

VISION

NCOPE 2023 Education Summit on  
Challenges and Opportunities  
in O&P Education and Training:  
**Envisioning Future Needs**



National Commission on Orthotic and Prosthetic Education

# NCOPE 2023 Education Summit on Challenges and Opportunities in O&P Education and Training: **Envisioning Future Needs**

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**F**ounded in 1991, the National Commission on Orthotic and Prosthetic Education (NCOPE) is a national educational accreditor which functions to create standards and guidelines for orthotic and prosthetic, educational programs at the academic institution and post-graduate level, including residency education. Our vision is to improve lives and strengthen the O&P profession through education. The O&P accreditation standards are developed and adopted in collaboration with CAAHEP member-sponsors.

**NCOPE focuses its efforts on the following goals:**

- Strengthen education and clinical experiences.
- Optimize the collection, use, and dissemination of data for the benefit of the profession.
- Demonstrate value of NCOPE's services and role.
- Attract a more racially and ethnically diverse cohort of students to choose O&P as a career so the future workforce better reflects the population it serves.

**NCOPE 2023 Summit on Challenges and Opportunities in O&P Education and Training:  
Envisioning Future Needs: Meeting Report**

**August 2023  
Minneapolis, MN**

The meeting was facilitated by Lowell Aplebaum, FASAE, CAE, CPF, CEO at Vista Cova, LLC.

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# Acknowledgements

NCOPE would like to acknowledge many contributors to the success of the NCOPE 2023 Education Summit on Challenges and Opportunities in O&P Education and Training: Envisioning Future Needs.

The summit attendees, a list of whom can be found in Appendix G, provided the substance of this publication.

The planning committee, composed of Robin Seabrook, Executive Director at NCOPE; Sue Spaulding, Associate Teaching Professor at the University of Washington; Mike Madden, Instructor and Program Coordinator at Bluegrass Community & Technical College; Sheryl Sachs, Prosthetist Orthotist Clinician at Dankmeyer Prosthetics and Orthotics Clinic; Jonas Ljung, Prosthetist Orthotist Clinician at Hanger Prosthetics and Orthotics Clinic; Josh Utay, Prosthetist Orthotist Clinician at Scottish Rite for Children; and Scott Bretl, Assistant Professor and Program Director at Alabama State University.

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The project was funded by



# Executive Summary

Clinical workflow is changing with advancements in materials and technologies. To adapt to current and future demands of clinical care and continue to improve care, the orthotic and prosthetic (O&P) profession needs effective, affordable, yet accessible and sustainable education and training programs for all O&P professionals. The NCOPE 2023 Education Summit on *Challenges and Opportunities in O&P Education and Training: Envisioning Future Needs* brought together 49 attendees including O&P faculty, clinicians, technicians, owners, residency directors, researchers, and administrators with the goal of defining the main issues affecting the sustainability and vitality of O&P education programs in relation to workforce and practice demands.

Challenges that impact the sustainability and vitality of O&P education programs were identified in a pre-summit survey. During the summit, these challenges were discussed in small groups by the participants. After the discussions, each attendee individually rated the importance of these challenges. The prioritization of these challenges is not NCOPE-specific; rather, they are relevant to the entire O&P profession. The full list of prioritized challenges can be found in [Appendix A](#).

## The challenges that were considered of the highest importance for the profession included the following:

### Technician programs

- Value of education/certification
- Credentialing model – Certificate/degree not required
- Cost to operate programs

### Assistant programs

- Student recruitment
- Clinical practice model – consensus

### Residency programs

- Resistance to change
- Consistency of (residency) program models
- Residency – quality and oversight

### Practitioner programs

- Reimbursement related to the DME billing model
- Cost of education for students
- Cost to operate programs
- Awareness of the profession
- Credentialing model – length of time
- Value of education/certification
- Consistency of (academic) program models
- Communication between education and practice

Through a collaborative and iterative process, attendees discussed the challenges and opportunities for technician, assistant, practitioner, and residency education programs. With the goal to address the most urgent challenges facing the sustainability and vitality of O&P education, the attendees developed recommendations for each program level. The full list of recommendations can be found in [Appendix E](#) and [F](#).

# Executive Summary *(cont.)*

**Recommendations** made to address the most urgent challenges relevant to NCOPE included the following:

## Technician programs

1. Create and administer a survey or forum to establish curriculum alignment with practice demands.
2. Administer an ABC Technician Practice Analysis.
3. Cultivate collaborations between technical programs, practitioner programs and the profession.
4. Develop promotional material to increase awareness and establish the Technician's identity as part of the O&P team.
5. Advocate for mandatory education and credential requirements.
6. Eliminate the experiential pathway for certification.
7. Explore alternative education pathways and models.

## Assistant programs

8. Investigate analogous positions in other fields to further define the role.
9. Survey certified assistants and non-certified assistants to inform the value proposition.
10. Develop consensus among business owners and practitioners regarding the scope and role of the assistant and the value of certification.
11. Educate the profession/employers how an assistant might fit into the care delivery model as an extension of the practitioner.
12. Propose guidelines for the integration of assistants into clinical practice models.
13. Develop of Entrustable Professional Activities (EPA) for O&P Assistants.
14. Evaluation of care extenders' impact on residency opportunities and orthotist/prosthetist workforce needs.
15. Suggest reconsideration of the fitter credential.

## Practitioner programs

16. Re-evaluate educational standards to focus curriculum on patient-centric care rather than devices.
17. Develop Entrustable Professional Activities (EPA) for educational programs.
18. Ensure curriculum content, certification exam content, and practice analysis are congruent.
19. Host bilateral conversations with the stakeholders to evaluate and modify expectations regarding baseline knowledge and skills of an entry-level practitioner.
20. Define and communicate the distinction between academic education and residency education.

## Residency programs

21. Maintain standards for minimum requirements for mentors and directors.
22. Maintain standards for explicit care and competency standards that align with the profession.
23. Maintain standards for collaboration between practice and educational programs.
24. Develop Entrustable Professional Activities (EPA) for residency programs.
25. Create self-assessment tools for residency.
26. Update the NCOPE Tracker tool/evaluations to improve data reports to mentors, directors and academic educators.
27. Investigate the viability of requiring intergraded education residency model.
28. Create a centralized communication portal and an easily digestible curriculum document.
29. Host more frequent "TOPER" sessions on a virtual platform.

In conclusion, the 2023 Education Summit was a pivotal event, addressing critical challenges and charting a course for innovative solutions. The recommendations put forth serve as a roadmap for education to prepare graduates for evolving clinical demands, ensuring that O&P education and training remain effective, accessible, and sustainable for all O&P professionals.

## Background

In preparation for the 2023 Education Summit, the planning committee reviewed the previous summit meeting reports and then coordinated, and published a journal of proceedings, and administered a pre-summit survey. Drawing from the overarching themes identified in the review of previous summit reports,<sup>1</sup> the planning committee decided to focus the 2023 summit around the theme of

## “ Sustainability and vitality of P&O academic programs and alignment with current and future workforce needs.”

To foster communication between academic programs and community partners, the planning committee invited representatives to contribute articles to a journal of proceedings, which was published the month before the meeting. Attendees were asked to review the articles in preparation for the meeting.<sup>2</sup>

Lastly, using an iterative approach to define the problems related to the sustainability and vitality of all O&P professional training programs, the planning committee administered a presummit survey to the anticipated attendees. Fifty-one people completed the pre-summit survey. The findings from this report formed the basis for the conversations at the meeting.<sup>3</sup>

## Purpose

Following several months of preparation, the National Commission on Orthotic and Prosthetic Education (NCOPE) successfully convened a summit on August 3-4, 2023, bringing together a diverse array of influential leaders. The summit's primary objectives were as follows:

1. Identify and prioritize the main issues affecting the vitality of O&P education programs in relation to workforce and practice demands for the profession:
  - Prosthetist/orthotist academic programs
  - Assistant academic programs
  - Technician academic programs
  - Clinical training (i.e., practicum/residency) programs
  - Technical practicums
2. Develop recommendations to address the issues.
  - Visualize future health and medical systems and workflow processes.
  - Identify the most urgent issues.
  - Suggest resources that NCOPE can use to enhance O&P education.

### Organization and Format

The agenda ([Appendix H](#)) was crafted in alignment with the objectives, ensuring that the first day of the meeting centered around objective #1, while the second day of the meeting was dedicated to objective #2. Every individual on the O&P team contributes to positive patient outcomes. Therefore, the planning committee made a concerted effort to discuss technician, assistant, and practitioner education programs.

To incorporate as many O&P perspectives as possible and to understand current issues and predict future workforce needs, the Planning Committee intentionally invited participants who would bring multiple perspectives to the meeting ([Appendix G](#)). In addition to primary professional roles (i.e., technicians, owners/managers, faculty, and clinicians) and settings (i.e., private practice, large practice, central fabrication, institution, industry, rural, and urban), years in practice and age were considered (range of ages = 25 to 70 years, with an average of 48 years). The Planning Committee deliberated the number of educators to invite and decided to include only the program directors from each program. After including representatives from the O&P education programs, professional organizations, and NCOPE representatives, the Planning Committee selected the final 17 people to include a total of 50 participants at the meeting. As a result, most invited participants (40 of 51) were orthotists-prosthetists, and 19 worked in CAAHEP accredited education programs. Fewer than half of the respondents (another 19) spent most of their time in clinical practice with direct patient contact and/or hands-on fabrication of O&P devices.

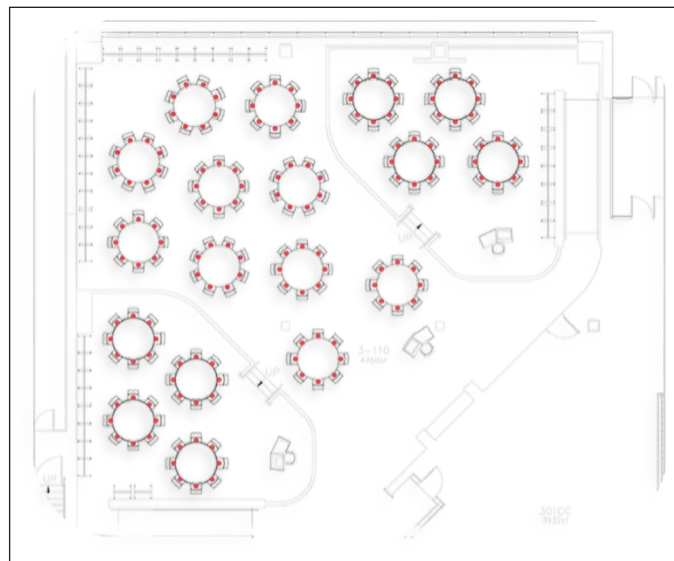
The summit took place in an active learning classroom on the University of Minnesota campus. This choice of venue aimed to foster an educational atmosphere and encourage open and smooth discussions. Furthermore, this central location was strategically selected to ensure accessibility for attendees from all over the United States. The summit's primary format revolved around interactive table discussions. Attendees were thoughtfully assigned seats at each table to ensure diversity in terms of professional roles and workplace settings. Every table was equipped with a designated note-taker and a facilitator/timekeeper. The note-taker used an online platform (i.e., Microsoft Excel) to record meeting notes.



The outcomes of the Summit are summarized within this document, serving as a valuable resource to steer the potential next strides in advancing O&P education. NCOPE will assess and incorporate the recommendations from the Summit into the future refinement of the CAAHEP Academic Standards and the NCOPE Clinical Residency Standards. The broader results of the summit are designed to benefit the wider O&P community and affiliated organizations, empowering them to leverage their strengths in contributing to a more promising future.

