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JL801

Antibiotic Therapy and Gastrointestinal Graft-Versus-Host Disease in Allogeneic Stem Cell Transplant Patients

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Purpose: Hematopoietic stem cell transplant patients undergo rigorous courses of myeloablative chemotherapy that increase vulnerability for infections. Complications can arise in the form of graft versus host disease manifesting in various organs including the skin, lung, liver, and gastrointestinal tract. Antibiotic therapy is generally begun in order to prevent further complications from infection but may increase the risk for acute gastrointestinal graft versus host disease (GIGvHD). Studies that investigated antibiotic therapy and the subsequent occurrence of GIGvHD in allogeneic stem cell transplant patients (aSCT) were reviewed. **Methods:** PubMed, Scopus, and CINAHL databases were utilized. Articles published between 1/1/2009 and 12/15/2019 were included in this review. A total of 1,142 articles were retrieved. Duplicates, reviews, letters to the editors, irrelevant interventions/outcomes, and non-English articles were excluded. Inclusion criteria included individuals who were undergoing an aSCT and received antibiotic therapy. A total of seven articles were included for this review after applying the inclusion and exclusion criteria. **Results:** The use of broad-spectrum antibiotics increased the risk of developing GIGvHD. Stool analysis showed a decrease in the diversity of the gut biome which in turn led to the increase in acute graft versus host disease (GvHD). **Implications for Practice:** The increased risk may have implications for the standard of care therapy for infections during stem cell transplants. Providers will need to weigh the risk versus benefit of antibiotic therapy and exercise judicious selection of antibiotics prior to engraftment.

JL802

Assessing Educational Gains and Gaps for Advanced Practice Providers in Immuno-Oncology: 2017-2020

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Background: As immuno-oncology (IO) continues to be more fully integrated into cancer practices across the country, advanced practice providers (APPs) are taking on a growing role in IO patient care. This multidisciplinary group of providers, however, may be underrepresented in IO-specific education activities. As such, we examined the results of an online survey to assess how IO knowledge, behaviors, and challenges for APPs have changed over time, and how this group can be engaged in future educational initiatives. **Methods:** In June-August 2020, the Association of Community Cancer Centers administered an online survey to evaluate real-world challenges in the delivery of IO therapies and assess the education and resource needs among its multidisciplinary membership. Survey questions addressed current knowledge and behaviors around the use of immunotherapies in cancer care as well as challenges in using these regimens. Several questions from a 2017 survey on this topic were included verbatim for comparative

analysis. Preliminary results from APP survey respondents were analyzed and compared against the 2017 data to evaluate the changes that have occurred over time among this specific provider group. **Results:** At the time of interim analysis, APPs (i.e., nurse practitioners and physician assistants) comprised 14.52% (n = 9) of all 2020 survey respondents compared to 9.38% (n = 5) of the 2017 survey respondents. Comparison of demographic data among both sets of respondents showed similar cancer practice type representation (e.g., physician-owned practice) and number of patients treated with immunotherapies per year. When asked about familiarity with immune checkpoint inhibitors and IO combination therapies, there was a positive trend towards more familiarity with these therapies between 2017 and 2020. However, these trends were not observed when asked about chimeric antigen receptor (CAR) T-cell therapy. In addition, when asked about specific challenges, there were positive trends towards a higher degree of challenge related to patient education and patient demand. Finally, when asked about IO-specific priorities at their practice, there were positive trends towards higher importance related to getting reimbursed for off-label IO agents, having IO-specific treatment information available at their practice, and having access to experts for consultation on clinical issues. **Conclusions:** This interim analysis serves as an indicator of the changing IO knowledge base and areas of need for APPs over the past three years. The data also suggests persistent knowledge gaps exist which have not been addressed by educational initiatives to-date. While the sample sizes across both surveys are limited, this also lends itself to our conclusions that future educational programming may need to be tailored to better reach an APP audience and their unique needs. **Recommendations:** These findings should be taken into consideration in the development of future IO educational activities designed for APPs. For example, additional education may be needed in the areas of CAR T-cell therapy, patient education and demand, reimbursement, and access to experts. Overall, additional evaluation and outcomes research across IO education for APPs will continue to provide insights into how to best provide impactful education to this group of providers.

JL803

Closing the Research-to-Practice Gap With a Comprehensive Strategy to Manage Neratinib-Associated Diarrhea

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Background: Tyrosine kinase inhibitors (TKIs) play an important role in the treatment of several cancers. This class of targeted therapies interferes with specific cell signaling pathways that stimulate cell growth and induce apoptosis in selected malignancies. Although TKI use is associated with improvements in progression-free survival and overall survival, use of these therapies is not without challenges and TKI-associated diarrhea is an important consideration. The second generation TKI neratinib, approved for use in HER2+ breast cancer as extended adjuvant therapy and in third-line metastatic disease, has improved patient outcomes while also increasing the incidence of grade 3 diarrhea. Results from the phase II CONTROL trial allow clinicians to evaluate the effectiveness of therapy but possessing knowledge of hazard ratios and discontinuation rates does not translate into effective management of side effects. In our experience educating clinicians, we have identified a research to practice gap between scientific knowledge and the application of effective interventions to manage neratinib-associated diarrhea (NAD). **Approaches:** Diarrhea associated with TKIs is markedly different than diarrhea caused by conventional chemotherapy. Educating healthcare providers on the results of the CONTROL trial has revealed a gap in how to best translate these data into effective practice. By also educating clinicians on the pathophysiology of NAD, the pharmacology of anti-diarrheal medications, and comprehensive assessment tools, clinicians have improved symptom management and enabled longer (and more effective) treatment durations. **Discoveries:** The CONTROL trial includes six arms: two dose escalation schedules and four prophylaxis regimens that incorporate loperamide, budesonide and colestipol. Although the trial has demonstrated decreased rates of grade three diarrhea and discontinuations, clinicians struggle to implement a diarrhea management strategy tailored to an individual patient's side effect experience. Two iden-

