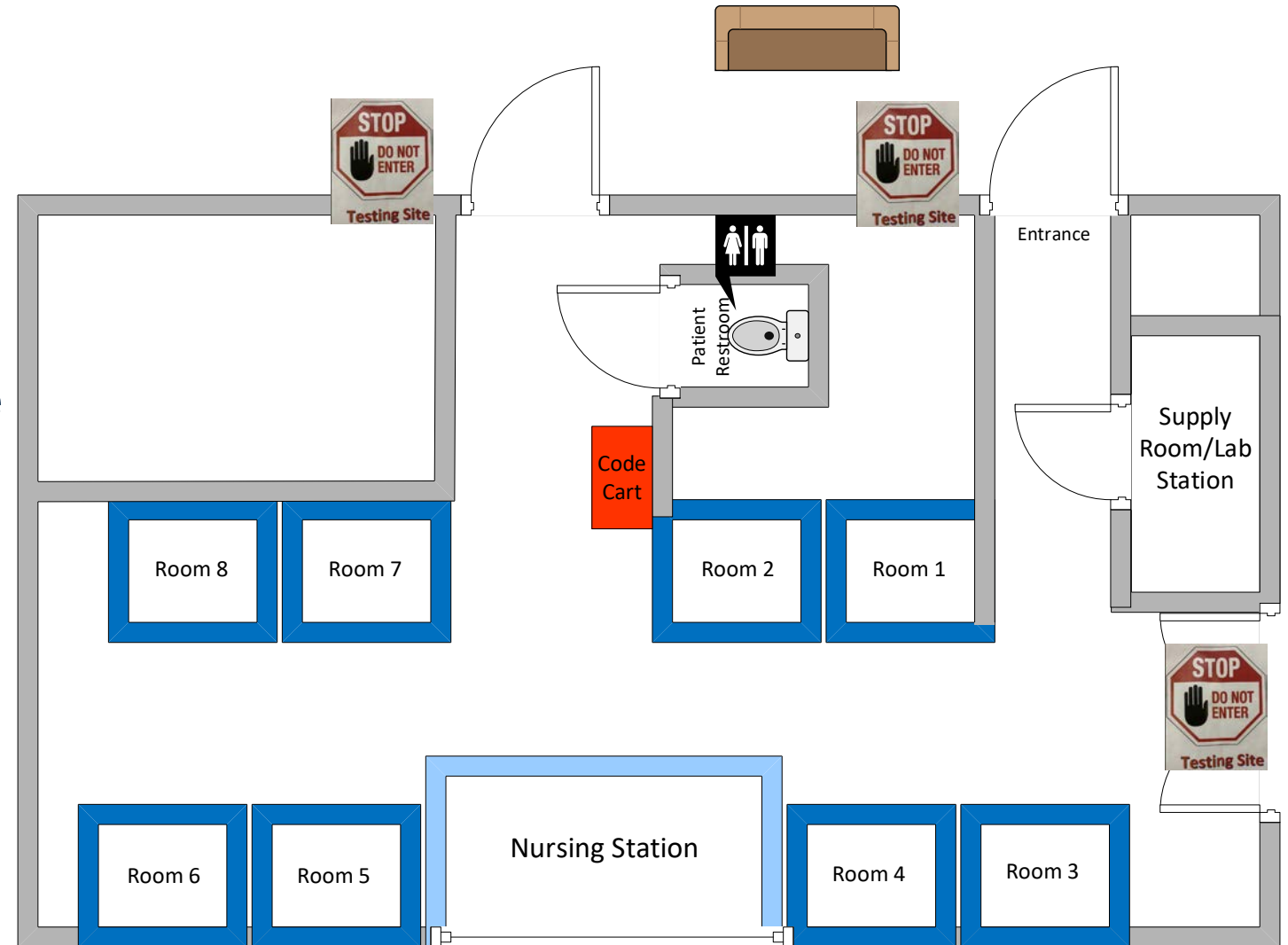
Outpatient COVID Cancer Unit

- **Partnered with Regulatory and Infection Control** to establish a dedicated space for **“HOT”** Patients.
- Allowed HOT patients to **receive all necessary care in *one* designated “HOT” space:**
 - Labs
 - COVID swabs
 - Blood product transfusions
 - Anti-cancer Treatment/other non-oncology infusions
 - MD/APP Oncology Provider visits (with real-time PPE coaching by Infusion RNs)
 - Closer proximity to entrances/exits
 - Closer proximity to the Radiology Dept.
- **“COLD” COVID Testing was absorbed on the infusion floors:**
 - Infusion RNs on each floor were trained