## References

1. Recurring Themes in Prosthetic and Orthotic Education: A Narrative Review of Prosthetic and Orthotic Education Summit Meetings. *JPO* 2023, 35(3):139-148. DOI: 10.1097/JPO.0000000000000471
2. Challenges of and Opportunities for O&P Education and Training: Envisioning Future Needs. *JPO* 2023, 35(3S):p 1-55. DOI: 10.1097/JPO.0000000000000474
3. [2023 NCOPE Pre-Summit Survey. 2023 NCOPE Education Summit - The National Commission on Orthotic and Prosthetic Education](#)



## Introduction

The participants began the Summit grouped into eight tables, each designed to hold a mix of disciplines. NCOPE leaders presented a series of topics impacting the sustainability and vitality of O&P to set the stage and align all on the group's discussion. Topic and presenters included:

- Sustainability of O&P programs by Mike Madden, CPO, NCOPE Treasurer
- History of O&P Education Requirements by Robin Seabrook, NCOPE Executive Director
- O&P Professionals—scope of practice and education pathways by Steve Fletcher, CPO, ABC Director, Professional Credentialing & Robin Seabrook, NCOPE Executive Director
- NCOPE O&P Residency programs by Mark Clary, CPO, NCOPE Vice Chair
- Numbers in O&P Education by Chris Robinson, CPO, NCOPE Clinical Resource Director
- The Practice Setting by Charles Kuffel, CPO, Arise Orthotics & Prosthetics & Eric Weber, CPO, Hanger Prosthetics and Orthotics

This introduction was followed by an initial small table discussion where attendees could relate a reflection along their own learning journey as a means of introduction.

## Prioritizing Challenges by Audience

The summit attendees moved their focus to address four audiences – Technician, Assistant, Practitioner, Residency – taking 15 minutes to discuss the challenges facing each that was identified in research conducted prior to the summit. The group then rated the importance of addressing the respective challenges for each audience - see Appendix A. This prioritization was not NCOPE-specific; it addressed the O&P profession as a whole with the hope that the prioritization will be an important guide in partnering with other organizations that share in mutual focus.

## The challenges that were considered of the highest importance for the profession included the following:

### Technician programs

- Value of education/certification
- Credentialing model – Certificate/degree not required
- Cost to operate programs

### Assistant programs

- Student recruitment
- Clinical practice model – consensus

### Residency programs

- Resistance to change
- Consistency of (residency) program models
- Residency – quality and oversight

### Practitioner programs

- Reimbursement related to the DME billing model
- Cost of education for students
- Cost to operate programs
- Awareness of the profession
- Credentialing model – length of time
- Value of education/certification
- Consistency of (academic) program models
- Communication between education and practice

### Understanding Challenges through Inquiry

Of all the challenges, sixteen (16) were preselected by NCOPE leadership that correlates to challenges within NCOPE auspices as well as a number of challenges selected for each of the four audiences. To better understand the challenges before attempting to offer solutions the group participated in an inquiry exercise of creating the questions that would lead to deeper understanding of the challenges. All participants contributed to each of the sixteen challenges.

The list of all questions submitted for deeper understanding of the challenges faced by each audience can be found in [Appendix B](#). Within these questions is the further opportunity to use them for future learning sessions, collaborations, or ongoing dialogue.

After every group had contributed their thoughts on questions that could help provide better understanding of the challenge, a summary sentence or two was drafted to further define each challenge with the deeper understanding provided by the questions. An initial draft was written on the end of Day 1 and refined at the start of Day 2 with the result as follows:

#### **Technicians:**

1. *The value of education/certification for Technicians* - To attract and generate competent, valued Technicians who are committed to the profession, we must overcome the lack of return on investment for education or certification and generate new collaborations that support the expansion and growth of the Technician workforce.
2. *The Credentialing model - Certificate/degree not required for Technicians* - Technological advances and innovation will define future Technician practice, roles, critical competencies, and certifications, as well as the optimal educational model and appropriate credentialing process.
3. *Cost to operate programs for Technicians* - There is a consensus that the cost to operate technical programs are too high; things that may impact these costs may include partnerships with industry/manufacturers and central fabs, as well as sharing costs and space with other programs (i.e., autobody, plumbing, or even O&P masters programs). Other influences include changing curriculum models, such as hybrid models, apprenticeships (e.g., VR or apprenticeship) or micro-credentials.
4. *Curriculum content for Technicians* - There is a consensus that the technician curriculum is not aligned to the most current industry fabrication practices; the skills needed to fabricate devices with current practice are maligned with ABC certification standards. There is a lack of understanding of the current technician curriculum in general, and specifically regarding its relevance for teaching future technicians.

#### **Assistants:**

1. *The value of education/certification for Assistants* - The challenges associated with the value perceived for assistants having a degree/certification include exploring career prospects, salary expectations, program requirements, job responsibilities, job outlook, and the impact of certification on job opportunities and career advancement. Given these challenges there remains a lack of consensus on the role of the Assistant and the value of education and certification.
2. *Credentialing model - Certificate/degree not required for Assistants* - There is no consensus on whether having two certification models for the Assistant truly creates challenges for potential students and employers, although there is recognition that academic programs do not benefit from the two options. Insights into Assistant certification and its necessity/value should involve clarification of the role and scope of the Assistant and its impact on business practices and patient outcomes.

3. *Career advancement opportunities for Assistants* - Career advancement opportunities for Assistants are complicated by the lack of clear role definition, multiple pathways for certification and lack of buy-in by the profession.
4. *Clinical practice model - consensus for Assistants* - The O&P profession does not have enough data to form a consensus on the necessity, the role and the scope for the assistant. In addition, there is lack of understanding on the delineation of the assistant from the other credentialing levels.

### **Practitioners:**

1. *Communication between education and practice* - Inconsistent communication between O&P education programs and clinical practices inhibits collaboration needed to align curriculum content with practical needs, facilitate residency opportunities, and maintain evidence-based techniques. There are limited partnerships, ill-defined expectations, a potential misunderstanding of graduate abilities, and inconsistent dialogue to promote transparency between schools and clinics in the O&P profession.
2. *Limited entry skills of practitioner graduates (i.e., inadequate preparation)* - Employers expect new graduates to have a consistent/predictable baseline skill level to enter a real-world clinical setting. There is little consensus between the O&P residency sites and the O&P school faculty defining a baseline level of psychomotor, cognitive, and affective skills to allow residency sites to implement a consistent residency curriculum.
3. *Cost to operate programs for Practitioners* - Educational institutions seek cost reduction by developing strategic external partnerships, exploring alternative revenue sources, efficient space use, and shared resources. They also grapple with aligning curriculum with evolving standards and stakeholders' expectations, as well as addressing faculty workload and development.
4. *Curriculum content for Practitioners* - Educational institutions need strategies to evolve curriculum to ensure efficient integration of appropriate technologies as well as to establish a balance between foundational skills and stakeholder expectations to ensure relevance to real-world clinical practice.



### Residency:

1. *Accreditation requirements for Residency* - Residency standards are not clear, concise, and may not satisfy the needs and expectations of various stakeholders such as residents, educational institutions, residency sites, and accrediting bodies.
2. *Residency - quality and oversight* - Quality of a residency is not clearly defined and mentorship is often inconsistent across sites, leading to undesirable variability in the residency experience.
3. *Credentialing model - length of time for Residency* - Residency is structured around a set time with unclear definitions of competence. The variety of models to residency need assessment in order to determine the most effective/efficient approach.
4. *Residency - Business operating costs/time* - Running a residency program requires financial investment, time, and resources. The value of and return on investment for a residency program is unclear without a comparison of the traditional versus the integrated models with specific regard to expectations, utilizations and costs/benefits.



## Prioritization of Challenges

With the refined definitions from day 1, the second day of the Summit began with participants voting to prioritize which eight challenges were most urgent. The voting process consisted of each participant starting with eight votes, four of which they were required to apply to a challenge facing each of the four program levels. Then, their remaining four votes could be allocated as they saw fit.

The top eight challenges are listed below with the full prioritized list of challenges in [Appendix D](#).

- 1. Value of education/certification for technicians AND credentialing model - certificate/degree not required by technicians:** To attract and generate competent, valued Technicians who are committed to the profession, we must overcome the lack of return on investment for education or certification and generate new collaborations that support the expansion and growth of the Technician workforce. Technological advances and innovation will define future Technician practice, roles, critical competencies and certifications, as well as the optimal educational model and appropriate credentialing process. (41 votes)
- 2. Communication between education and practice:** Inconsistent communication between O&P education programs and clinical practices inhibits collaboration needed to align curriculum content with practical needs, facilitate residency opportunities, and maintain evidence-based techniques. There are limited partnerships, ill-defined expectations, a potential misunderstanding of graduate abilities, and inconsistent dialogue to promote transparency between schools and clinics in the O&P profession. (35 votes)
- 3. Clinical practice model - consensus for Assistants:** The OP profession does not have enough data to form a consensus on the necessity, the role and the scope for the assistant. In addition, there is lack of understanding on the delineation of the assistant from the other credentialing levels. (33 votes)
- 4. Curriculum content for practitioners:** Educational institutions need strategies to evolve curriculum to ensure efficient integration of appropriate technologies as well as to establish a balance between foundational skills and stakeholder expectations to ensure relevance to real-world clinical practice. (31 votes)



5. **Limited entry skills of practitioner graduates (i.e. inadequate preparation):** Employers expect new graduates to have a consistent/predictable baseline skill level to enter a real-world clinical setting. There is little consensus between the O&P residency sites and the O&P school faculty defining a baseline level of psychomotor, cognitive, and affective skills to allow residency sites to implement a consistent residency curriculum. (31 votes)
6. **Value of education/certification for assistants:** The challenges associated with the value perceived for assistants having a degree/certification include exploring career prospects, salary expectations, program requirements, job responsibilities, job outlook, and the impact of certification on job opportunities and career advancement. Given these challenges there remains a lack of consensus on the role of the Assistant and the value of education and certification. (30 votes)
7. **Residency - quality and oversight:** Quality of a residency is not clearly defined and mentorship is often inconsistent across sites, leading to undesirable variability in the residency experience. (29 votes)
8. **Curriculum content for technicians:** There is a consensus that the technician curriculum is not aligned to the most current industry fabrication practices; the skills needed to fabricate devices with current practice are maligned with ABC certification standards. There is a lack of understanding of the current technician curriculum in general, and specifically in regard to its relevance for teaching future technicians. (25 votes)

### Future of the Workforce

Next, the leaders visualized the future of the workforce around four key questions. The questions were developed from the pre-summit survey. The key questions are italicized below followed by a synthesis of common themes found in the group comments.

***Q1: Our profession continues to shift in response to technological advancements. How can education (technicians, assistants, and practitioners) adapt and stay relevant to current and future technology advancements?***

Overall, the common themes revolve around:

- Conscientious technology adoption
- Outcome-focused approaches
- Micro-credentialing
- Collaboration with manufacturers to provide in-services which expose students to technology
- Engagement with clinical practice for curriculum alignment with clinical utilization of new technology
- Use of technology to expand delivery models (e.g. education, patient care)

***Q2: The number one response to “what are the threats to O&P education programs?” was external encroachment. What are the unique skills of O&P professionals as compared to other healthcare providers who provide O&P care, e.g., OTs, PTs, chiropractors, podiatrists, athletic trainers, etc.***

O&P professionals possess a unique combination of knowledge and expertise in anatomy and physiology, materials science, biomechanics, device design, fitting, gait analysis, and patient care. This enables them to offer a continuum of care, providing personalized solutions for patients. They excel in problem-solving and evaluating treatment efficacy and effectiveness, while considering long-term management of the device interface with the human body. Their skills in componentry, engineering, and device-mediated treatment allow them to optimize forces and cater to individual patient needs. As interface design experts and technology managers, O&P professionals deliver comprehensive, tailored orthotic and prosthetic care to manage pain, correct deformity, and/or restore mobility/function that ultimately improves quality of life.

**Q3:** *As our clinical care model shifts, what are the key competencies (knowledge, skills, professional behaviors) needed for best practice and sustainability of the next generation of O&P care providers (technicians, assistants, and practitioners)?*

In addition to the current curriculum, additional emphasis and depth is required in the following domains:

### 1. Communication

- a. Coordinating orthotic & prosthetic clinical care
- b. Interdisciplinary Collaboration / Role Delineation
- c. Documentation (Too?)

### 2. Practice/Patient Management

- a. Economic Assessment
- b. Professional Behaviors
  - i. Empathy
  - ii. Lifelong Learning
  - iii. Time Management
- c. Formulation of comprehensive treatment plan that integrates best available evidence
- d. Documentation
- e. Screening/Evaluation/Assessment
- f. Fabrication (too?)
- g. Patient safety and quality assurance

### 3. Technology

- a. Fabrication
- b. Material Science
- c. Engineering Design
- d. Digital Fluency

### 4. Leadership

- a. Professional Advocacy and Awareness

### 5. Scholarship

- a. Education
  - i. Clinical education
  - ii. Academic education
- b. Research
- c. Translational Science

**Q4:** *In the next 5-10 years, for practitioners, is school or residency the more appropriate place to emphasize fabrication skills? And why? Is clinical training required for assistants? If so, is school or residency the more appropriate place to emphasize fabrication skills?*

- Fabrication fundamentals should be taught in school to a consistent skill level. Fabrication skills will be emphasized and further developed in residency. Mastery of fabrication skills takes place after residency.
- Clinical training should be required. Technical exposure should be required in the training. Whether the fabrication training should take place in a school or clinical environment is not clear. Inconsistent interpretation of the question made conclusions difficult.