tified barriers to implementing knowledge into practice for managing NAD are 1) limited assessment tools for defining the extent of diarrhea and 2) lack of mechanism of action (MOA) knowledge. When Clinical Nurse Educators review comprehensive aspects of assessing diarrhea, including identification of volume and consistency, as well as frequency of stools, and explain MOA, participants consistently describe greater understanding. In follow-up, providers report increased confidence in managing NAD, and improved patient outcomes are demonstrated through increased month-to-month persistence and fewer discontinuations. **Conclusions:** Education and a more comprehensive diarrhea assessment are critical for increasing clinician confidence in managing NAD. These findings may be limited to certain clinicians, geographic regions, or institutions. Further evaluation is needed to ascertain the clinical need for a new treatment algorithm and/or guideline to assist clinicians in managing NAD, and to increase patients' compliance and persistence in completing the course of treatment and achieving optimal benefit. **Recommendations:** Due to the multifactorial etiology of NAD, a specific patient assessment and management strategy that is inclusive of the sequela of EGFR inhibition, incorporates identification of volume loss, and allows for factors that increase motility, may be effective in improving patient compliance and persistence with neratinib. The authors propose a pilot study to evaluate an enhanced diarrhea management plan that incorporates current guidelines and evidence-based information to manage side effects.

JL804

Development of a Standardized Bone Marrow Procedure Training and Competency Toolkit for Advanced Practice Providers in a Large Community Oncology Practice

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Background: Bone marrow procedures are a common diagnostic tool utilized in hematology/oncology and can be completed in the office by trained clinicians. Currently, there are limited guidelines for appropriate training and competency for bone marrow procedures performed by Advanced Practice Providers (APPs) in a community oncology practice setting. This type of procedure is well within the scope of practice for APPs. If done in the clinic, it reduces cost by avoidance of facility fees as well as reduces radiation exposure from image guided biopsies. The need to create a standardized training and competency protocol for APPs in this setting was recognized. **Process:** A taskforce comprised of eight APPs, spanning across the state with varying clinical backgrounds, was formed to review available guidelines and identify education and training needs for the community oncology APP. Each member was assigned a different task to research and individually contribute to the toolkit. At least monthly meetings were conducted. Multiple groups were given the opportunity to review and provide feedback on the toolkit including an internal legal team, Human Resources as well as APP and physician leadership. **Results:** A comprehensive, standardized educational and procedural toolkit was created including resources to explain indications for bone marrow biopsies and aspirates, risks and benefits of the procedure, procedure process, treatment implications and findings, pre and post-procedure patient educational materials, procedure consent form, dictation templates and billing guides. An internal policy was created for the use of office-based anesthesia in congruence with current state laws. Competency checklists and procedural logs included in the toolkit allow for proper documentation of standardized training protocols. **Conclusion:** Bone marrow biopsies are routinely performed by APPs. The creation of a comprehensive training toolkit for an APP in the community oncologic practice setting helps to ensure a high standard of procedural proficiency and consistency among individual providers and practices. **Recommendations:** APPs need to take an active role in creating comprehensive protocols to guide a high standard of procedural proficiency in patient care. The creation of such an extensive toolkit is time consuming. By adopting and standardizing toolkits such as this one, community hematology/oncology practices can ensure high-quality patient care through delivery of highly trained and proficient APPs.

JL805

Dual Track: Development of an Oncology-Track Fellowship Curriculum for Advanced Practice Providers Using a Needs-Based Assessment

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Background: Advanced practice providers (APPs), including nurse practitioners (NPs) and physician assistants (PAs), are part of a growing cancer care workforce nationwide. Current practice in hematology/medical oncology is reliant on APPs functioning autonomously within the care team model, posing a significant challenge to recent graduates. Orientation and mentorship require significant time and effort to support new APPs. Most NP/PA graduate programs have limited focus on hematology/medical oncology. The knowledge gap between graduate education and practice in hematology/medical oncology is significant. In the current state, formal on-the-job training includes 6-12 months of orientation with an additional 1-2 years of mentorship. Development of a subspecialty fellowship program is imperative for training highly qualified medical oncology APPs. Based on the successful training experience of our current Hematology NP/PA Fellowship, we have developed a combined Hematology/Medical Oncology program with dual tracks in hematology or medical oncology. **Methods:** We developed a web-based survey of 18 questions to guide curriculum development for our medical oncology fellowship track. The survey was sent to medical oncology APPs (n=37) at three Mayo Clinic sites in Rochester, MN; Scottsdale, AZ; and Jacksonville, FL. Survey questions addressed prior training, perceived knowledge gaps and challenges in medical oncology practice. **Results:** Twenty-four (65%) APPs responded to the survey. 19 (79%) reported primary care focused education while 0 received adequate medical oncology training. 19 (79%) felt specialty instruction would be beneficial. Furthermore, 20 (83%) strongly agreed that a structured oncology fellowship would improve subspecialty practice satisfaction and job retention. Direct patient care and 1:1 preceptor-led didactics were identified as the most effective means of learning. **Conclusions:** Graduate training opportunities in hematology/medical oncology for APPs is limited. All programs currently available consist of a 1-year combined hematology/medical oncology curriculum. While this approach improves subspecialty knowledge, a combined program is often insufficient to provide the in-depth knowledge and skills necessary for highly subspecialized practice. Unlike most community-based cancer institutions, our academic medical center offers specialty care in hematology or medical oncology, with further specialization based on tumor type. Our goal is to prepare competent APPs with expertise in academic medical oncology. Based on survey results, subspecialty graduate training is necessary to achieve this goal. We therefore developed a Hematology/Medical Oncology APP Fellowship consisting of two independent year-long tracks in hematology or medical oncology. Our approach will ensure that APP fellows gain a strong foundation of knowledge, exposure to research and education. As the first independent, dual track program, our fellowship model is a pioneer for advanced APP training and will serve as a postgraduate education model for subspecialty training of APPs in tertiary cancer care.