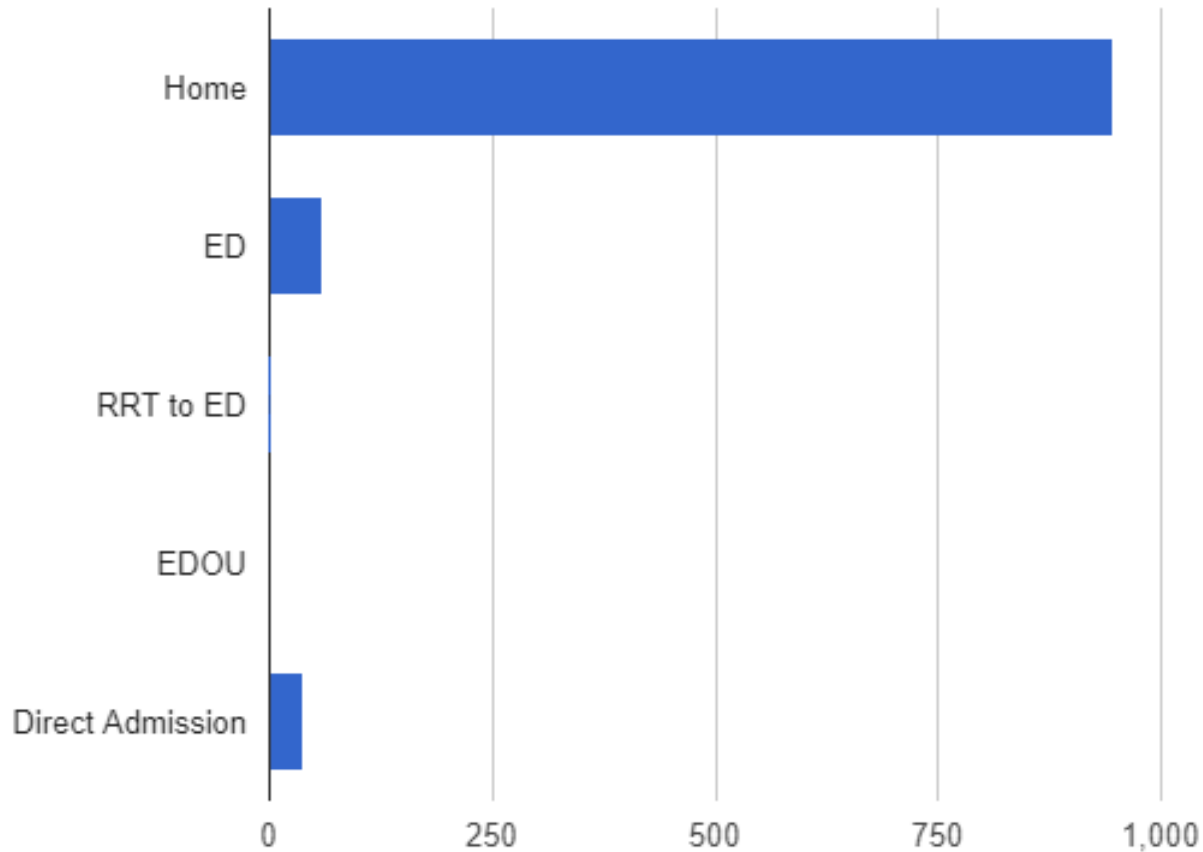


Outpatient COVID Cancer Unit:

- ▶ **The “HOT Zone”:**
 - Oncology patients
 - Non-oncology patients
- ▶ **8 – room clinic repurposed for COVID specific ambulatory care needs**
- ▶ **Staffing Model:**
 - 2-3 Infusion RNs
 - (PRN) APP
 - 1 PSA/CSA
- ▶ **Opened: June 2021 – Current**



Outpatient COVID Unit: Measuring Success



- ▶ **90.6%** of patients discharged to home
 - 5.6% to ED
 - 0.2 % Rapid Responded to ED
- ▶ **3.6%** Direct Admissions

Data: 7/10-4/19



COVID Monoclonal Antibody Treatments



EUA: COVID Monoclonal Treatments: December 2020 - Present

- ▶ High-Risk (non-oncology + oncology) outpatients with Symptomatic COVID 19 Infection:
 - Most oncology patients receiving mABs are liquid oncology patients
- ▶ EUA mABs infusions for COVID + Patients
 - Casirivimab-imdevimab
 - Bamlanivimab-etesevimab
- ▶ **Given to reduce risk of hospitalization (or ER visit) AND achieving a modest reduction in duration of symptoms by 1-2 days**