Small group discussion notes are in [Appendix C](#).

### Recommendations

After visioning, for the eight challenges that took priority, each table was asked for up to three recommendations in the face of each challenge.

Each table was then given a single challenge along with its respective list of all recommendations submitted from all tables to further refine, elevating the highest priority recommendations, and evolving language that could be understood by any audience in the profession. The results of the challenge, how it was defined, and the subsequent prioritized recommendations are as follows:

#### **Priority Challenge A: Value of Education/Certification for Technicians AND Credentialing Model - Certificate/Degree Not Required by Technicians.**

To attract and generate competent, valued Technicians who are committed to the profession, we must overcome the lack of return on investment for education or certification and generate new collaborations that support the expansion and growth of the Technician workforce. Technological advances and innovation will define future Technician practice, roles, critical competencies and certifications, as well as the optimal educational model and appropriate credentialing process.

#### Recommendations:

1. Complete an ABC Technician Practice Analysis, including stakeholder meeting to delineate the role and significance of the certified technician.
2. Cultivate collaborations between technical programs, practitioner programs and professional partners for shared projects to reduce or share program costs and create opportunities for student and program sponsorship through shared interests. Collaborations can reduce costs, improve learning opportunities, and enhance patient safety.
3. Develop promotional material aimed at prospective students as well as professional partners to increase awareness of the profession and establish its identity as part of the O&P team.

### Priority Challenge B: Communication Between Education and Practice

Inconsistent communication between O&P education programs and clinical practices inhibits collaboration needed to align curriculum content with practical needs, facilitate residency opportunities, and maintain evidence-based techniques. There are limited partnerships, ill-defined expectations, a potential misunderstanding of graduate abilities, and inconsistent dialogue to promote transparency between schools and clinics in the O&P profession.



#### Recommendations:

1. Creating a centralized communication portal and an easily digestible curriculum document that details expectations and timelines for the residency sites for the education programs to review to acknowledge through the current rubric.
2. NCOPE should develop Entrustable Professional Activities (EPA) for educational programs to meet practice expectations.
3. NCOPE will create a comprehensive survey administered to residents at the beginning and third quarter of their residency, shared with educational programs, and made mandatory to meet NCOPE standards.
4. Communication between residency directors and education programs will be facilitated to align graduate expectations. More frequent “TOPER” sessions on a virtual platform will be held for easier access and greater participation.

### Priority Challenge C: Clinical practice model - Consensus for Assistants

The OP profession does not have enough data to form a consensus on the necessity, the role and the scope of the assistant. In addition, there is lack of understanding on the delineation of the assistant from the other credentialing levels.

#### Recommendations:

1. NCOPE should refine the CAAHEP orthotist/prosthetist standards for practitioner educators to provide clear guidance about how the CPO implements care models in clinical practice with the care extender or assistant.
2. Establish Entrustable Professional Activities (EPA) for O&P Assistants to define baseline competencies for use in practice by adapting EPAs that have been established by other allied health professionals.
3. Identify the impact of care extenders including O&P assistants on residency opportunities and future employment opportunities for the orthotist/prosthetist.
4. Encourage ABC to eliminate the fitter credential and expand the scope of practice for assistants to include the activities within the fitter scope of practice.

### Priority Challenge D: Curriculum Content for Practitioners

Educational institutions need strategies to evolve curriculum to ensure efficient integration of appropriate technologies as well as to establish a balance between foundational skills and stakeholder expectations to ensure relevance to real-world clinical practice.

#### Recommendations:

1. NCOPE should develop a committee of equitable stakeholders (i.e. educators, professional organizations, O&P professionals, and O&P users) to re-evaluate educational standards at the intersection of technology and foundational skills to assist programs in focusing and refining curriculum to focus on patient centric care rather than devices.
2. NCOPE should work with ABC to ensure curriculum content, certification exam content, and practice analysis are congruent to provide agile feedback to educational partners, residency sites, and employers so all stakeholders have a shared expectation of entry-level practitioners (i.e. EPA and/or Milestone models).
3. NCOPE works with the stakeholders to provide a circular communication process to help review, evaluate and modify expectations regarding baseline knowledge and skills of an entry level practitioner.

### Priority Challenge E: Limited Entry skills of Practitioner Graduates (i.e. inadequate preparation)

Employers expect new graduates to have a consistent/predictable baseline skill level to enter a real-world clinical setting. There is little consensus between the O&P residency sites and the O&P school faculty defining a baseline level of psychomotor, cognitive, and affective skills to allow residency sites to implement a consistent residency curriculum.

#### Recommendations:

1. Define and communicate the difference between academic education and residency education as it relates to the students/residents upon completion.
2. Investigate and develop the EPA model for residency.
3. Create a self-assessment tool for residency at start of program to share with the residency director and back with the academic educators.
4. Update the NCOPE Tracker tool/evaluations that would provide data reports to mentors, directors and academic educators related to residency standards.
5. Investigate the viability if NCOPE required only an intergraded education residency model.



### Priority Challenge F: Value of Education/Certification for Assistants

The challenges associated with the value perceived for assistants having a degree/certification include exploring career prospects, salary expectations, program requirements, job responsibilities, job outlook, and the impact of certification on job opportunities and career advancement. Given these challenges there remains a lack of consensus on the role of the Assistant and the value of education and certification.

#### Recommendations:

1. Explore similar roles in other professions and how they might inform Assistant career prospects, salary expectations, job responsibilities, etc., to further define the role and to inform the value proposition.
2. Develop consensus among business owners and practitioners using consensus gathering methods (e.g. Delphi method or focus group) regarding the scope and role of the assistant and the value of certification. Update the Assistant education standards to align them with the consensus definition.
3. Survey certified assistants and non-certified assistants regarding their perceptions on career aspects, job outlook, salary expectations, responsibilities, etc., to further inform the value proposition.
4. Use various communication methods to highlight to the profession/employers how an assistant might fit into the care delivery model as an extension of the practitioner.
5. NCOPE should develop and/or modify standards for practitioner education that guide educators to learn about extended care models and to teach them to students.



### Priority Challenge G: Residency - Quality and Oversight

Quality of a residency is not clearly defined and mentorship is often inconsistent across sites, leading to undesirable variability in the residency experience.

#### Recommendations:

1. Redefine, implement and maintain standards that include:
2. Minimum requirements for mentors and directors
3. Explicit care and competency standards that align with the profession
4. Collaboration between practice and educational programs

### Priority Challenge H: Curriculum Content for Technicians

There is a consensus that the technician curriculum is not aligned to the most current industry fabrication practices; the skills needed to fabricate devices with current practice are maligned with ABC certification standards. There is a lack of understanding of the current technician curriculum in general, and specifically regarding its relevance for teaching future technicians.

#### Recommendations:

1. Develop a survey &/or host a forum to establish a consensus on how the current curriculum/ education standards of technician programs reflect practice needs. This will serve as a supplement to the practice analysis and include input from all stakeholders rather than only certified technicians.
2. Establish new standards based on the results of the consensus meeting and review the standards at least every three years.
3. Explore alternative methods of communicating revised standards through partnerships with sister organizations including ABC, AOPA, and AAOP.

The full list of recommendations from the 1st round of small group conversations is in [Appendix E](#).

Where a small group table was able to conclude their recommendations early, they were provided an optional set of questions to further create a path for their recommendation. See [Appendix F](#) for responses to:

- *Is there data/research/information/knowledge that would help us advance this recommendation?*
- *Are there specific resources that would help advance this recommendation?*
- *What are 2-3 milestones of achievement we would hope to see in 3 years?*
- *What are 2-3 milestones of progress we would hope to see in 1 year?*

## Appendix A: Prioritizing Challenges by Professional

Challenges of developing and/or sustaining O&P education programs were identified in the pre-summit survey. Participants reviewed the results and spoke in small groups. After their small group discussion, the attendees individually rated the challenges for each profession by answering this question: **How do you rate the level of importance of the challenges identified in the pre-summit survey?**

The prioritization of the challenges is not NCOPE-specific; rather, the prioritized challenges are relevant to the entire O&P profession. The prioritized list might be useful for all O&P professional organizations to coordinate efforts toward addressing the challenges of workforce and practice demands.

Education Programs	High Importance	Medium Importance	Low Importance	Unknown Importance
<b>Technician</b>	<ul style="list-style-type: none"> <li>• Value of education/certification</li> <li>• Credentialing model -Certificate/degree not required</li> <li>• Cost to operate programs</li> </ul>	<ul style="list-style-type: none"> <li>• External support from the profession</li> <li>• Finding/ retaining qualified instructors</li> <li>• Awareness of the profession</li> <li>• Inadequate salaries/compensation for professional</li> <li>• Student recruitment</li> <li>• Curriculum content</li> </ul>	<ul style="list-style-type: none"> <li>• Cost of education for students</li> <li>• Geographic location - Saturation of jobs in local markets</li> <li>• Curriculum delivery model</li> <li>• Geographic location - Access to education</li> <li>• Accreditation requirements - too specific</li> <li>• External support from the industry/manufacturers</li> <li>• Student retention</li> </ul>	<ul style="list-style-type: none"> <li>• Consensus of clinical practice model</li> <li>• Availability of employees</li> </ul>
<b>Assistant</b>	<ul style="list-style-type: none"> <li>• Student recruitment</li> <li>• Clinical practice model - consensus</li> </ul>	<ul style="list-style-type: none"> <li>• Career advancement</li> <li>• Awareness of the profession</li> <li>• Value of education/certification</li> </ul>	<ul style="list-style-type: none"> <li>• Credentialing model - Certificate/degree not required</li> <li>• Encroachment issues within the profession</li> <li>• Finding/retaining qualified instructors</li> </ul>	

## Appendix A: Prioritizing Challenges by Professional *(cont.)*

Education Programs	High Importance	Medium Importance	Low Importance	Unknown Importance
<b>Practitioner</b>	<ul style="list-style-type: none"> <li>• Reimbursements related to the DME billing model</li> <li>• Cost of education for students</li> <li>• Cost to operate programs</li> <li>• Awareness of the profession</li> <li>• Credentialing model - Length of time</li> <li>• Value of education/ certification</li> <li>• Consistency of program models</li> <li>• Communication between education and practice</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate salaries/ compensation for professionals</li> <li>• Institutional support</li> <li>• Finding/retaining qualified instructors</li> <li>• Inadequate salaries/ compensation for instructors</li> <li>• Graduate ability/ skills - inadequate preparation</li> <li>• Student recruitment</li> <li>• Curriculum content</li> <li>• Applicant quantity</li> </ul>	<ul style="list-style-type: none"> <li>• Accreditation - requirements too specific</li> <li>• Business operating costs</li> <li>• Geographic location</li> <li>• Time to teach skills and content</li> <li>• Encroachment issues within the profession</li> <li>• Accreditation - need higher standards</li> <li>• Student retention</li> <li>• External support from industry/ manufacturers</li> <li>• Accreditation - unclear</li> </ul>	<ul style="list-style-type: none"> <li>• Practice analysis</li> <li>• Resistance to change</li> <li>• High workload of instructors</li> <li>• Credentialing model - Unclear</li> </ul>
<b>Residency</b>	<ul style="list-style-type: none"> <li>• Resistance to change</li> <li>• Consistency of (residency) program models</li> <li>• Residency-quality and oversight</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate salaries/ compensation for residents</li> <li>• Credentialing model - length of time</li> <li>• Cost of education for students</li> </ul>	<ul style="list-style-type: none"> <li>• Business operating costs/time</li> <li>• Residency – availability</li> <li>• Accreditation requirements (residency) - too specific</li> <li>• Encroachment issues within the profession</li> <li>• Value of education/ certification</li> <li>• Accreditation - need for higher standards</li> </ul>	

## Appendix B: All Questions per Challenge

Sixteen (16) challenges of developing and/or sustaining O&P education programs from the pre-summit survey were preselected by the NCOPE board.