JL806

OUTSTANDING POSTER AWARD WINNER

Impact of Advanced Practice Providers on Early Recognition and Management of Adverse Events in Patients Enrolled in Early Clinical Trials in the Ambulatory Setting

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Background: Early Phase oncology clinical trials (phase I-II) require close collaboration of clinical and research teams. Nurse practitioners and physician assistants (Advanced Practice Providers [APP]) are an integral part of the clinical team, identifying eligible patients (pts), providing education and caring for pts enrolled on clinical trials. Their role in management of toxicities from novel therapeutics is unknown. In this study, we assessed the management of adverse events (AEs) by APPs in early clinical trials in the ambulatory setting. **Methods:**

Pts with advanced and/or metastatic solid tumors enrolled in phase I-II clinical trials were seen by APPs between September 2017 and August 2018 in the Fast Track (APP FT) Clinic in the Department of Investigational Cancer Therapeutics at The University of Texas MD Anderson Cancer Center. We assessed patient characteristic, type of treatments received, the occurrence of grade 3-4 AEs and their management. We also evaluated the emergency center (EC) visits and admissions 24 hours before and/or after the APP FT visit. **Results:** A total of 808 pts were seen in 2697 visits (median=3 visits/pt; range 1-28) by 10 APPs. Pts were enrolled in 159 phase I-II clinical trials with targeted therapies, chemotherapies, immune-checkpoint inhibitors (IO) and other treatments. The majority of visits (59.7%) occurred during the dose limiting toxicity assessment period or cycle 1 and 41% of visits were for pts receiving treatment including IO. The most frequent tumor types seen in the APP FT clinic were: colorectal, breast, non-small cell lung, pancreatic cancers and sarcoma. Treatment was held in 6.9% of visits and grade 3-4 AEs were present in 5.4% of visits, however only 1.4% of visits ended with the patient being sent to the EC and/or admitted for further treatment and toxicity management. The majority of hematologic grade 3-4 toxicities (91%) were managed in the APP FT ambulatory clinic, avoiding pts to be seen in the EC or admitted. Among patients seen in the APP FT clinic, those referred to the EC were more likely to have baseline hypoalbuminemia, high LDH and poorer performance status (P< 0.001). Models stratified on years of APP experience did not demonstrate significantly different associations with these strong predictors. Multivariate modeling adjusting for age and race demonstrated patients sent to the EC were 20 times more likely to have poorer baseline ECOG (P < 0.001) and 3.5 times more likely to have higher RMH scores at baseline (P=0.001). **Conclusions:** The APP FT clinic has an important role in the management of AEs by APPs in early clinical trials in the ambulatory setting, potentially avoiding EC visits and admissions. **Recommendations:** The preliminary results of this study suggest that patients with baseline hypoalbuminemia, high LDH and ECOG >1 would benefit from close monitoring and follow-ups in the APP FT clinic during treatment on a phase I-II clinical trial.

JL807

Implementation of Palliative Care Consult "Trigger Criteria" in Outpatient Oncology

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Background: There are high numbers of unplanned symptom-management admissions and Emergency Department (ED) visits among oncology patients to a community-based academic hospital in the Southeast. Palliative care (PC) has been shown to decrease the symptom burden of oncology patients and improve oncology outcomes. The American Society of Clinical Oncology (ASCO) recommends early PC, concurrent with active treatment, to patients with advanced cancer (Ferrell et al., 2016). PC is underutilized at this institution. Advanced Practice Providers (APPs) are essential members of the oncology care team, contributing not only to direct patient care, but also to research, patient education and advocacy across the disease trajectory. Oncology APPs are poised to promote and deliver important PC services. The purpose of this pilot study is to improve PC utilization within outpatient oncology clinics; to decrease unplanned hospital/ED admissions among oncology patients; and to explore the feasibility of implementing PC consults using trigger criteria among oncology outpatients. **Methods:** A pre-intervention survey seeking to examine views of PC, potential barriers and benefits, and feasibility was given to multidisciplinary staff in the pilot clinic. During the five-month intervention period, new patients were screened. If they met any of the four trigger criteria (based on diagnosis and stage), a PC referral was teed up in the electronic medical record for provider signature; a consult appointment was facilitated. Data was collected from the pilot clinic and a comparable control clinic. A post-interview was conducted among key players to determine barriers and successes. **Results:** The pre-intervention survey (n=7) found most respondents believe PC is an important part of cancer care and would advocate for its use, though feel patients are unaware of its role. Potential barriers included: the burden of additional visit or cost to the patient and the association with end-of-life care. The post-intervention interview identified many of the same barriers. All thought that the project was important and feasible. It was