Use Criteria	
	
☒ Positive SARS-CoV-2 PCR or antigen test AND	
☒ Symptoms attributable to COVID-19 AND	
☒ Symptoms for ≤9 days at time of referral (≤10 days at time of infusion) AND	
☒ At least one inclusion criterion	☒ No exclusion criteria
• Age ≥65 years • Body mass index ≥35 • Type 2 diabetes with hemoglobin A1c ≥9.0 and/or retinopathy or neuropathy • Chronic kidney disease stage IV or V • Immunosuppression* • Age ≥55 years AND ≥1 of the following: • Ejection fraction <40% • Pulmonary hypertension • Prior myocardial infarction • Prior PCI and/or CABG • Chronic obstructive pulmonary disease • Moderate-persistent or severe-persistent asthma • Lung disease impairing daily activity • Active lung cancer	• Age <18 years • Admitted to hospital due to COVID-19 • Requiring new or increased supplemental oxygen for COVID-19 or SpO2 ≤93% • Previously received SCMA • Enrolled in SCMA clinical trial • Weight <40 kg • Currently enrolled in hospice * Immunosuppressive condition (hematologic malignancy, metastatic cancer, asplenia or functional asplenia, HIV w/ CD4 <200, or other congenital or acquired deficits of humoral or cell-mediated immunity) OR medication (steroid equivalent of prednisone ≥20 mg/day for >14 days, chemotherapy within past 3 months, calcineurin inhibitor, anti-proliferative agent, mTor inhibitor, tumor necrosis factor alpha inhibitor, or anti-B-cell antibody)

COVID Clearance Strategies



COVID Clearance Strategies:

Winter – Spring
2020:
TEST-Based



Little to no guidance from the CDC at the beginning of the pandemic, especially for oncology patients → test-based

Summer 2020 –
Winter 2021:
TIME-Based



On July 22, 2020, Centers for Disease Control and Prevention (CDC) released updated guidance on the duration of isolation precautions for adults with COVID-19. In this guidance, CDC recommended moving to a time-based strategy for discontinuation of isolation.

Spring 2021:
mostly TIME-based;
new TEST-based
guidelines



As of February 16, 2021, CDC “Patients who are severely immunocompromised could remain infectious more than 20 days after symptom onset. Consultation with infectious diseases specialists is recommended; use of a test-based strategy for determining when to discontinue Transmission-Based Precautions could be considered.”

COVID Vaccination for Cancer Patients at Penn Medicine



Million Dollar
question(s) for us all,
but especially
oncology patients
once vaccinations got
EUA:

*“Is it safe for me to
get vaccinated? If so,
how do I get
vaccinated?”*



The screenshot shows the top of a New York Times article. At the top is the newspaper's logo and a navigation bar with 'The Coronavirus Outbreak >' and 'LIVE Latest Updates'. The article title is 'In the Vaccine Scramble, Cancer Patients Are Left Behind'. Below the title is a sub-headline: 'Those with compromised immune systems are often advised to get the shots under medical supervision, but their cancer centers can't always provide them.' At the bottom of the article preview are four social media sharing icons: Facebook, WhatsApp, Twitter, and Email.

≡ The New York Times

The Coronavirus Outbreak > | **LIVE** Latest Updates Ma

In the Vaccine Scramble, Cancer Patients Are Left Behind

Those with compromised immune systems are often advised to get the shots under medical supervision, but their cancer centers can't always provide them.

f WhatsApp Twitter Email

Oncology Patient Vaccination: Started mid-late January 2021

- ▶ Penn Medicine patients who are **Philadelphia residents AND meet the Philadelphia Department of Health criteria for phase 1b**
- ▶ **Eligibility:** Patients have at least one of the following high-risk criteria
 - 75 years of age and older
 - **Cancer**
 - Solid organ transplant recipients
 - Chronic Renal Disease
 - Diabetes
 - Sickle cell anemia



- Age over 65
- Metastatic solid tumor
- Lung cancer
- **Heme malignancy**
- Treatment within 90 days (systemic therapy or radiation)

Special Care Considerations for Outpatient Infusion Nurses



What we knew prior to the pandemic about cancer patients:

- ▶ Cancer patients are reluctant to go to the emergency room for disease and/or treatment related complications
 - This intensified quickly as the pandemic unfolded!
- ▶ Cancer patients are known sensitive patient population:
 - Immunocompromised
 - Frequent disease and treatment related complications
 - Co-morbidities
- ▶ It is not uncommon for cancer patients to withhold new or worsening symptoms from their oncology care teams for fear they will not be able to proceed with their anti-cancer treatment
- ▶ Many anti-cancer drugs can cause reactions and more serious complications and/or side effects.

So, from a NURSING Perspective.....

How do we keep ourselves and our patients safe during the pandemic while taking these factors into consideration???



Limiting Covid-19 Exposure During Emergencies

- ▶ A model intended for outpatient infusion emergency management was developed to **enhance staff safety during clinical emergencies**
 - that may entail aerosolizing procedures for patients.
 - to limit potential staff exposures and the number of responders in the room
- ▶ The Outpatient Infusion Nursing Department frequently encounters a wide range of clinical emergencies, ranging from mild infusion reactions to full codes.
 - These emergencies are often drug or disease related, but it cannot be overlooked that in this setting **each patient's Covid-19 status is most often unknown in outpatient infusion.**
 - As previously mentioned, cancer patients often **arrive for treatment with new or worsening symptoms** that they have not reported to their teams and/or sought evaluation for.