To define the challenges for clearer understanding, the participants were provided this prompt:

**What are all the questions that we need to ask about (the challenge) to learn more about (the challenge)? The questions you develop should provide more meaning and context for the challenge.**

During the initial inquiry process, all participants developed questions for each of the sixteen challenges. The following list of questions was submitted by all groups:

**What are all the questions that we could ask about the value of education/certification for Technicians that would help us learn more and better understand the challenge?**

1. Is there value in education and certification of technicians?
2. Given automation for manufacturing, what is the relevance of technicians?
3. What is the future role of a technician in the profession?
4. What does it mean to be a technician?
5. What are the opportunities for career growth? Is there a career path? What is the scope of practice that informs the career path?
6. Does the profession value education/certification of technicians? From a business perspective, are technicians necessary?
7. What technologies now and in the future define the role of a technician?
8. What is the optimal combination of technology and traditional methods (e.g., hand skills) for technicians?
9. Do we know what the absolute skill set is for a technician of today (and the future)?
10. How do you define the technician, e.g., knowledge, skills, and behaviors?
11. Will there be technician tiers? If there are tiers, what skills are each addressing?
12. Who are the competing professions?
13. Who else is penetrating the market that is competing with services provided by technicians?
14. Will technicians of the future be relegated to a central fabrication role?
15. Could the industry operate without technicians?
16. Why would a student choose this profession over another profession?
17. Is technician a viable career from a financial standpoint?
18. How willing is a candidate to relocate to pursue technician training?
19. How do you incentivize students to leave an area where they trained?
20. How can the profession support a model of training technicians and then reintegrating them back into their home state/region?
21. Is there value in leaving your home state to go somewhere else and then come back home?
22. What is the best model for technician training?
23. Is the workforce model the best way to train technicians? Is the apprentice model the best way to train technicians?

## Appendix B: All Questions per Challenge *(cont.)*

24. Is modulating coursework better? Micro-credentialing?
25. Are we offering enough technology to attract the new generation?
26. If there is no value to certification, how do we make this valuable?
27. What is the financial incentive for certification?
28. What is gained with formal technician education?
29. Is education necessary for quality control?
30. What can a certified technician do that someone else with experience can't? What is the value added?
31. Are we poised to adapt if fabrication standards are required to bill for a device or care?
32. What is the impact of requiring certification?
33. How do we regulate standards for micro-credentialing?
34. Who creates the content for micro-credentialing?
35. In addition to fabrication, what skill set is essential to the curriculum?
36. Can we make technician education competency-based?
37. Can asynchronous learning benefit course length? Student-paced versus instructor-paced.
38. How can sister organizations demonstrate the value of educated technicians? How much technician education can be delivered remotely?
39. Can we create a better pipeline of technical grads by integrating training into high school, penitentiary system, or other unique pathways?
40. Should we consider micro-credentialing certifications (like ASE mechanics) - Ex: LL Orthotic Cert, Thermoset Cert, etc.?
41. Do we need to only allow a single certification pathway?
42. Can we develop outcome measures of an academically trained technician vs. on-the-job training (experiential)?
43. Is there a way to quantify the value of certification/education?
44. Should manufacturing methods and standards be standardized so they can be taught at the tech schools?
45. How will the definition of O&P hand skills change in the future?
46. What is the intersection of technical knowledge and hand skills?

### **What are all the questions that we could ask about the [Credentialing model - Certificate/degree not required for Technicians](#) that would help us learn more and better understand the challenge?**

1. Is not having a degree requirement a detriment to program development?
2. What did the programs look like before offering an Associate's degree?
3. Would the profession support a degree requirement for technicians (e.g., orthotic-prosthetic technology)?
4. Would prospective students find it more attractive if certification was required?
5. Can the 2-year program be expedited?
6. Would a self-paced model of education be a better format for training?

## Appendix B: All Questions per Challenge *(cont.)*

7. What are the other options for training, e.g., stacked credentials?
8. Would stacking credential options allow for easier upgrading to match emerging technology?
9. How could stacked credentials drive educational offerings?
10. What opportunities would stacked credentials offer to students and educational programs and industry?
11. How can educational programs address the wide application of technology in the profession, e.g., working from cast to 3D technology?
12. Would greater collaboration between industry, schools, and students enhance resources?
13. How would the profession benefit from providing greater resources to educational programs?
14. Is there potential for partnerships between industry and academia to support students' education?
15. Would regulation be beneficial to the profession of a Technician?
16. Will the type of devices created in the future (e.g., robotics) require greater regulation/oversight and affect the certification requirement?
17. Does a technician have a role in habilitative (performance-enhancing) technology? What would motivate a business to hire a certified versus non-certified Technician?
18. Should ABC eliminate the experiential pathway to technician certification? Should we offer virtual training with regional practical experience?
19. Is there value in not having to train a technician each time a new employee is hired?
20. Can the value of hiring a certified technician be quantified?
21. What are the legal implications (product liability) of having non-certified or non-formally trained technicians engaged in manufacturing?
22. Are the economics in place to enable an all educated/certified technical workforce?
23. What motivates a technician to be certified versus non-certified?
24. What motivates a technician to obtain a degree in O&P? What incentives are there?
25. Why are technicians not required to be certified to make medical devices covered under insurance?
26. Would requiring technicians to be credentialed allow for less liability to be placed on the clinician and instead on the person fabricating the device?
27. Are clinicians trained in being able to see issues in the fabrication of devices that could end in catastrophic failures during patient use?

### **What are all the questions that we could ask about the **cost to operate programs for Technicians** that would help us learn more and better understand the challenge?**

1. Where does the program get funding for operations?
2. What is stopping a school from getting a sponsor (not necessarily an O&P sponsor) to support the program?
3. How do we get better discounts from suppliers and manufacturers?
4. Are there less costly alternatives to components to teach fabrication?
5. Are there grant opportunities to subsidize operating costs?
6. How much is the cost for a technical program?
7. Why does it cost so much to operate a tech program?
8. Would students be willing to pay higher tuition to cover costs?

## Appendix B: All Questions per Challenge *(cont.)*

9. Can the technical programs be shorter?
10. Can the curriculum change to make them more affordable? Would a hybrid model lower costs?
11. Would short courses lower costs?
12. Would virtual reality lower costs?
13. Would it be possible to get employers to pre-agree to scholarships? Would schools accept sponsorships to offset costs?
14. Could tech programs sell fabrication services to subsidize cost? (i.e., central fab) Would a workforce model/apprenticeship model work?
15. Would a residency model for technicians lower costs? (e.g., plumbing)
16. How might an internship model be managed/oversight?
17. Could technician education be taught in collaboration with other technical programs? (i.e., shared “garages”)
18. Could master’s programs share resources with tech programs?
19. Would master’s/assistant programs be willing to share part-time models?
20. Would master’s/assistant programs use the technical programs as central fab?
21. Would retirees volunteer as instructors?
22. Could non-profit or low-cost clinics provide an avenue for resources (provide marketing)?
23. Could the tech programs provide low-cost devices as a non-profit?
24. Would industry be interested in a mutually beneficial relationship that offsets the costs (perhaps by providing future industry workforce)?
25. Is there an opportunity to partner with entities with maker space?
26. How do we identify state/regional scholarships for students?
27. What entities could provide sponsorship (i.e., federal, state, corporations)?
28. Are there work placement program options?
29. Can guest lecturers from industry teach specialized courses?
30. How is digital/additive manufacturing changing the cost of the programs?
31. Can faculty be shared with other technical programs at the same school?
32. How can the O&P clinical programs better partner with technical schools to offset costs?
33. How can technical schools enable better inventory control to minimize material loss/expiration?
34. How can we negotiate a standardized school discount with suppliers?
35. How much of the technician curriculum could be delivered remotely vs in-person?
36. Is there a place for Virtual Reality (VR) in technician education? What tasks would lend themselves well to VR?
37. What costs to operate a Technician program are the biggest burden, and are there opportunities to reduce those costs by partnering with other education programs or industry partners?

## Appendix B: All Questions per Challenge *(cont.)*

**What are all the questions that we could ask about the **value of education/certification for Assistants** that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. What can be done to enhance the value for students pursuing an Assistant education and/or certification?
2. What are the prerequisites to enter an education track/pathway?
3. How does getting an Associate in O&P Assistant vs another allied health profession benefit me?
4. Why would I get certified as an Assistant?
5. What is the career ladder for Assistants?
6. What are the salary expectations for Assistants?
7. What is the length of time to get certified as an Assistant?
8. How many programs are there for Assistant education?
9. What are the requirements for certification renewal (CE and cost)?
10. What are the typical job responsibilities for Assistants? Which regulatory bodies require certification?
11. What is the return on investment (ROI) for a student pursuing Assistant education?
12. Will I have to move to get a job as an Assistant? Is there a shadowing opportunity?
13. Is the education available in a hybrid model (online and live)? What are the didactic and lab requirements in the program?
14. How many credits do I need for Assistant education?
15. What are the different levels of Assistant education (4-year, 2-year, trade school)?
16. How much is Assistant education/certification currently valued in the profession?
17. What is the profession doing to increase the value of Assistant education/certification? What is the job outlook?
18. What is the work-life balance for Assistants?
19. What is the difference between a Technician and an Assistant? Can I go on to be a practitioner if I start as an Assistant? What is the work environment like for Assistants?
20. How independent is the work of Assistants?
21. What is the ROI if I start an Assistant program?
22. Does education/certification increase job opportunities for Assistants compared to non-certified individuals?
23. Why aren't more people already pursuing Assistant careers?
24. Why are companies not hiring Assistants?
25. What are the qualifications to be an instructor in an Assistant program?
26. Is my scope of practice the same if I go to school vs not go to school as an Assistant?
27. How can I convince my school to offer an Assistant program?
28. What are the drawbacks of offering an Assistant program?
29. How can we blend an Assistant program into a school with other practical or technical programs?
30. What is the opportunity to blend Assistant education with other allied health professions' education?

## Appendix B: All Questions per Challenge *(cont.)*

31. How can I pay for my Assistant education (scholarships/financial aid, stipends)? Will some employers pay for my education?
32. As an employer, why should I hire an educated and/or certified Assistant? How will my practice benefit from hiring an educated/certified Assistant?
33. If I were opening a brand-new business, what would cause me to hire an educated/certified Assistant?
34. What are the licensing requirements for Assistants?
35. What is the acceptable ratio of practitioner to Assistant?
36. Is there an ideal demographic for an educated/certified Assistant?
37. Is an Assistant necessary in the O&P profession?
38. Is a certified Assistant paid more when ABC certified?
39. Will the profession support the Assistant credential long-term?
40. Is the Assistant credential a threat to residency and/or practitioners? What is the optimal ratio of CPO to Assistant(s)?
41. What is the scope of practice for the Assistant role?
42. Should CPO and Assistant programs be developing overlapping curriculum? Is a certified Assistant a “junior practitioner” or a care extender?
43. What criteria does CAAHEP recommend for Assistant programs?
44. What are we doing to promote the Assistant position?
45. How many Assistant jobs are available?
46. Who would perform a needs assessment for the Assistant position? Is there a pathway to go from an Assistant to a Practitioner?
47. Can we allow a post-associate (ATC) certificate to enable rapid training of Assistants who already hold an associate or bachelor’s degree?
48. Should there be a defined pathway from Assistant to Practitioner?

**What are all the questions that we could ask about the **Credentialing model - Certificate/degree not required for Assistants** that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

Here is the list of questions related to the Credentialing model - Certificate/degree not required for Assistants:

1. Why does ABC allow a pathway that does not require a CAAHEP education for Assistant certification?
2. Is the barrier to entry too high for Assistant certification?
3. Is the barrier to entry too low for Assistant certification?
4. Will being certified allow me to earn more money as an Assistant?
5. Will employers pay for the requirements of Pathway 2 for Assistant certification?
6. How do the two credentialing pathways benefit the patient in terms of quality of care?
7. Are patient outcomes differentiated between each credentialing pathway for Assistants?