suggested that triggers be symptom-driven and tandem oncology-PC visits considered. Twenty-seven patients met trigger criteria in the pilot clinic with a 59% admission rate; 5 of the 27 patients were referred to PC. In the control clinic, 0 of 17 patients who met criteria were referred to PC and there was a 94% admission rate. **Conclusions:** Using trigger criteria in the outpatient oncology setting is an innovative process that increases the use of PC in this population and may improve admission/ED rates. Data is limited by the short time interval and small sample size. More time is needed to see if a relationship with the PC team can decrease the number of admissions in the long term. More education to providers and patients is needed regarding the benefits of PC. Alternative trigger criteria may be evaluated. **Implications:** APPs are an integral part of the oncology care team, who provide high-quality, holistic care. They are in a unique position to increase awareness for PC, improve partnerships between PC and oncology, and provide PC to oncology patients. APPs across institutions should consider triggering PC consults for high-risk oncology patients.

JL808

Importance of Advance Care Planning and End-of-Life Communications With Cancer Patients in Global COVID-19 Pandemic: Practical Tips for Oncology Advanced Practice Providers

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Background: Cancer patients can have altruistic goals including feeling free to express themselves using unrestrained and honest talk especially towards the end of life. Advance care planning discussions ensures patients' values and goals of care, including patient's freedom to choose their place of death are respected. Unfortunately, these discussions are often delayed, and are not initiated early in patients' cancer trajectories. As a result, patients' wishes often remains unknown until the last phase of their life. Evidence suggests that many patients inappropriately receive aggressive treatment near the end-of-life, which leads to higher resource utilization, decreased quality of life, and increased cost. Additionally, the novel coronavirus disease 2019 (COVID-19) pandemic is challenging health care systems worldwide and raising important ethical issues, especially regarding the potential need for rationing health care in the context of scarce resources and crisis capacity. The importance of goal concordant care is now even substantially important and is heightened in the context of this pandemic. Oncology clinicians include physicians and advanced practice providers (APPs [nurse practitioners, and physician assistants]). APPs are integral members of the oncology team and contribute greatly to the oncology care by providing diversity of services to cancer patients. During the pandemic, cancer patients care delivery require even more coordination and communication than usual. **Purpose:** To encourage and provide practice tips for oncology advanced practice providers for developing confidence in initiating advance care planning and end of life discussions with cancer patients to explore their goals of care based on their values. **Methods:** First and foremost is exploring our own personal beliefs and understanding the cultural norms of patients and their family. Then follow step by step of communication using effective communication tips which include both verbal and non-verbal. Non-verbal communication skills are the first step in building relationship with patients and families followed by verbal communication. **Conclusion:** Several benefits and adopting the communication strategies can overcome the barriers to effective communication related to advance care planning and end of life care with cancer patients which can provide care based on their goals, values and preferences. This is highly important in a global pandemic with scarcity of health resources. Advanced practice providers are an integral part of the oncology team and also serve as patient advocates. APPs can learn the skills through non-verbal and verbal communication strategies to build their confidence in initiating advance care planning and end of life discussions with cancer patients. **Recommendations:** Oncology APPs have the potential to initiate advance care planning and end of life discussions. Following the practical tips on verbal and non-verbal communication, APPs can ensure the delivery of high-quality patient care by ensuring patients receive the care they want and aligning the care that is delivered based on patients' values and goals.

JL809

Increasing Oncology Advanced Practice Registered Nurse Utilization in Oncology Clinical Research in the Community

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Background: The majority of oncology advanced practice registered nurses (APRNs), including nurse practitioners and clinical nurse specialists, have a deep understanding of treatment paradigms along the disease trajectory, and many are experts in symptom management. In addition, oncology APRNs are responsible for much of the care coordination in everyday practice. Because of these skills, they have the potential to make significant contributions to clinical research. This project's objective was to increase oncology APRN utilization and contributions to cancer clinical trials at the University of Hawaii Cancer Center (UHCC)/Hawaii Minority/Underserved National Community Oncology Program (M/U NCORP). **Methods:** From October 2018 through July 2020 1. Registered Oncology APRNs in Hawaii as Non-Physician Investigators (NPIVR) through the National Cancer Institute (NCI) Registration and Credential Repository a. Served as enrolling investigators on cancer control and prevention trials 2. Changed policy at UHCC to allow Oncology APRNs serve PIs for Hawaii M/U NCORP cancer control, symptom management and cancer care delivery trials 3. Integrated Oncology APRNs into protocol review through UHCC/Hawaii M/U NCORP 4. Developed a valid and reliable survey through mixed methods approach to assess attitudes, beliefs and roles on Oncology Advanced Practitioners (APs) in Hawaii leading to a national benchmarking survey. **Results:** 1. Investigation: a. NPIVR: Increased number of Oncology APRNs in Hawaii M/U NCORP registered through NCI as NPIVR from 2 to 11 (84%) b. Oncology APRNs serve as enrolling investigators now on appropriate clinical trials separate from treating oncologist c. Principal Investigator: Increased number of protocols of Oncology APRNs serving as PI on, from 0 to 5 currently 2. Protocol review: Oncology APRNs now routinely review protocols that come into Hawaii M/U NCORP-2019. Oncology APRNs reviewed greater than 20 different protocols to date 3. Accrual: Increased accrual at two institutions in Hawaii 4. Coordination: Assisted with clinic coordination of cancer care delivery research (CCDR) implementation trials 5. Awards: Oncology APRN in community 1st APRN and NPIVR to receive the UHCC accrual award in January 2020 6. Research: Pilot survey fostered a national survey to collect national data on Oncology APs knowledge, attitudes and roles regarding cancer clinical research **Conclusions:** Oncology APRNs are interested and able to make meaningful contributions to cancer clinical research. Oncology APRNs in Hawaii are now enrolling patients on protocols independent of MDs. They are also involved with recruitment, coordination, reviewing incoming protocols and protocol development. They have been instrumental in assisting with CCDR implementation trials, taking the lead in clinic coordination and serving as nurse coaches, NPIVR and as PIs. In addition, they were able to publish findings from the Hawaii Pilot Oncology APs and Clinical Trials Survey. **Recommendations**: Evaluate your APRN utilization in your clinical trials processes and procedures at your practice, institution or community. If APRNs are not practicing to their full scope, work towards better integration, education and policy change to allow these providers to reach their full potential.