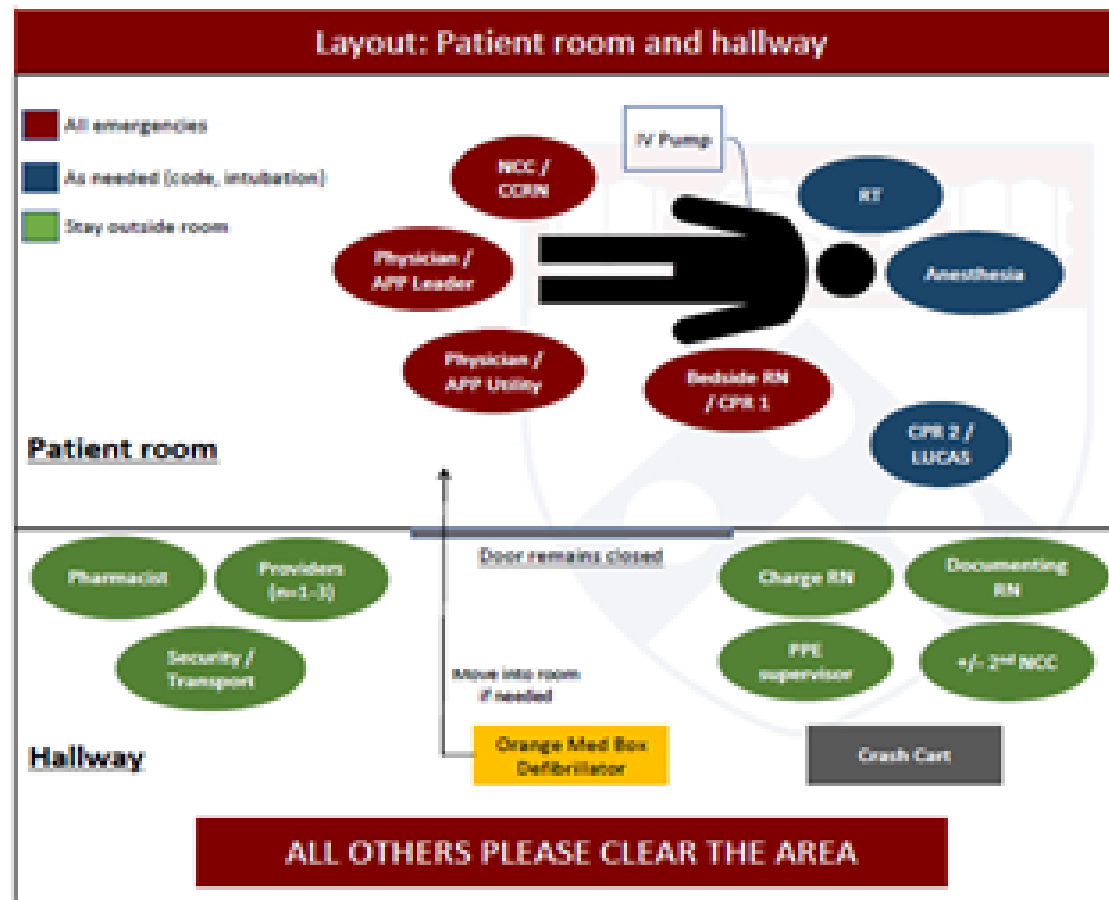
Inpatient Initiatives

- Inpatient centric emergency management model
- Code Stickers



Clinical Emergencies Guide: Layout and Logistics

(Use when Clinical Emergencies Guide: PPE and Respiratory Management dictates minimizing in-room personnel and closing door)