## Appendix B: All Questions per Challenge *(cont.)*

8. What is the value of this level of certification (to the patient, the facility, the Assistant)?
9. Is there another professional allied health credential that should be recognized as the equivalent of an Assistant, affording them the same privileges and eligibility as an ABC certified Assistant?
10. Is there another professional allied health credential that should be recognized as a certification eligibility criteria for Assistants?
11. Who are the stakeholders for this credentialing model?
12. What impact does Assistant certification have on the assigned clinician in terms of efficiency and care provision?
13. Who benefits from this level of certification for Assistants?
14. Who else is performing a similar job to an Assistant under a different name?
15. What is the perception of patients regarding certified vs. non-certified Assistants?
16. What do employers look for in a certification model for hiring Assistants?
17. Does the current credentialing model bring a higher level of perceived professionalism to the O&P profession?
18. Does having an established academic level of credential bring more professionalism to the O&P profession?
19. How can we leverage certified Assistants to benefit the perception of the O&P profession?
20. Does being a certified Assistant allow for more interaction with other healthcare professionals?
21. What is the fastest pathway to become a certified Assistant?
22. What is the difference between a certified orthotic Assistant and a certified fitter?
23. What is the difference between a certified orthotic Assistant and an orthotist-prosthetist?
24. Are certified Assistants providing the same quality of patient care?
25. Is certification required at the state level for Assistants? If so, which states?
26. What resources are being used to develop curriculum content for Assistant training?
27. What are the boundaries (scope of practice) for Assistants, and how are they enforced?
28. Can a clinical entity purchase a package that enables certification through workforce training for Assistants?
29. Does a degree have to be rewarded with Assistant training?
30. Can an Assistant candidate be micro-credentialed if they come in with an associate's degree?

**What are all the questions that we could ask about **career advancement opportunities for Assistants** that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. Does the profession need assistants?
2. What are the career advancement opportunities for Assistants within O&P?
3. Should we assume all assistants want to move on to become a practitioner?
4. Will assistants in the future be required to be certified to practice?
5. Can assistants practice in all licensure states? If yes, is there a career advancement within that licensure scope specific to the assistant?

## Appendix B: All Questions per Challenge *(cont.)*

6. Does career advancement for the assistant require additional education, such as going back to school?
7. Should the delineation of an assistant's responsibility be based on formal education or experiential learning?
8. What do the continuing education requirements look like for assistants?
9. What is the clear delineation of an assistant's skills/knowledge compared to a practitioner?
10. Is there a need for the level of an assistant within the O&P practice model?
11. Is the profession large enough to have an assistant level?
12. Is there a transitional level of education (degree) that could assist the assistant with career advancement?
13. Is there a sufficient population/applicant pool to supply the assistant workforce in practice?
14. Are we solving a problem that does not exist?
15. How do other health career professions handle career advancement, such as PTA, OTA?
16. Could assistant-level education be a prerequisite for becoming a practitioner?
17. Could current master's level coursework or experience be accepted for the assistant's career advancement?
18. What is the next level of Assistant education, and how is that level defined?
19. What motivates an Assistant to extend their career?
20. Is there a level in between Assistant and Practitioner, and is that the right model?
21. Is the potential for career advancement something people want when they join the profession as an Assistant?
22. Are career advancement opportunities for Assistants a motivation or a hindrance?
23. Can a technical and/or practitioner training program also offer assistant training? Does career advancement impact the number of Assistants in the profession?
24. Would having a clearly defined opportunity for advancement for Assistants be an incentive to join the profession?
25. What is the clear delineation of an assistant's skill/knowledge compared to a technician?
26. Can a career ladder be developed with defining characteristics within the Assistant credential?
27. Could specialties be developed within the Assistant level?
28. Do we want to have specialists within the Assistant level?
29. What is the incentive to advance within the Assistant level, such as autonomy of practice?
30. Should we assume all assistants want to move on to become a practitioner? Is there sufficient education on the scope of an Assistant in practitioner programs?
31. How do we educate the current field about the Assistant profession?
32. Can assistant courses be stackable towards further education?
33. Would additional pathways be needed to facilitate stacking courses?
34. Is it valuable to break down master's level courses to facilitate assistant course stacking?
35. Is privileging too broad?
36. Can we compensate an assistant well enough to prevent them from quitting or seeking out higher credentials?
37. Does our current billing/reimbursement model enable the assistant to have a clear role?

## Appendix B: All Questions per Challenge *(cont.)*

**What are all the questions that we could ask about the **clinical practice model - consensus for Assistants** that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. Do OP need assistants?
2. What is the fundamental difference between a resident and an assistant? Is the current assistant scope of practice too high/close to the practitioner?
3. What is the line in the sand difference between the assistant and practitioner? Do assistants have too much autonomy?
4. Is the assistant a clinical value?
5. Is the assistant a business value?
6. Does the assistant sacrifice quality of care for business profitability?
7. How does what an assistant may be paid in terms of salary impact the quality of care, i.e., lower salary for assistant than practitioner?
8. Do assistants provide greater access to care for the patients? Is there enough oversight of assistants in practice?
9. Is there a consensus within the profession that we need assistants?
10. How does the assistant fit in practice with the other care providers of pedorthists and orthotic fitters?
11. Is privileging too broad?
12. Does privileging impact the flow of prospective students at the assistant level? Do assistants need formal academic education vs. experiential?
13. Would assistant level be enhanced or detrimental by elimination of an experiential pathway for certification?
14. Does the assistant devalue the practitioners as being only case care managers? Do assistants have insufficient autonomy?
15. Since privileging is always going to happen, do we need both certified orthotic fitter and certified orthotic assistant?
16. What is the benefit of O&P assistants needing to go to O&P school vs other health care professions?
17. Does the profession understand the scope of practice of the Assistant?
18. Does the Assistant level of practice need a residency?
19. If Assistants were to have a residency, what would this look like (e.g., should they get paid)?
20. Is the Assistant role clearly defined so as not to create public confusion?
21. Should practitioner programs teach how to utilize assistants in practice?
22. Do we have hypothetical economic analyses that demonstrate how an assistant can improve a clinic's profitability?

## Appendix B: All Questions per Challenge *(cont.)*

**What are all the questions that we could ask about the communication between education and practice that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

Here is the list of questions under the category “What are all the questions that we could ask about the communication between education and practice that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.”

1. How do O&P education programs evaluate clinical skills to determine graduate readiness?
2. How do O&P education programs evaluate technical skills to determine technicians' graduate readiness?
3. How frequently do O&P education programs and practices communicate with each other?
4. Why doesn't communication happen more easily between the two parties?
5. What needs to be communicated between O&P education programs and practices?
6. What do clinicians see clinically that should be implemented into an education program's curriculum?
7. How is communication between O&P education and clinical practice currently being facilitated?
8. What is the goal of communication between O&P education programs and practice?
9. What expectations do clinicians have with O&P schools communicating with them and vice versa?
10. What are some clinical settings graduates will potentially encounter when entering the workforce?
11. What is the best way for a clinic to communicate the type of graduate that best meets their organization's needs?
12. Is there a mechanism to establish stronger partnerships between schools and O&P clinics?
13. What mechanisms already exist to develop partnerships between O&P schools and clinics?
14. Is there a place I can find contacts for the O&P schools?
15. How does the dialogue between schools and clinics impact the way programs are taught or the way a clinic operates?
16. What do schools want clinics to know about their students/graduates?
17. How would communication between the O&P schools and clinics help facilitate residency opportunities/placements?
18. Why is it sometimes difficult to place a resident if the profession has a genuine shortage of clinicians?
19. What can O&P educators do to encourage clinics to be engaged with residents/hire their graduates?
20. What are the questions the O&P schools and clinics should be asking of each other to empower their future graduates?
21. Are there extrinsic factors (ex: government) that impact the communication between the O&P schools and the profession?
22. What should NCOPE do to facilitate the discourse between academic programs and clinics?
23. How do you ensure ongoing dialogue between the O&P schools and the clinics?
24. How do we ensure all students get consistent and transparent information about clinical opportunities?

## Appendix B: All Questions per Challenge *(cont.)*

25. What are the benefits of hosting an O&P resident or student?
26. How can a clinic that is geographically removed from a school enable communication with the schools?
27. How are central fab facilities and manufacturers engaging O&P students?
28. Should central fabrication facilities and manufacturers engage with students and faculty?
29. What is the best form of communication to enable dialogue between the O&P school and clinics?
30. What are the expectations that employers have of new graduates? Are these reasonable?
31. What are the schools communicating to the employers on what they are teaching?
32. Are the schools communicating curriculum content to the practice? How is research informing businesses to change practice?
33. How do practices partner with the schools to maintain their (the practice's) evidence-based practice techniques?
34. How do we ensure the programs don't teach to the certification exams only?
35. What platforms or methods of communication exist to improve communication between programs and practices?
36. What can schools do for practices? What do practices need?
37. What value does a resident provide a practice (and vice versa)?
38. How can NCOPE encourage practices involvement in the development of education/residency standards?
39. How does the profession who wants research and educational programs that do research come together?
40. What strategic planning is necessary for research priorities and implementation?
41. How do you account for regional differences?
42. What responsibility do professional/practices have to communicate with education institutes?

**What are all the questions that we could ask about the **limited entry skills of practitioner graduates (i.e., inadequate preparation)** that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. Is this a fair perception of graduates?
2. What are the skills a graduate should have before entering practice?
3. How is "inadequate" being defined by the profession?
4. How can the CAAHEP standards and NCOPE be framed to enable program faculty to teach beyond the standards?
5. How do employers' actual needs align with the CAAHEP education standards as written?
6. How can the CAAHEP standards be refined to enable graduate readiness into the future?
7. What specific clinical skills should be taught in school in contrast to clinical practice?
8. Are the skills being taught in school transferrable to practice?
9. How do we ascertain what practitioners see as a limitation in our graduates?

## Appendix B: All Questions per Challenge *(cont.)*

10. What are the challenges O&P education programs have in addressing the areas of inadequate preparation?
11. How do we develop graduates that are willing, eager, and able to effectively learn in a real-world clinic setting?
12. How do clinic owners/employers define entry-level, and when does it occur?
13. What can O&P educators do to reasonably shape the expectations of clinicians?
14. What factors do clinicians weigh when determining a new graduate's abilities?
15. What is the variability of clinician expectations depending on the setting (VA hospital vs private clinic)?
16. What are factors outside of the CAAHEP standards that employers value in a new clinician?
17. How does professionalism get defined as we develop a more culturally diverse workforce?
18. How do we educate students on factors to enable success (e.g., social determinants of health) in diverse settings or with underserved populations?
19. How do clinicians ensure their knowledge and expectations are reflective of the current state of the evidence?
20. Who determines what the graduate must possess upon entering the profession?
21. Why do residency programs not understand that the resident is receiving an educational training, second half, not a first-time employee? (i.e., expectations)
22. What is the fundamental knowledge needed, and therefore what is missing?
23. Should there be a shift toward digital manufacturing in the practitioner education programs?
24. Can we educate private practices on the education programs?
25. Are there outside funding sources that can subsidize the salary of residents?
26. Should new graduates of practitioner programs also be trained as technicians?
27. What are the explicit and objective criteria of a well-fitting socket or orthosis?
28. How to teach technical communication skills to a practitioner? (e.g., the technical fabrication details)
29. Do they need technical hand skills?
30. How do you identify technical hand skills vs clinical hand skills? What are employers having to teach new hires?
31. How long do you expect a graduate to perform independently?
32. Can NCOPE facilitate and disseminate this information?
33. How long did it take the employer to be prepared at the level they desire new graduates to be? (e.g., how many casts before you were adequately prepared)

## Appendix B: All Questions per Challenge *(cont.)*

**What are all the questions that we could ask about the **cost to operate programs for Practitioners** that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. Can schools team up with non-profits to reduce costs per student?
2. Can we utilize industry to reduce costs?
3. How can we reduce our carbon footprint?
4. How can we design projects that would reduce wasted materials?
5. Can we ask O&P community to volunteer/supplement programs with guest lectures?
6. Can a school associate with a local central fab to reduce costs?
7. What other revenue streams besides tuition and fees can programs utilize to offset costs?
8. How are schools offsetting costs to produce cost disparity between programs? How are programs being funded beyond tuition?
9. Are schools communicating on program costs?
10. Are programs teaming up with other departments within the institution to reduce costs?
11. What programs are available for collaboration within the institutions?
12. What programs are available outside of the institution?
13. Are accreditation or standards impacting cost?
14. What equipment is actually necessary for each workstation?
15. Can standards be accomplished by different means?
16. Can we consolidate standards within the same project?
17. Can individual projects meet several standards?
18. Do the standards represent the needs of the industry?
19. Is there clarity in the standards on individual fabrication versus team? What fabrication skills are essential for a practitioner to know?
20. Does the fabrication or fitting area have to be part of the institution or offsite?
21. What are the costs to operate a program?
22. Are there other operational efficiencies to reduce overall costs?
23. Can different instructional models be implemented to reduce space required?
24. Do we need to communicate with clinics post-ed program to determine if resources are being used effectively?
25. Is the product (meaning students) meeting the expectations of clinics?
26. Can we get outside subsidization for program cost, e.g., faculty salary?
27. How much do we need to reduce costs to achieve a meaningful difference/improvement?
28. What economies of scale can be implemented to improve/lower operating costs?
29. Is the cost per student impacted based on institution location, i.e., state vs. private?
30. Is it harder or easier to host an OP program in a state or private institution?
31. Should we develop different pathways?
32. Are we degree inflated?