JL810

Oncology Advanced Practitioner Collaboration for Successful Implementation of Clinical Trials Survey Protocol

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Background: Nurse practitioners (NPs), clinical nurse specialists, physician assistants (PAs), and clinical pharmacists, collectively known as advanced practitioners (AP), are instrumental in providing quality cancer care. It is widely accepted that clinical research is an integral aspect of oncology care, yet there is limited published data regarding

oncology APs' practice and contributions to cancer clinical trials. To address this knowledge gap, an NP from the University of Hawaii Cancer Center (UHCC) designed and implemented a survey to determine Hawaii-based APs' research involvement. Successful completion of this pilot project led to consideration of expansion of the survey into a nationwide assessment of oncology APs. **Methods:** In order to reach oncology APs nationwide, the UHCC NP first formed a collaboration with the Association of Community Cancer Centers (ACCC). Second, as members of the Advanced Practitioner Society for Hematology and Oncology (APSHO), the APs participating in this project sought collaboration with the parent company of APSHO, Harborside, given its large network of oncology APs and their role in oncology AP advocacy, education, and publishing. Four oncology APs from these three organizations collaborated to reformat, revalidate and then disseminate an updated nationwide survey. Once the national pilot proved the instrument psychometrically sound (Cronbach's alpha ranging between 0.59 and 0.88 and Pearson's correlations with a median of 0.77), the survey was sent to over 14,000 oncology APs' emails from Harborside's and ACCC's membership databases. **Results**: The team successfully implemented a national survey protocol with responses from 408 oncology APs and obtained benchmarking data on this group of health care professionals in the setting of cancer clinical trials. The team analyzed the data and drafted several abstracts and a manuscript for submission to a high impact oncology journal. Educational content is currently being developed to build upon this benchmarking data and advocate for further integration of oncology APs in clinical research. In addition, the collaboration with ACCC and Harborside has created multidisciplinary enthusiasm from leaders in several organizations. For example, a member of the team presented the preliminary data to the executive committee of an oncology clinical research cooperative group to begin the discussion of improving integration of APs in cooperative groups. **Conclusions:** Through multi-organizational collaboration, an individual NP was able to expand a single institution research project into a national survey of oncology APs' knowledge, attitudes, and roles in the realm of cancer clinical trials. To our knowledge, this is the first comprehensive attempt to gain national insight into oncology APs' practice in the setting of clinical trials. Membership in professional organizations and multi-organization collaboration are effective routes to assemble working groups with shared objectives to conduct projects with far reaching impact. **Implications for Practice:** The results will be used to address unmet educational needs, advocate for more inclusive research practices and policies, and further support oncology AP practice in clinical research. This could ultimately lead to improved clinical trial accrual, a stronger cancer research workforce, and a better patient experience.

JL811

Opioid Use Disorders: Experience, Knowledge and Interest Among Oncology Advanced Practice Providers and Pharmacists

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Primary Objective: To describe oncology advance practice provider (APPs) and pharmacist experience with, knowledge of and interest in opioid use disorders (OUDs). **Background**: The opioid epidemic has had devastating effects on families and communities. Opioid use disorder is a medical illness, yet misconceptions still exist that this is a weakness or lifestyle choice, separating OUD treatment from the rest of health care. Cancer patients with opioid misuse and addiction are often more challenging due to the often-lethal nature of cancer diagnoses, complex treatment-related issues and problems with noncompliance/adherence. Serious complications, such as infections, may occur if strategies for reducing patient harm are not implemented in at-risk patients. Oncology APPs, including advanced practice nurses (APNs) and physician assistants (PAs), as well as pharmacists, are unprepared for confronting the opioid epidemic. This is not only about opioids and substance use, it is also about good medical care. **Methods**: A hospital-wide survey utilizing REDCap (Research Electronic Data Capture), was emailed to potential participants over 4 weeks in early 2020. Data focusing on OUD knowledge, beliefs and interest among APPs and pharmacists is reported here. The total possible sample was ~480 participants (~360 APPs and ~120 pharmacists). **Results:** One hundred and eighty APPs (response