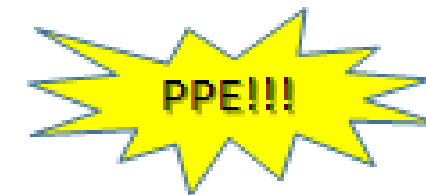
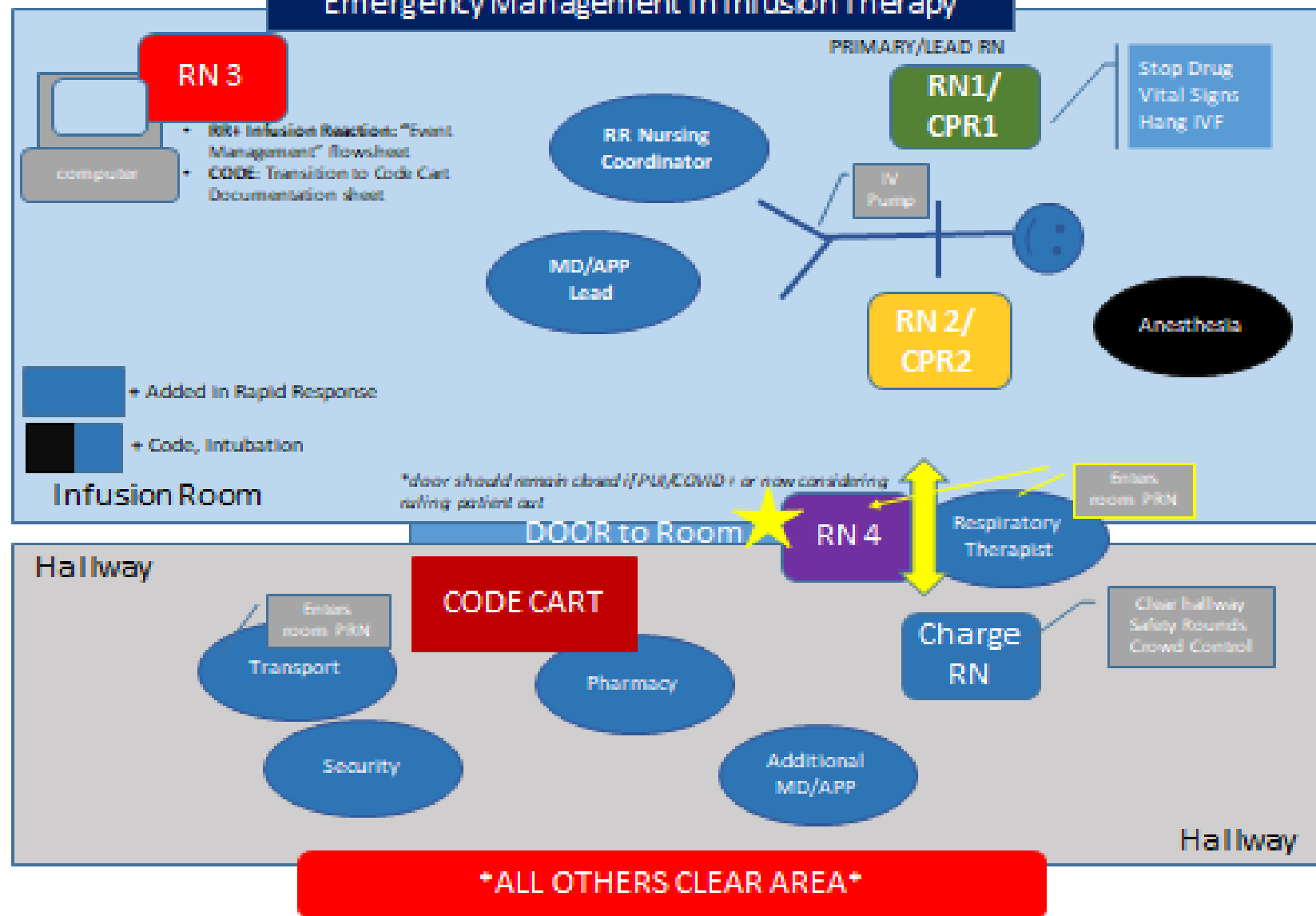
Logistics
Local provider response (before BRT arrival)
STOP: Don appropriate PPE first Focus on ABCs, basic life support
Clinical emergency physician / APP roles
Leader: BRT emerging, fellow, resident, APP Utility: local or primary bedside provider Outreach/consult: Other local or BRT providers
PPE management (charge RN, designee, or SME)
Distribute PPE (note: NRS masks in crash cart) Ensure appropriate donning / doffing Minimize door opening
Communication and documentation
Call between 2 phones, pass 1 (on speaker) into room (Alt: white boards / windows, nurse call system) Sanitize phone at end of emergency Document as able outside patient room
Intubation
Non-intubating personnel: all feet away if possible Intubation during CPR: pause chest compressions
LUCAS (chest compression device)
Sectionalizations: - Fresh alternately - Prone position Max: - Manual compressions while applying - Don't pause device for defibrillation - Marker suction cup borders, monitor for migration

Items Addressed

- Differences in workflow
- # of RNs and providers in room
- Defining roles for RNs during an emergency
- Establishing a "PPE Supervisor"
- Working with a closed door and facilitating communication

Pathway adapted from HUP Clinical Emergencies guidelines. Updated 5/4/2020 - Recommendations may evolve: check UPHS COVID-19 SharePoint for most updated version.
Created by Michael Shashaty, Stacie Neefe, Scott Falk, Jen Ginestra, Cameron Barton, Susan Lin, and Oscar Mitchell. Email Michael Shashaty (mshashaty@pennmedicine.upenn.edu) for corrections.