## Appendix B: All Questions per Challenge *(cont.)*

33. Can we eliminate fabrication costs from the master's program?
34. If we eliminate fabrication, can we elevate it to technician only?
35. What is the ideal student-to-faculty ratio?
36. How do we convince manufacturers to be more generous with supporting the schools?
37. How do we measure changes in the profession and then adjust the curriculum accordingly?
38. Can programs share space, lab equipment, and supplies?
39. Is there a better way of justifying the program's cost to the school administration?
40. Would it be less costly to have more digital learning (less use of school's resources)?
41. Can the appropriate level of education be achieved outside the university environment?
42. Can programs recruit more out-of-state or international students who may pay greater tuition?
43. Can programs collaborate with tech programs to reduce costs?
44. How do faculty obtain training in pedagogy, research, and mentorship, as this is an additional cost?
45. Can schools team up with non-profits to reduce costs per student?

**What are all the questions that we could ask about the curriculum content for Practitioners that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. How can we increase the speed of incorporating new technologies into the curriculum?
2. How can schools afford to keep up with technology?
3. How prevalent does technology need to be before incorporation?
4. Why aren't we incorporating more technique courses in the schools instead of relying on manufacturers?
5. Should programs be responsible for teaching innovation? What other areas need to be included: business, leadership?
6. Is there a way to address needs in standards changes outside of NCOPE's cycle?
7. Is there a way to engage recent graduates to define curriculum shortfalls?
8. How do we balance what the curriculum content is with what CAAHEP and clinics want/need?
9. How can we align expectations of stakeholders with program limitations?
10. Can the disparity between content of residency and academia be more defined? Who should decide what is expected from programs and residency?
11. What metrics exist to measure domains of mastery?
12. How is mastery defined in the field?
13. Is the curriculum relevant to daily practice?
14. How do we align testing with the curriculum?
15. How can the curriculum be used to identify challenges in practice?
16. How can we prepare students for challenges in practice?
17. How do we best utilize existing clinical practice guidelines or create CPG to have universal best practices?

## Appendix B: All Questions per Challenge *(cont.)*

18. How can curriculum correlate to best clinical practices?
19. How can the curriculum be relevant when research is outdated?
20. Is it in the industry's best interest to allocate training to certain specialists?
21. How much clinical content should be shared among programs?
22. Should clinical content be shared with allied professions?
23. Does this positively/negatively impact the industry?
24. Who decides what is relevant to teach, i.e., new technology versus core principles?
25. Does the current curriculum prepare the students for the demands of clinical practice?
26. What skills are employers addressing in clinical education?
27. What content can be dropped from curriculum standards? How often are CAAHEP standards reviewed?
28. What is the risk of removing high-cost projects from the curriculum?
29. How do we create education activities that more closely reflect real-world clinical demands?
30. How do we refine our rubrics/measures to ensure grading rewards/measures essential real-world clinical skills?
31. How do you recruit effective contributing faculty (i.e., interdisciplinary) to teach when honorariums or compensation might not be available for their time?
32. Should the O&P education programs begin teaching how to work with supportive professionals (assistants/techs) to enable more efficient workflows?
33. Is it fair to specific patient populations that someone who is certified really doesn't have foundational knowledge in their area?
34. Should the O&P profession develop fellowships to allow for specialization (UL Prosthetics, Cranial, Scolio)?
35. Are the same resources being used across all programs?
36. How do manufacturers entering the clinical realm affect clinical content?
37. How does manufacturers' instruction in schools bias student decisions?
38. Does practitioner education cover the interaction with other care providers within O&P?
39. What are the deliverables for scholarship and research in the curriculum that are valued by industry, payers, clients, etc?
40. Can electives/tracks be developed (research/clinical/business/education)?

**What are all the questions that we could ask about the Accreditation requirements for Residency that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. Do the requirements match the demands of the daily clinical practice?
2. Do the requirements match the expectations of the students?
3. Do the requirements match the expectations of the educational institution?
4. Do the requirements match the expectations of the residency site?
5. Do the requirements encourage an opportunity for continued education?

## Appendix B: All Questions per Challenge *(cont.)*

6. Are the requirements clinically relevant?
7. Are residency directors equipped to fulfill residency requirements?
8. Are the accreditation requirements problematic to fulfill?
9. What do the residency sites think about the standards for residency? Can they be specialized and yet apply?
10. Are the residency standards evaluated at any other time than the accreditation period?
11. Why should sites participate?
12. What is the tipping point for too many standards until the site says “no more”? How do we report concerns?
13. What is the oversight of these standards?
14. How do we know the resident is getting the experience they need?
15. What is the loop for feedback?
16. Could we shorten the length of the residency?
17. If the resident is of a different opinion from the site, how should this be handled? Is time a good indicator of student competency?
18. What education opportunities are available to residency sites?
19. Are the residents aware of the site standards?
20. Are the sites aware of the standards residents need to meet?
21. Is accreditation easy to understand for both the resident and the site? Are longitudinal outcomes available for the site?
22. How many hours will need to be invested to take on a resident?
23. Would it be beneficial for a site to receive a rating or a score? (ex. AAA or 5-star) What defines the threshold for competency?
24. What are the consequences for not meeting standards?
25. Are the current standards as written sufficient to provide a “good” residency?
26. What makes a good residency?
27. What can the regional resident liaisons do to help encourage compliance with the standards?
28. What can the resident review committee do to help encourage compliance with the standards?
29. What would happen if we were to only allow the combined residency pathway? Does residency as an independent part of education make sense?
30. What are the outcomes when a residency site fails to meet the NCOPE Residency Standards?
31. Do the residency standards ensure that the patient, resident, and residency site are appropriately protected?
32. Are the standards too subjective?
33. Should the residency standards be more or less prescriptive?
34. How do we shift away from device-centric to patient care-centric standards? Should residents be able to finish “early” if competency is attested to?
35. Could the standards be reviewed to adjust the length of time required?
36. Should the standards be changed to require orthotics AND prosthetics to finish the residency?
37. Could passing written and written simulation exams be required prior to residency and then CPM after for certification?

## Appendix B: All Questions per Challenge *(cont.)*

38. Should residents be required to do any fabrication?
39. How does NCOPE objectively assess the residents' skills?
40. What are the objective measurements of competency?
41. How does NCOPE ensure the quality check (inter-rater reliability/consistency) of the residents' skills between different mentors?
42. Who should bear the financial burden of residency?
43. What are the barriers to programs moving to an integrated model?

**What are all the questions that we could ask about Residency - quality and oversight that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. Is a residency an educational opportunity or a first job?
2. Can the facility identify their strengths as a residency site?
3. Are there tools to provide a better match between a resident and site?
4. Can we eliminate non-competes?
5. Are there available resources to inform students on non-compete contracts?
6. How do you measure the quality of the residency experience?
7. How do you measure the quality of the resident?
8. Would residency sites complete satisfaction questionnaires?
9. Is there potential for post-residential employment?
10. Should an administrative rotation be included in a residency?
11. If the student chooses, may the ABC Exam scores be released to the residency site?
12. Do you have a specialty track residency option?
13. How do we avoid burnout in quality residency sites?
14. How are residency sites recognized for good teaching practices?
15. How can residency liaisons be better utilized?
16. How often should residency directors/mentors re-train?
17. What resources would help residency directors/mentors improve the quality of their programs?
18. Can accredited residency programs be rated? (e.g., 1 star, 2 stars, etc.)
19. Can data be shared publicly on residency program outcomes?
20. Can the quality of the experience (evaluation data from resident's eval forms) be published and shared?
21. How do we protect residents from retribution if they are reported for poor quality?
22. How do you measure the quality of the residency site?
23. Should there be a limit on the number of hours a resident can work to avoid "cheap labor" or burnout?
24. Should there be an in-person residency site survey or site visit?

## Appendix B: All Questions per Challenge *(cont.)*

25. What standardized, reliable, and valid tools/assessments are being used to evaluate competency (e.g., to reduce implicit bias)?
26. Who is evaluating the residency evaluators?
27. How do program faculty (integrated model) aid in ensuring residency quality and control?
28. How can academic programs (integrated model) offer support structures and oversight for residency?

**What are all the questions that we could ask about the **credentialing model - length of time for Residency** that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. Why was 12 months selected as the correct length of time for a single discipline residency?
2. Why was 18 months selected as the correct length of time for a dual discipline residency?
3. Why should residency have any timeframe as opposed to competency-based? Should there be a choice in the length of residencies?
4. Should clinical experience obtained during the academic program be counted toward the “residency” requirements?
5. Should any time requirements be tied to practice domains versus an overall length of time?
6. How does length of time correlate with competency?
7. Would reducing the length of the residency inherently compromise patient care? Do we know what specific types of experiences the resident obtains are the most valuable?
8. Could one of the certification assessments take place during the residency to shorten the overall time to become a CPO?
9. Would shortening the length of time for residency impact the appeal for integrated model programs?
10. Why do the integrated programs have to complete the master’s standards prior to beginning the clinical rotations?
11. Why is it called “residency” if it is not a “specialized” training period?
12. If the residency required length of times were shortened, how would it impact residency sites?
13. How does NCOPE ensure the intent of the residency site is clinical training, not cheap labor?
14. Could integrated students take ABC combined written at end of didactic phase of education prior to residency to shorten time to take rest of the ABC boards?
15. How is clinical competence objectively defined?
16. What percentage of residency should be independent provision of patient care?
17. How do we determine how long it takes on average for a resident to achieve each competence?
18. What do we think it takes to achieve clinical competence?
19. Would changing the length of the residencies change state licensure requirements?
20. Is the length of residency a deterrent to entry into the field?
21. How can quality and efficiency of learning be improved to reduce overall residency length?
22. Can residency turn into privileging if the timeframe is too short?
23. How can existing data be leveraged to assess competency?

## Appendix B: All Questions per Challenge *(cont.)*

24. How will shortening the residency timeline affect a person's ability to get licensed in states with licensure?
25. How will changing the length affect onboarding and HR processes (ex: VA timelines)?
26. Could we have an in-service training exam?
27. Are institutional residency programs better than private practice residency? Can we identify what makes institutional-style residency programs better?
28. What can we learn from institutional residency to impart into private practice? Is the quality of patient care affected by the length of the residency?
29. What other models can we point to for additional success?
30. What could a rotation-based model teach a single facility model, and vice versa? Should there only be a dual discipline residency and no single discipline residencies?
31. Could the residency be shortened with the addition of specialized fellowships? How do we integrate fellowships into the residency?
32. How to ensure consistency of assessing resident skill levels between residency sites/mentors?
33. How can NCOPE provide feedback on the quality improvement of a residency program?
34. How can NCOPE evaluate the effectiveness of a residency site?
35. What would be the effects of only offering a combined O&P residency? Why does competency (e.g., simulation examinations) not drive the timeframe for residency?

**What are all the questions that we could ask about Residency - Business operating costs/time that would help us learn more and better understand the challenge? These questions should provide meaning, insight, and context so that, if the challenge is addressed in the future, a better possible solution could be created.**

1. How does a practice fit the residency requirements into their already very busy daily operations?
2. Why are residents paid a salary?
3. Why aren't all the programs integrated?
4. How impactful is a resident's salary to the practice's bottom line?
5. What is the impact on staff's productivity if they participate in clinical training of residents?
6. What is the incentive to train a resident if they are not your employees?
7. Is there a recommended salary for residents?
8. What is the recommended time allotment that the residency director should spend dealing with the residency?
9. How much should a residency site plan to spend on operational costs (e.g., computer, software, training, etc.)?
10. Should residency sites pay both the residency site fee and the resident fee?
11. How much revenue should a resident bring into the business?
12. How does a residency site define the value of having a resident?
13. Are the residency director and mentor training requirements appropriate?
14. Are the residency director and mentor training requirements a burden?
15. Do the residency director and mentor training requirements create a barrier to sites?