rate 50%) and 33 pharmacists (response rate 27.5%) completed the survey (overall response rate 44.4%). Fifty-four (30.2%) of APPs worked in hematology, whereas more pharmacists (n =10, 32.3%) worked in oncology. The majority of APPs (n = 77, 42.8%) worked in the ambulatory setting, whereas the majority of pharmacists (n =18, 54.5%) worked in both inpatient and ambulatory/outpatient settings. Most APPs (n = 100, 57.1%) and pharmacists (n = 17, 56.7%) have personal experience with OUD, meaning someone they knew had an OUD. Patient issues with OUD were encountered occasionally or often by 91.4% (n = 160) of APPs and 70% (n = 21) of pharmacists. Only 41 (23.5%) APPs and 8 (26.6%) pharmacists reported education and training in OUDs. Not having confidence in addressing OUDs was reported by 60 (34.9%) APPs and 10 (33.3%) pharmacists. In comparison, 31 (18.1%) APPs and 4 (13.3%) pharmacists answered confident or very confident. The majority of APPs (n = 168) and pharmacists (n = 27, 81.8%) were possibly interested in learning more about OUDs. The most popular learning preferences were online (i.e., computer-based learning) or an online presentation. **Implications for Practice:** Opioid use disorders are encountered by the majority of oncology APPs and pharmacists in both their personal and professional lives. Only a minority reported receiving disease-specific training, which may contribute to the lack of confidence in addressing OUDs. Innovative strategies to provide additional education, preferably in an online setting, are both welcome and needed. The opioid epidemic provides opportunities for advanced oncology providers to improve patient outcomes, ultimately positively impacting families and communities.

JL812

Outpatient Intensive Induction Chemotherapy for Patients With Acute Myeloid Leukemia During the Time of COVID-19 and Beyond

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Setting: The COVID-19 pandemic caused an unprecedented strain on the medical system. The shortage of inpatient beds at this academic cancer center necessitated the decision between admitting new Acute Myeloid Leukemia (AML) patients or initiating induction chemotherapy in the outpatient setting. To accomplish the latter, an advanced practice provider (APP) managed, interdisciplinary, outpatient induction chemotherapy program was initiated. **Methods:** AML and infusion APPs collaborated and followed the guidelines published by Becker et al[1]. Three adults, age less than 50 with supportive caregivers, received intensive induction chemotherapy as outpatients. One patient was pregnant, another had treatment-related AML, and the third had received two allogeneic transplants. Two had adverse and one had intermediate-prognosis AML by European Leukemia Net 2017 guidelines. Each patient had performance status of 1 with normal hepatic and renal functions except one patient with a creatinine of 1.32. Their absolute peripheral blast counts were 0.13, 0.32, and 9.75, suggesting a low risk of tumor lysis syndrome along with normal uric acid levels. Their estimated probabilities of death during weeks 1-4 after beginning therapy, based on the treatment-related mortality scores 2 were < 1, 1.5, and 4. For chemotherapy regimens, one received 7+3, and two received ara-C doses > 1g/m² together with an anthracycline and cladribine or fludarabine over 5 days. Prior to beginning chemotherapy, a central catheter was placed and a MUGA scan was obtained. During chemotherapy, the patients were assessed daily in the outpatient infusion center by their primary APP. Daily CBC, PT/INR, CMP, fibrinogen, LDH, uric acid were obtained. Support was also provided by infusion APP staff. All APPs had been trained to recognize chemotherapy-related complications and to arrange timely hospital admissions for complications. **Results:** The patient receiving 7+3 completed 5 out of 7 days outpatient. The other two patients completed 1 out of 5 and 2 out of 5 days of outpatient induction chemotherapy respectively. Two were admitted for disseminated intravascular coagulation and one for neutropenic fever. All three chemotherapy regimens were completed in the inpatient setting as prescribed, except for one 5-hour delay. All patients were discharged from hospital; the 30-day mortality was zero. **Conclusion & Recommendations:** This APP run program suggested that intensive induction che-

motherapy can safely be administered to AML patients in the outpatient setting. This program was successful because the patients all resided within 30 minutes of the cancer center, each had a caregiver, and all were assessed as low risk for complications. This program should find wider use, even beyond the time of COVID-19.

JL813

Postgraduate Training for Oncology Advanced Practice Providers: An Overview

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Background: Over the years, there has been an increasing number of cancer patients and survivors with a rise in the aging population, as well as innovation and treatment advances in cancer care. The field of oncology becomes more specialized, and cancer treatment becomes more complex. All these changes contribute to a shortage in highly skilled clinicians including advanced practice providers (APPs). Postgraduate clinical programs offer physician assistants (PAs) and advanced practice registered nurses (APRNs) additional clinical training after completion of graduate degree programs and certification. The number of postgraduate fellowship programs for APPs have grown substantially in recent years. This review traces the history of APP postgraduate programs in the United States and will provide a broad overview of these programs with a particular focus on oncology postgraduate training programs regarding their accreditation, curriculum, and impact on the career of APPs who elect to complete such programs. It also sheds light on the impact on quality of care such as team efficiency brought by APP graduates of these programs. **Methods:** Ovid, PubMed, and Scopus were used as search engines to identify literature that addresses APP oncology fellowships. Additionally, the Association of Postgraduate PA Program's (APPAP) "Postgraduate PA/NP Program Quick Reference Chart" and information from the websites of the identified APP oncology postgraduate programs were used to compile data regarding the goals, models, components, barriers to, and outcomes of these programs. **Results:** In our search, we identified five APP, three PA, and eight APRN postgraduate programs in oncology. The goals of these programs are for participants to develop oncologic skills and knowledge, to gain experience in and exposure to oncology practice, and to become competent APP leaders in the field of oncology. Most programs include a variety of exposures, while a few are more surgically and pediatric focused. Programs range from three months to thirteen months long and accept one to three fellows per cohort. APRNs complete Advanced Oncology Certified Nurse Practitioner (AOCNP) certification, while PAs receive a certification of program completion. Common program components include didactic courses, clinical rotations, procedure practice, mentorship, academic meetings, and professional projects. **Conclusions**: APP oncology fellowships are a new and growing field, allowing APPs to train in oncology and be exposed to various oncologic specialties. The structure and components of each program we compared were similar, although the focus and combination of components of each varied. Despite barriers in reported funding and mentorship opportunities, the outcomes of developing clinical knowledge, skills and confidence led to fellowship graduates being highly sought-after APPs in oncology practice. **Recommendations:** Future studies could include quantitative surveys to determine major areas of improvement for postgraduate programs, as well as retrospective comparative studies of fellowship trained oncology APPs to non-fellowship trained oncology APPs to determine the differences in leadership, research, and job prospects.