Emergency Management in Infusion Therapy



RN 1:

- 1st responder,
- Responds to pt's immediate needs focusing on ABCs
- Administers meds PRN

RN 2:

- Assists RN 1 (re-cycling vitals, administering meds, monitoring patient)
- In less acute emergencies RN 2 may be documenter, while 1 RN manages reactions

RN 3:

- Documenter when 2 RNs are needed for interventions/stabilizing patient
- Contacts provider/Calls RRT
- Reinforce PPE

RN 4:

- **PPE captain as needed**
- Supports RNs in room PRN
- Assist with any additional PPE needed
- Print snap shot for RR Coordinator and security during RR or CODES
- If door closed, helps facilitate communication with team inside room

PPE Prioritization

► Homegrown “COVID PPE Kits” in Infusion

- Located on each infusion floor in the same place and contain:
 - (5) face shields (can be sanitized and reused)
 - (5) disposable gowns
 - (5) N95 masks

► CODE CART PPE Kits

- Go-live December 2020
- Part of daily code cart checks



PPE Checks	
N95	☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1
Disposable isolation gown	☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1
Donor eye shields	☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1
Comments	

Practice Changes: Respiratory Interventions

► Nebulizers Strongly Discouraged

- Especially for any oncology patients with acute respiratory decline and an unknown COVID Status

► Transitioned to stocking and prioritizing the use of Meter-Dosed Inhalers

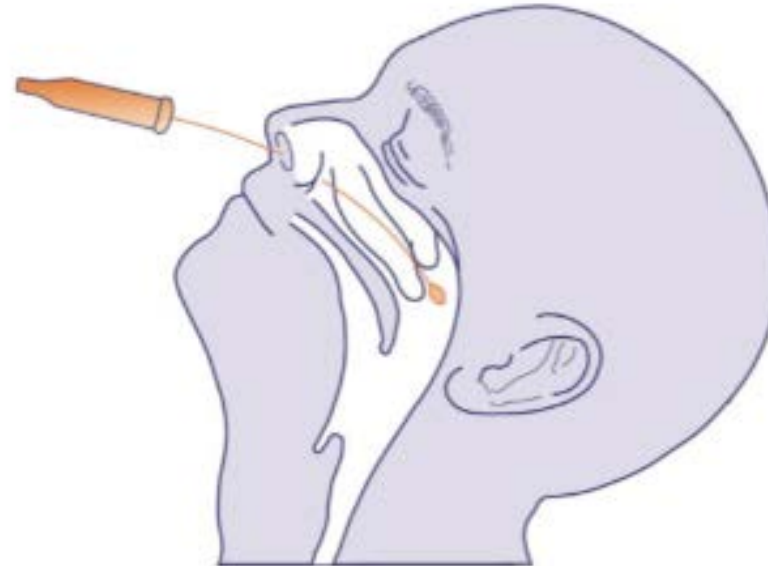
- Partnered with pharmacy to ensure these were stocked on each floor

► If/when high-flow O2 is required for a patient → transition to N95



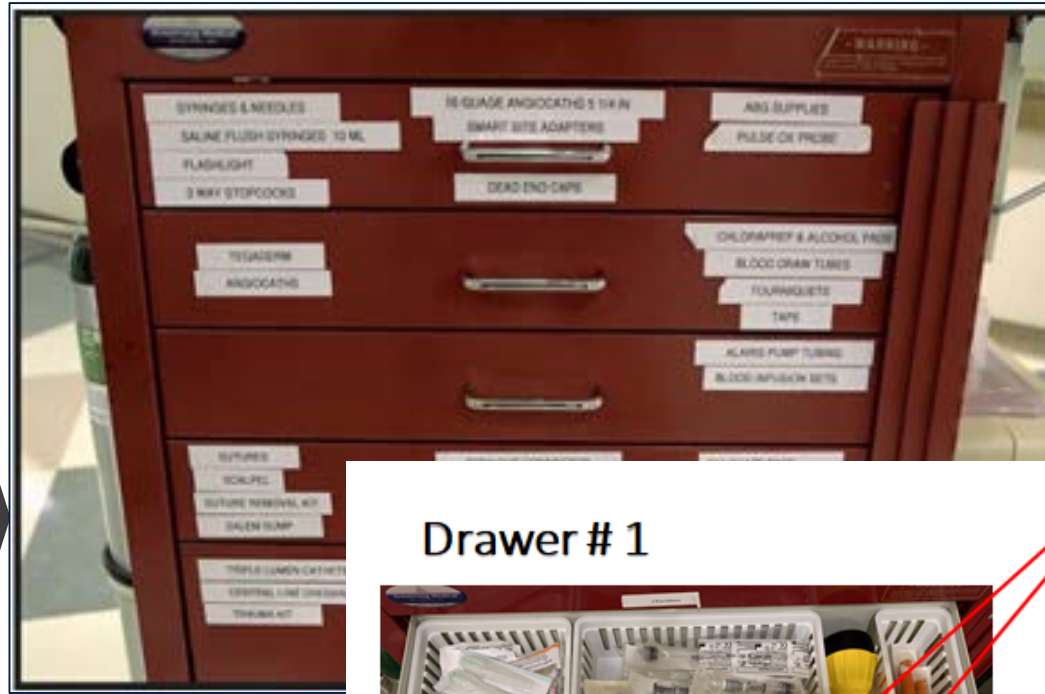
Infectious Work-ups: Neutropenic Fevers

- ▶ 2 sets of blood cultures
- ▶ LA
- ▶ Chest x-ray
- ▶ UA/UC
- ▶ **RRP**
 - **Now includes COVID!**
- ▶ IVF
- ▶ Antibiotics