## Appendix B: All Questions per Challenge *(cont.)*

16. Are the residency director and mentor training requirements enough?
17. How do the integrated versus non-integrated models impact the O&P practice's bottom line?
18. What are the different ROIs for the residency sites for an integrated vs non-integrated model?
19. Do the NCOPE reporting requirements create a burden to small practices?
20. At what point in the residency should the resident create profit for the practice?
21. Why should residents have to sign a non-compete?
22. Can the CEU option for supervising residency be better publicized?
23. Can outside agencies subsidize residencies, i.e., Medicare, professional organizations?  
Would subsidized residencies increase the number of residency sites?
24. Do we really need more residency sites as suggested?
25. How can a resident more efficiently bring value to the company?
26. Is it a better business choice to hire a resident to be a future employee than a fully certified clinician?
27. Should application harmonization be a requirement?
28. Is it cost-effective to host residents every year, i.e., residents complete and move on? Can the O&P suppliers incentivize residency sites with a modest additional discount (1-2%)?
29. Who should be responsible for the costs—the resident, the school, or the residency site? How can NCOPE reduce the burden on residency directors and mentors?
30. Has NCOPE ever investigated applying for GME federal funding?

## Appendix C: Future Workforce - Group Discussion Notes

To determine areas of agreement about the future workforce, the attendees addressed four questions, which were developed from their responses in the pre-summit survey.

**Round 1:** Round 1: Attendees were instructed to collaborate within their small groups (Tables) to address a set of four questions. Prior to engaging in group discussions, participants took a few minutes for independent reflection and recorded their thoughts in their notebooks.

**Round 2:** Following the initial discussions, two tables joined forces to compile the responses and pinpoint areas of consensus (i.e., Tables 1 and 2 collaborated to aggregate the responses for Question #1 and produced a summary.)

The outcomes of the initial table discussions (round 1) are summarized in the table provided below.

### Q#1

**Our profession continues to shift in response to technological advancements. How can education (technicians, assistants, and practitioners) adapt and stay relevant to current and future technology advancements?**

#### Table 1

- Emerging technology course added to curriculum.
- Survey recent graduates to identify what technologies they felt prepared for and what ones they did not.
- Education programs by definition have to focus on entry level knowledge and skills. Application of new technology should be “introduced” during school, but not in depth.
- The profession needs to be aware that core competencies learned in school should be “immune” to what technology is utilized. Focus should be on meeting the patient’s needs, using whatever technology is most effective/efficient.
- For some technologies, the technician education program may be the best place to focus on new technology.
- Utilize technology to improve delivery models and remove barriers to education.

#### Table 2

How can technology help our field? Just because it’s new and cool doesn’t mean it’s helpful. What to eliminate and what to introduce? How to pick the right technology to introduce? How to share new innovations (not products) with the O&P community? Technical CEU’s that are applicable/relevant are hard to find. Process and outcome focus on technology (not product/device). Universal processes and framework that can be used for new technology.

## Appendix C: Future Workforce - Group Discussion Notes *(cont.)*

### Table 3

- Create stacking “credentials” based on continuing education courses.
- Need guidance on which technologies can be de-prioritized to make room for new technologies.
- Expand our partnerships with tech developers and tech disruptors. Compete or collaborate?
- Understanding what practices are providing in current O&P practice so students learn that, as well as learning new technologies.
- Schools need ability to reduce barriers to access to newer technologies.

### Table 4

- CEU's and short courses – since academic programs do not teach to anyone specific cad system
- There are exposures. Teaching to a technology is challenge for programs. Encourage students to seek out different manufactures, but take it will grain of salt.
- Nice to stay on top, but until in standards is hard for academic programs
- Need input from O&P community as a whole.
- Can NCOPE have recommendations
- Feedback loop is needed on technology
- Creation of a Technology Alliance style group supported by all the O&P partner organizations to share and monitor
- Technology: different types/level. Device specific and other is workflow.
- Workflow has a bigger change to academic programs and what they teach (and ability to adjust to curriculum).
- Ability to use and recognize transfer of skills from different projects, without having the students perform so many “projects”
- How do we plan navigate digital workflow?
- Need of data, from practice and residents.

### Table 5

- Invite emerging technology companies to provide an in-service for the students.
- It should NOT be a sales pitch
- Define broad standards that define the technology utilized for O&P care
- Advisory board should direct technology advancement
- NCOPE should develop a technology committee to review and make recommendations for technology training
- Continued assessment of adoption in current practice and coming alongside early adopters to determine if the technology will “stick” or if it is just a fad?
- Seek funding and ask for discounts

### Table 6

1. Technology is not necessarily revolutionary but evolutionary. Technology enables us different approaches to our fundamental care model.
2. Technology should be “the space” of orthotics & prosthetics.
3. Rotational sharing of technology learning resources:
  - Multiple scanners shared across schools
4. Get input from the community/profession on an ongoing basis in lieu of relying on the retroactive facing practice analysis.

### Table 7

- Certification exams should be updated to reflect current needs. Equipment at programs should be up to date and relevant
- Manufacturers and Industry Leaders in the field can provide free courses and teach new techniques
- (AOPA, AAOP, or a school) Develop fundamental content/curriculum that is shared across schools and possibly used for continuing. E.g., a set of slides, lesson plans, and readings on CAD.

### Table 8

Micro credentialing should be introduced in educational programs to address advances in technology within the O&P space. This will allow O&P professionals to mitigate gaps in training that emerge with new technologies. In addition, augmented communication between training programs and industry will be instructive and helpful.

### Q#2

**The number one response to “what are the threats to O&P education programs?” was external encroachment. What are the unique skills of O&P professionals as compared to other healthcare providers who provide O&P care, e.g., OTs, PTs, chiropractors, podiatrists, athletic trainers, etc.**

### Table 1

The number one threat is really the operating costs of educational program, not encroachment. O&P is unique because of our knowledge of; materials, biomechanics, device interfaces, problem solving, componentry, alignment, gait, evaluation and treatment recommendation, on-going continuation of treatment...

The O&P profession has not been successful in communicating the attractiveness of the profession and the unique value it brings to the overall rehabilitation team.

### Table 2

Clinical coordination of care and understanding of billing processes in formulating a treatment plan. Recognition when custom vs OTS is appropriate. Threat to tech programs is that you don't have to go to tech program to be a tech. More internal threats compared to external threats. Hand skills are unique, nuance in patient care and device modification. O&P are the problem identifiers and mitigators and can provide a map to a solution. Clinical creativity. Have to demonstrate the value and uniqueness of O&P in a way that payors, other fields can understand.

### Table 3

- What do we do well to distinguish ourselves from other providers of O&P care? What do we do that others don't?
- We're interface experts. We have a clear understanding of how a human and a device interact/interface.
- Unique skills:
  - Anatomy/physiology
  - Design
  - Material science
  - Biomechanics/stress factors
- Understanding of and skill in how hand skills link to the design and function of the device
- We offer a continuum of care, we're not married to a particular product, we are knowledgeable about a range of devices.
- Our facilities have the ability to provide a variety of options.
- We are technology managers.

### Table 4

- Encroachment:
  - Is there things within O&P to "fight for" or not "fight for" the O&P professionals to be the primary experts.
  - Concern of other professions delivery a section or portion of O&P care. For example, PT side and billing rights for Lcodes based on their belief they have the education to provide O&P..
  - Encroach O&P education levels and the multiple pathways
  - How things are advertised, example soft goods
  - Professional advocacy – important
  - Ability to bypass the practitioner in delivery of care
  - Care access – the process and time for patients for receiving care
  - Not clear and concise of practice standards.
- Unique:
  - Design, fitting and gait are the unique to O&P.
  - Ability to adapt and be creative.

## Appendix C: Future Workforce - Group Discussion Notes *(cont.)*

- Diversity of background of our workforce, ie.
- Ability for follow-up.
- Need to defend our body of knowledge through uniqueness
- Actual physical and machinery is unique to O&P
- Device to patient and the expertise our professional (their education/training) brings to the patients.
- Unique to O&P is that patient care services provide as their treatment a tangible item, the device, but the need to change the terminology and understanding both within O&P and health community of providing O&P cared.

### Table 5

- Large manufactures are providing direct patient care and
- Competitive bidding
- Non licensure states may suffer from Amazon, drop ship just a device, “garage -tinkerers” type encroachment
- Delineate between technical and clinical outcomes to provide optimal patient care

SKILLS UNIQUE to US: assessment, evaluation, image capture, rectification, design fabrication, training and adjustment, maintenance, repair

Totality of care for the devices we provide

### Table 6

- Working off entry-level competencies, O&P are uniquely qualified to perform:
- Static and dynamic alignment
- Human/device interface
- Prosthetic/orthotic prescription and design
- Optimization of microprocessor and digital control mechanisms
- Ongoing maintenance and care
- Differential identification of issues that can be resolved with adjustment/alignment
- Matching patient treatment goals, mechanical
- Requirements, and ADL/vocational/avocational activities with appropriate orthotic/prosthetic technologies.

### Table 7

- We use mechanical problem solving to put stuff on people. E.g., applied forces to the body and mechanical operation of devices
- Knowledge of material properties and use of materials.
- Interprofessional communication and relationships to allow allied fields to defer to the expert.
- We need to take ownership of our domain (both custom and OTS)
- O and P professionals are experts in which device is most appropriate for care needed and take time with the patient to ensure best fit and outcomes.

## Appendix C: Future Workforce - Group Discussion Notes *(cont.)*

- Access to the tools, materials, and machinery to optimize

### Table 8

Unique skills include the ability to do follow-up care with trouble shooting and problem solving. Introduction of interprofessional training will forestall some of the encroachment problems that have or are emerging.

O&P professionals have the ability to apply biomechanical principles to the production of devices and in the long-term management of these devices as end-users develop and change over time.

### Q#3

**As our clinical care model shifts, what are the key competencies (knowledge, skills, professional behaviors) needed for best practice and sustainability of the next generation of O&P care providers (technicians, assistants, and practitioners)?**

### Table 1

“A new competency needed is to be able to document the medical necessity of our treatments. O&P providers will need to assess the “whole” patient and determine how an O or P intervention positively impacts their functional level and/or quality of life.

Practitioners need to learn to how to delegate to care extenders to be more efficient. They also need skills related to communicating the technical needs (I.e., to a central fab)

Knowledge of scope of practice, both within O&P and other professionals.

New graduates need core empathy, interpersonal communication and psychology of the disabled skills.”

### Table 2

O&P clinician is a care coordinator, communicator (written, verbal, interpersonal), decision maker.

Communication is key to all levels. Manipulation of technology to communicate integrated across all levels.

### Table 3

- Foundational biomechanical principals
- Collaborator
- Communicator
- Professional
- Scholar
- Tech expert/manager
- Leadership skills, how to manage a team
- Crafter
- Patient Advocate
- Documentation
- Administrative skills
- Knowledge of how to prioritize time/work flow
- Managers of care extenders, knowledge of other SOP's and roles—we see a lack clarity around these roles

### Table 4

- Being committed to being lifelong learners will assist with
- Clear standards of practice with defined roles. Knowing when and how to delegate.
- More focus on making clinical decision making/documentation.
- Communication, written and verbal for justifying what doing.
- Teaching at the education programs how the different care levels interconnect and work within the practice setting.
- Application of evidence
- Intra responsibilities and knowing roles within O&P
- Clinical care will come from models establish best practice
- Payers only pay for X, does that define our shift?
- Movement to or enhancement of the value of op services (based on evidence/outcomes from patient population) on the importance of how the treatment enhanced the quality of life for patients.
- CPO in a “directing” level position and building up the other levels and their area of expertise.