JL814

tAPPing Into Your Leadership Potential

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Background: Integration of advance practice providers (APPs) into team-based care is well recognized, but operational leadership positions and training have not been consistently defined for APPs. Effective clinical leadership training improves patient care by encouraging teamwork, facilitating the design and close monitoring of care processes, promoting a safety focused culture that enables innovation and professional growth and development. To achieve the best operational and clinical outcomes in today's health care envi-

ronment, APPs should be equipped with clinical leadership skills paired with mentorship support. Nebraska Medicine (NM) recognized the value of developing leadership skills in the APP group and developed such a program. In 2017, the tAPPing program was launched to foster growth of leaders from within the organization and improve APP engagement/retention. Employee engagement was measured by a quarterly pulse survey that was aimed to assist leaders and managers to identify areas of concern they can focus on. NM employs 450-APPs who report to variety of managers, including APP leaders and non-APP leaders. Results of the pulse survey demonstrated that APP leaders engaged peers more than non-APP leaders. **Intervention:** The program was a 9-month commitment. The participants were asked to find a leader within organization to be their mentor, in order to see things through the organizational lens. Monthly discussions on assigned topics including: 1) Development Surveys (Hogan Assessment and Strength Finders) to identify strengths and possible career derailers. 2) Crucial conversations 3) Leadership spotlights with executive leaders within NM 4) Discussions around novel by Cy Wakeman on "Reality-based approach to leadership." Post survey was performed after completion of the program. **Outcomes**: Since the initiation of the program there have been a total of 27 APPs have completed the program and achieved personal and operational goals. Post tAPPing surveys demonstrated that participants were able to reflect on their individual strengths and derailers which allowed them to have more confidence in crucial conversations. They felt more engaged in the organization having face-to-face interactions with senior leadership within the organization. Some of the participants as a result of their experience were able to go onto supervisor/lead roles or provide informal leadership within the organization. The NM pulse survey demonstrated improved engagement with APP leaders as opposed to non-APP leaders. This validates the importance of promoting leadership skills in APP leaders. **Conclusion:** During difficult times, healthcare workers are asked to do more with less. Leaders need to be able to understand what their employees need and deliver what is necessary to encourage engagement. APP leaders can bridge the gap in communication from senior leaders and present the information that is most meaningful to the APP then non-APP leaders leading to better engagement. As a result of this program, senior leadership at NM recognized the value and need to grow leadership from within the organization and to ensure effective alignment with other members of the care delivery team. The ASPIRE program was developed and is set be launched fall 2020 for all employees within the organization.

JL815

The Changing Paradigm of Urgent Outpatient Oncology Evaluation in the Era of the COVID Pandemic

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Background: The onslaught of COVID-19 has impacted every facet of healthcare requiring initiation of new guidelines and protocols which are under constant review and revision in line with the changing environment. The primary focus for care delivery is aimed at maintaining safety of patients and staff. The Oncology Evaluation Center (OEC) at the Hospital of the University of Pennsylvania provides Advanced Practice Provider- (APP) led, same-day, urgent evaluation for symptomatic medical oncology patients (MOPs) in the ambulatory setting. Early in the pandemic, the OEC census was decreased; patients with symptoms concerning for COVID-19 were directed to local testing centers or the emergency department (ED) to minimize the risk of SARS-COV-2 exposure to cancer center patients and staff. The goal was to maintain the OEC as a "cold zone," meaning that patients evaluated there were at low risk for being COVID positive. Ambulatory resurgence initiatives began in May and in mid-June, an OEC "hot zone" was established enabling evaluation of symptomatic MOPs, deemed at higher risk for COVID due to fever or other accompanying symptoms. The hot zone OEC, also APP–led, offered full evaluation, management and rapid on-site COVID testing. **Methods:** Regulatory approval was granted in