Emergency Management: A Closer look inside of a Code Cart

Learning Opportunity: education improved on crash cart contents



We wanted and needed all infusion RNs to more familiarize with the contents of the Code Cart

Drawer # 1



Contents:

- ResQPod- *see next slide*
- 14G Angio-Cath/Terumo: can use for needle decompression of the chest (tension pneumothorax)
- Pulse Ox Probe
- Blood Gas Slips (yellow)
 - When you send this off with an ABG you can think of this as a "super gas" – they can run H&H, chemistries, ABG
- ABG Kit without needle + ABG Kit with needle
- SQ Needle
- IM Needles
- Blunt Needles
- 0.9 NSS Flushes
- 3-way stopcock
- Invision-Plus Caps
- Smart-Site adaptor
- Syringes (10ml, 20ml, 60ml, insulin)
- Flashlight

Nurse-Driven Initiatives for Routine Cancer Treatment during the COVID – 19 Pandemic

► Outpatient Cancer Center:

- *What do we do if patient arrives with new symptoms??*
 - Designated Isolation Rooms for Impromptu “HOT” patients that arrive to outpatient infusion for treatment
- *How do we prevent overcrowding? Promote social distancing?*
 - Manager of Clinical Nursing informatics (Outpatient Infusion) created “social distancing scheduling templates”

► Cancer Center Visitor Policy:

- Outpatient: No visitor policy with the following exceptions
 - Severe physical impairments
 - Inability of patient to understand care instructions
 - i.e. cognitive impairments, language barriers

PENNOPEN PASS

HAVE YOU COMPLETED YOUR COVID-19 SYMPTOM AND EXPOSURE CHECK THROUGH PENNOPEN PASS?

YES

Open Your PennOpen Pass.
Proceed to check-in and be ready to show your Green Pass and ID upon entry. You may have received this through text message or email.

NO

Please scan the QR code or visit [PennMedicine.org/PreScreen](https://pennmedicine.org/PreScreen) to complete your symptom check. If you are unable to use the online screener, please be prepared to be verbally screened.

Employees pre-screen through **PENNOPEN PASS** before arriving on campus.

Penn Medicine

Nurse-Driven Initiatives for Routine Cancer Treatment during the COVID – 19 Pandemic

▶ Decreasing time spent in the cancer center

- Moving cancer treatments to the home
- Prioritizing telehealth visits
 - Made possible by Cancer Center Clinic Leadership
- Re-purpose outpatient infusion RN FTEs to homecare nurses for oncology patients

▶ Darzalex Patients (Dx- Multiple Myeloma/Amyloidosis)

- Discontinuing pre-medications after proven tolerance to medication
- Discontinuing wait time in between pre-medications and drug administration