May 2020 through October 2020 for the opening of the OEC hot zone. There are eight rooms allotted for evaluation and infusion. Referrals to the OEC occur from the primary hematology oncology provider team to an OEC-scheduler. Symptoms are reviewed by an OEC APP who then directs for the patient to be scheduled in the "hot" or "cold" zone. For patients being evaluated in the hot zone, they are instructed to call the RN upon arrival to the building and are escorted to an isolation room in the hot zone. **Results:** Fifty-eight patients with either solid or liquid tumor malignancies, considered persons under investigation (PUI) for COVID, were evaluated in the OEC hot zone from June 15, 2020 through August 7, 2020. Presenting symptoms included fever (n = 45/58), shortness of breath (n= 17/58), new cough (n = 11/58) and other (n= 24/58). Of note, some patients had more than one presenting symptom. Forty-three patients were discharged home from the OEC. Five patients were directly admitted to the hospital. Ten patients were directed to the ED for further evaluation and subsequently all 10 were admitted. A total of 48 patients avoided ED evaluation. Of the 58 patients evaluated there were none positive for COVID-19. **Conclusions:** In this single institution experience of evaluating symptomatic oncology patients in the OEC hot zone, the incidence of COVID-19 was negligible. Nonetheless, it remains essential that oncology patients receive appropriate cancer specific evaluation of new or worsening symptoms, rather than deferring this care to EDs or other providers. Given the high-risk population, creating a niche to evaluate patients with symptoms concerning for COVID-19 is a mechanism to minimize risk of infection or transmission to other immunocompromised patients and to decrease ED visits and/or hospitalization.

JL816

The Expanding Role of Oncology Clinical Pharmacists in Immune Effector Cell Therapy Programs

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Background: The provision of Immune Effector Cell (IEC) therapy, in particularly CAR-T (chimeric antigen receptor T-cell) therapy, is a rapidly evolving and complex specialty practice requiring a multidisciplinary care team. Patients receiving CAR-T therapy require dedicated attention to their medication and adverse event management. Through stakeholder, risk and gap analysis, learning needs assessment, and patient feedback, our center identified the need to add a clinical pharmacist to both pre- and post-infusion setting to optimize patient experience and the quality of healthcare delivery. The purpose of this abstract is to define the new role of the pharmacist in an IEC program. **Design:** Framework development was guided by the American Society for Transplantation and Cellular Therapy Pharmacy Specialty Interest Group recommendations on the Hematopoietic Cell Transplant Pharmacist Roles and Responsibilities. **Findings:** There are five specific roles that a clinical pharmacist should engage in as part of an interdisciplinary care model: (1) Provide direct patient/caregiver education and participate in the consent process; (2) Ensure adherence with the risk evaluation and mitigation strategy (REMS) programs; (3) Perform comprehensive medication reviews and clinical decision support in toxicity monitoring and management; (4) Provide medication management recommendations on cessation of therapies and wash-out periods prior to apheresis and product infusion and (5) Develop supportive care practice guidelines and implement quality assurance projects. **Summary:** Clinical pharmacists play a critical role in providing patient and healthcare team education, medication management, guideline development, and quality improvement in IEC programs. Clinical pharmacists should partner with physicians and advanced practice practitioners to improve the quality of care in IEC programs allowing for a more patient centered and collaborative approach. **Recommendations**: Integration of a clinical pharmacist into an interdisciplinary IEC team represents a novel practice model. As more CAR-T products receive FDA-approvals in the upcoming years, future studies should explore the impact of clinical pharmacists on patient experience, practitioners' satisfaction, clinical outcomes, and the quality of care within IEC programs.

JL817

Use of a Home Symptom Management Zone Tool With Geriatric Patients Undergoing Cancer Treatment

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Background: Oncology practices are caring for a growing number of older adults with cancer. By 2030, the incidence of cancer among those 65 years of age and older is expected to increase by 67%. Oncology nurse practitioners are often responsible for providing symptom management education and supportive care to older adults in the ambulatory cancer clinic setting. However excellent this education and support is, seniors are often unable to comprehend and recall complex cancer treatment and symptom management information. Handouts given in this setting may be difficult for seniors to read and challenging to locate at home when needed. Zone tools provide symptom management education in a colorful, stepwise fashion from green (no symptoms present) to yellow (concerning symptoms) to red (severe symptoms) for a variety of chronic conditions, with actions to take at each level. Oncology staff at Providence St. Joseph's Medical Center in Burbank, CA adapted this concept for cancer symptom management and made it available to other oncology clinicians. This initiative examined the feasibility and acceptability of the oncology zone tool when used with older adults in a community cancer clinic in Richmond, VA. **Methods:** This project was deemed a quality improvement initiative by the institutional review board. The Ottawa Model of Research Use provided the framework for engaging and equipping staff and keeping the team on task. The project lead nurse practitioner mentored nursing staff on the purpose of the tool and the steps of the initiative. Nursing staff distributed the zone tool to patients before their first or second treatment cycle. Patient/caregiver comprehension was assessed using the teach-back method. After the ten-week implementation period, surveys with Likert scale and open-ended questions were disseminated to patients and staff. **Results:** Thirty-one zone tools were distributed to patients. All four office nurses completed the email survey and 36% of patients participated by phone. All of the nurses felt the zone tool was very easy to use and could be explained to patients in a reasonable amount of time. They were very or mostly satisfied with the zone tool and with its helpfulness when triaging patient calls. Seventy percent of patients surveyed found the zone tool easy to use and had used it at least once to manage symptoms at home. Eighty percent were very satisfied with the tool and all were very likely to recommend it to others in the same situation. **Conclusions:** Results of this initiative suggest that utilizing a home symptom management zone tool in a population of older adults undergoing cancer treatment in a community oncology practice is feasible and acceptable to patients and staff. Patients appreciated the design of the tool which included magnetized strips for easy access on a home refrigerator. **Recommendations:** Replication with larger samples will enable analysis of the zone tool's impact on outcomes such as emergency department use, timeliness of symptom-related phone calls, and patient/caregiver anxiety pre- and post-implementation. A zone tool template has been created with the hope that other oncology clinicians will tailor it to their patient populations.