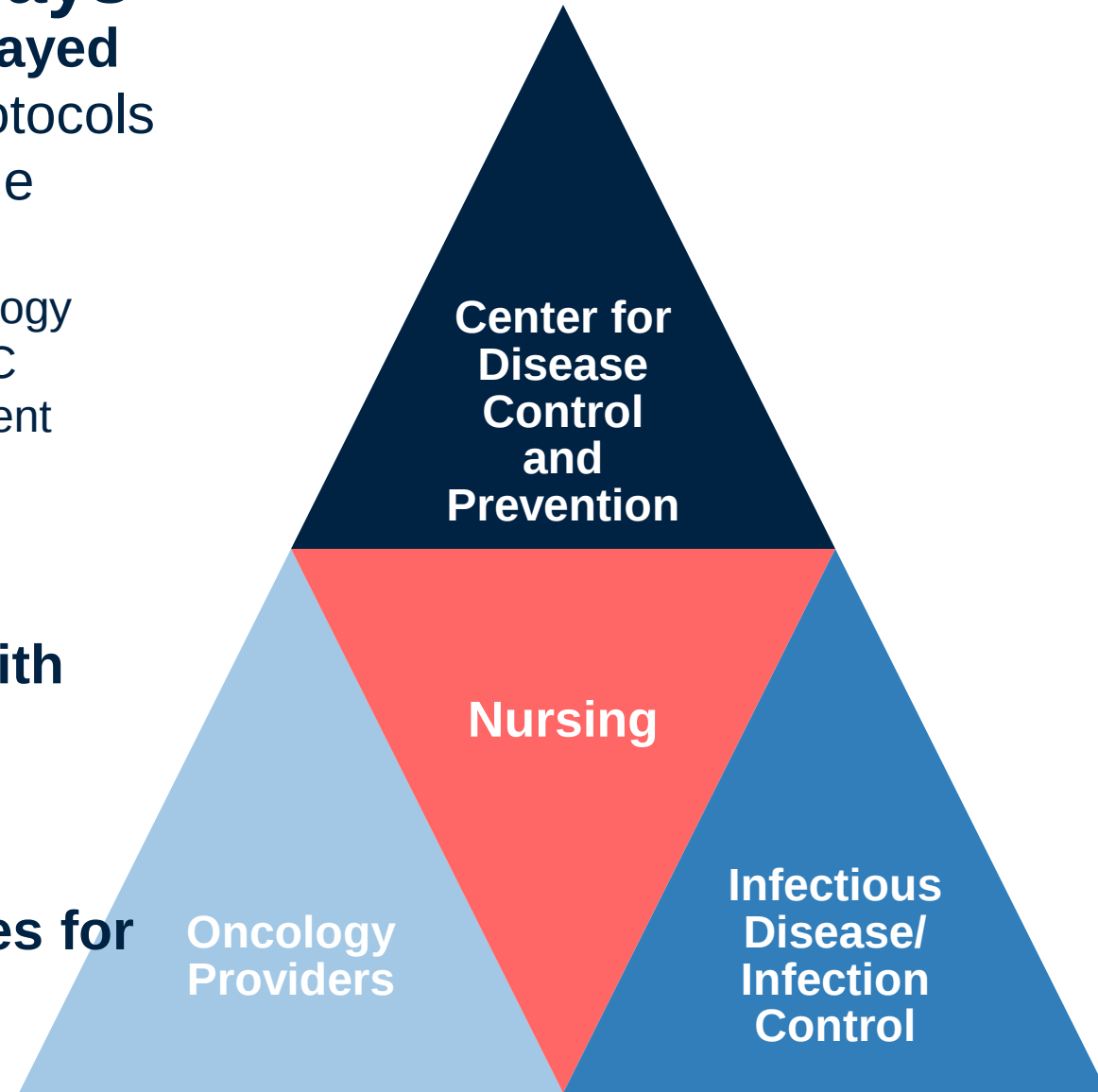
Ongoing Challenges in COVID Management in Outpatient Infusion

- ▶ **Pre-treatment/Routine COVID testing is not required for outpatient Infusion patients**
- ▶ **Liquid Oncology patients often have (disease and/or treatment related) symptoms that overlap with COVID symptoms**
 - What is truly suspicious? What isn't?
 - COVID testing fatigue in liquid patients
- ▶ **Care Coordination between Inpatient and Outpatient for COVID + Cancer patients (especially liquid oncology patients)**
 - Non-clinical individuals scheduling appts. → disregarding COVID flags!
- ▶ **COVID Rule Out + Confirmed Flags: Resolution**
 - Not always getting resolved by providers or Infection Control. This is all MANUAL!

Overview of COVID-19 Infection Statuses (Flags)		
Infection: COVID-19 Rule Out - patient level	Infection: COVID-19 Confirmed - patient level	Infection: COVID-19 Resolved
COVID-19 Rule-Out - Patient has been ordered a test for COVID-19; outpatient reported being exposed to COVID-19 and is in quarantine	COVID-19 Confirmed – patient has tested positive for COVID-19	COVID-19 Resolved – patient has recovered from COVID-19 illness, COVID-19 Resolved flag replaces a COVID-19 Confirmed flag.
***NOTE: COVID-19 Resolved flag replaces a COVID-19 Confirmed flag ***		
The goal is to limit unnecessary re-testing and potential delays in care during the minimal 3-month period of immunity to re-infection after a patient has recovered from COVID-19 infection.		

Key Takeaways

- **Our Outpatient Infusion Nursing Team has played an integral role in COVID** management and protocols for oncology patients in ambulatory care since the pandemic started in March 2020
 - Ongoing collaboration with Infection Control and Oncology Providers (while taking into consideration evolving CDC guidelines) has been critical for safe patient management
- **From December 2020 through March 2021, approximately 241 high-risk COVID+ patients (oncology and non-oncology) were treated with monoclonal antibodies**
- **The COVID 19 Pandemic yielded many important “lessons learned” and opportunities for developing new and enhancing old nursing practices to promote safe and efficient care.**



Contact Information:

- ▶ **Abbey C. Walsh, MSN, RN, OCN** – Clinical Practice Lead for Outpatient Infusion Therapy at Penn Medicine Abramson Cancer Center
 - Email: Abbey.Walsh@pennmedicine.upenn.edu
- ▶ **Angela Rubin, BSN, RN, OCN** – Clinical Nurse II, PCAM 4: Hem-Onc Infusion Floor at Penn Medicine Abramson Cancer Center
 - Email: Angela.Rubin@pennmedicine.upenn.edu

Thank you

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