### Table 5

- Inter-team communication
- Differentiate roles and understand insight to delegate skills within that role (ex. Train Assistant clear expectations and communication)
- Management leadership and coordination of care – we are siloed in our practice
- We manage the care specific to O&P– not just provide a device
  - With the physician, patient, therapist, insurer, etc.
- Use outcome measures for clinical decision making, not just insurance justification
- Knowledge of componentry and technology available for the best outcome customized to the patient
- Identify the patient need and treat
- Utilize practice management software and practice management process for clinical efficiency
  - To also include digital file management/protected cloud storage/record management
- Compliance with regulation and seek legal protection for our profession
  - Teach policy, payer denials, advocate for our profession to policy makers
- Provide scholarships, FUNDING

SKILLS UNIQUE to US: assessment, evaluation, image capture, rectification, design fabrication, training and adjustment, maintenance, repair

**Table 6**

1. Global Competencies:

- Communication on both an inter/intra-professional level: Verbal and Written (ex: persuasive writing/justification)
  - Patient level
  - Interdisciplinary care level
  - O&P collaborator level
- Critical appraisal of practical outcome, synthesis of information and physical outcome.
- Outcomes from a patient care quality and economic outcomes.
  - Demonstrating value in the care O&P professional applies.
- Advocating and justifying appropriate patient care.
- Administrative processes for documentation and reimbursement.
  - Ex: Local Coverage Determination Awareness
- Shared decision making with the patient being engaged in their own care decisions.
  - With the clinician shaping the dialogue using interventions appropriate/covered by insurance.
- Contemporary clinical workflow and process management.
- A knowledge of contemporary digital workflows and manufacturing.

2. Prosthetist/Orthotist:

- Initial gait training for persons with lower limb prosthetic management.
- Relevant pathophysiology and pharmacology
- Pain science

**Table 7**

**Tech:** Material science, safety, quality control, and fabrication skills

**Assistant:** Functional anatomy, biomechanics, Palpation, Gait analysis, profession behaviors

**Practitioner:**

Clinical knowledge:

If we are building clinical care professionals, then Professionalism and professional behavior (bedside manner) should be the focus.

Skills should come at residency

Emphasis on best outcomes and fit for the patient

**All:** Management and communication

Entrustable Professional Activities (EPA's) are devised and revised by consensus. And are in use by Medicine, PA, and other professions' educational institutional settings. Developing these for O&P education would resolve (or force resolution) for many of these issues stated.

## Appendix C: Future Workforce - Group Discussion Notes *(cont.)*

### Table 8

Overall, we need clearly delineated roles with competences unique to each of the O&P professional:

Practitioners- leadership, communication, organization, management, delegation, technological adaptation, evaluation and assessment.

Professional Behaviors: Patient-Centric, team-Collaboration, Ethics & Integrity, Clinical Expertise, Empathy & Compassion.

Assistants-technology adaptation, shape capture, communication.

Technicians-organization, time-management, fabrication, material science, process management, psychomotor skills, technology adaptation.

### Q#4

**In the next 5-10 years, for practitioners, is school or residency the more appropriate place to emphasize fabrication skills? And why? Is clinical training required for assistants? If so, is school or residency the more appropriate place to emphasize fabrication skills?**

### Table 1

Students need to learn fabrication “basics” during school, but overall fabrication skills need to be more emphasized during residency because that is the setting where repetition of skills is possible.

It is critical that practitioners know how to communicate fabrication requirements with technicians, including what type of technical intervention is best/possible (e.g., use of additive manufacturing, traditional methods, etc.)

Yes, clinical training should be included in assistant educational programs.

### Table 2

Are the results of the design or the process of fabricating more important? Assistant programs should have some technical exposure. Residency is going to be the majority of technical exposure, but should have the basics in educational program.

### Table 3

Practitioner:

Theory focusing on interface and all the technologies should be in school.

School should focus on theory, decision making, development of treatment plan, etc.

Schools should familiarize the student with fabrication, but most fabrication skills should be taught in residency. The residency can provide repetition and variety of technical exposures.

Schools should teach how to work with technicians.

Assts:

Standards requirement for Asst's don't allow time for clinical training in a certificate program.

Is training/teaching fabrication skills the entry point for assistants?

Need to clarify what we mean by fabrication skills, vs., for example, lab skills.

### Table 4

- Fab Skills Practitioner:
- Is a mix – schools should introducing fabrication skills. If in residency can provide more repetitions, to help enhance.
- How important is it for a graduate to have skill upon leaving a deliverable KAFO for example.
- Should be in both locations school and residency.
- Bridging education to practice – is important – but communication/expectations are critical.
- Breathe and depth for each level within each practice level.
- Classroom and clinical setting.
- Why do schools and residency need to be different.
- Generational clash between on “hand skills” for new graduates.
- Clinical training for assistants
- Be able to understand – so yes
- Needs to be within their scope level of practice.
- Assistant Fab skills: yes some understanding of process.
- When hired and graduated can gain greater experience.

### Table 5

- School is the more appropriate place to learn the rudimentary skills of fabrication, this will create a holistic care provider. Residency will refine these skills.
- Time is one of the most valued commodities. How can we place the burden of adding training of technical skills AND clinical training to a resident site – that is already strapped for time? It is expected that a resident can manipulate the devices to provide competent care.
- There should be clearly defined standards of what technical skills are required prior to residency.
- Technical skills and the application of such differentiate O&P care providers from other allied healthcare providers.
- Academic institutions may be the most appropriate place for residency. Residence is an educational model which should have oversight of a governing body of academics who understand pedagogy to ensure consistency across residency locals, removing from private practice the financial burden and conflict of interest between educating a resident and running a profit model business
- Make a clear delineation between an assistant “residency or hours “and a practitioner residency, avoiding the physical therapy assistant model, but maybe reflect the medical assistant model, where the Assistant is responsible for tasks such as measurements, initial assessments, and recording outcome measurements and the Certified Practitioner (who has the higher level of education) remains responsible for development and implementation of the treatment plan (including molding and refinement of patient models).

### Table 6

#### 1. Practitioners

- For practitioners the fabrication skills should be taught during residency.
- Schools should focus on what datapoints and anatomical models are needed to enable proper fabrication.
- Practitioners should have a foundational knowledge during skill.

#### 2. Assistants

- Baseline/route skills should be taught during school.
  - Adjustment skills:
    - Trimlines
    - Heat/flare

### Table 7

- a. Practitioners - Fabrication skills should be introduced in Education Programs. Baseline principals of fabrication needs to be defined across institutions. Advanced training will occur at residency. Should there be clear criteria for intensive beginner, intermediate, and advanced levels
- b. Assistants – Clinical training should be required for assistant training (3-6 weeks). Consistent baseline skills on adjustments and fabrication should be taught during the training period.

### Table 8

Students need to be introduced to fabrication sciences in schools, and obtain mastery elsewhere. They will be exposed variably in residency, but will not obtain mastery there. It is well settled that residents need psychomotor skills in addition to the cognitive understanding of fabrication application, but as to where and when mastery might occur, is still elusive.

Clinical training is needed for assistants. A residency is not needed. They should not be doing fabrication. They will grow on the job in the context of something akin to apprenticeship. School provides entry level education, but does not provide the working skills needed by assistants.

## Appendix D: Prioritization of Challenges

On day 1, the attendees defined the challenges affecting the sustainability and vitality of O&P education programs in relation to workforce and practice demands for the profession. On day 2, they revisited and refined the definitions of the challenges. After the small group discussions, the attendees individually completed a survey asking them this question: **How urgent/critical are the following issues to the profession to meet the workforce and practice demands?**

Participants were instructed to rank only 8 of the 15 challenges with specific instruction that at least one item must be related to the four programs (i.e., technician, assistant, practitioner, residency). Note: There were initially 16 challenges, but two of the challenges were bundled leaving 15 challenges.

The table below lists the items in order of urgency and the number of votes.

Challenges affecting the sustainability and vitality of O&P education programs in relation to workforce and practice demands	#Votes
<p><b>Value of education/certification for technicians AND credentialing model - certificate/degree not required by technicians:</b> To attract and generate competent, valued Technicians who are committed to the profession, we must overcome the lack of return on investment for education or certification and generate new collaborations that support the expansion and growth of the Technician workforce. Technological advances and innovation will define future Technician practice, roles, critical competencies and certifications, as well as the optimal educational model and appropriate credentialing process.</p>	41
<p><b>Communication between education and practice:</b> Inconsistent communication between O&amp;P education programs and clinical practices inhibits collaboration needed to align curriculum content with practical needs, facilitate residency opportunities, and maintain evidence-based techniques. There are limited partnerships, ill-defined expectations, a potential misunderstanding of graduate abilities, and inconsistent dialogue to promote transparency between schools and clinics in the O&amp;P profession.</p>	35
<p><b>Clinical practice model - consensus for Assistants:</b> The OP profession does not have enough data to form a consensus on the necessity, the role and the scope for the assistant. In addition, there is lack of understanding on the delineation of the assistant from the other credentialing levels.</p>	33
<p><b>Curriculum content for practitioners:</b> Educational institutions need strategies to evolve curriculum to ensure efficient integration of appropriate technologies as well as to establish a balance between foundational skills and stakeholder expectations to ensure relevance to real-world clinical practice.</p>	31
<p><b>Limited entry skills of practitioner graduates</b> (i.e., inadequate preparation): Employers expect new graduates to have a consistent/predictable baseline skill level to enter a real-world clinical setting. There is little consensus between the O&amp;P residency sites and the O&amp;P school faculty defining a baseline level of psychomotor, cognitive, and affective skills to allow residency sites to implement a consistent residency curriculum.</p>	31
<p><b>Value of education/certification for assistants:</b> The challenges associated with the value perceived for assistants having a degree/certification include exploring career prospects, salary expectations, program requirements, job responsibilities, job outlook, and the impact of certification on job opportunities and career advancement. Given these challenges there remains a lack of consensus on the role of the Assistant and the value of education and certification.</p>	30

## Appendix D: Prioritization of Challenges *(cont.)*

Challenges affecting the sustainability and vitality of O&P education programs in relation to workforce and practice demands	#Votes
<b>Residency - quality and oversight:</b> Quality of a residency is not clearly defined and mentorship is often inconsistent across sites, leading to undesirable variability in the residency experience.	29
<b>Curriculum content for technicians:</b> There is a consensus that the technician curriculum is not aligned to the most current industry fabrication practices; the skills needed to fabricate devices with current practice are maligned with ABC certification standards. There is a lack of understanding of the current technician curriculum in general, and specifically in regard to its relevance for teaching future technicians.	25
<b>Credentialing model - length of time for Residency:</b> Residency is structured around a set time with unclear definitions of competence. The variety of models to residency need assessment in order to determine the most effective/efficient approach.	24
<b>Cost to operate programs for Technicians:</b> There is a consensus that the cost to operate technical programs are too high; things that may impact these costs may include partnerships with industry/manufacturers and central fabs, as well as sharing costs and space with other programs (i.e., autobody, plumbing, or even O&P masters programs). Other influences include changing curriculum models, such as hybrid models, apprenticeships (e.g., VR or apprenticeship) or micro-credentials.	23
<b>Residency - Business operating costs/time:</b> Running a residency program requires financial investment, time, and resources. The value of and return on investment for a residency program is unclear without a comparison of the traditional versus the integrated models with specific regard to expectations, utilizations and costs/benefits.	23
<b>Cost to operate programs for Practitioners:</b> Educational institutions seek cost reduction by developing strategic external partnerships, exploring alternative revenue sources, efficient space use, and shared resources. They also grapple with aligning curriculum with evolving standards and stakeholders' expectations, as well as addressing faculty workload and development.	23
<b>Credentialing model - Certificate/degree not required for Assistants:</b> There is no consensus on whether having two certification models for the Assistant truly creates challenges for potential students and employers, although there is recognition that academic programs do not benefit from the two options. Insights into Assistant certification and its necessity/value should involve clarification of the role and scope of the Assistant and its impact on business practices and patient outcomes.	17
<b>Accreditation requirements for Residency:</b> Residency standards are not clear, concise, and may not satisfy the needs and expectations of various stakeholders such as residents, educational institutions, residency sites, and accrediting bodies.	15
<b>Career advancement opportunities for Assistants:</b> Career advancement opportunities for Assistants is complicated by the lack of clear role definition, multiple pathways for certification and lack of buy-in by the profession.	7

## Appendix E: Recommendations

To develop recommendations to address the eight most urgent challenges, the participants performed two rounds of small group conversation.

**Round 1:** Each table was tasked with providing three recommendations to address the top eight prioritized challenges.

**Round 2:** Each table was assigned one topic area to synthesize and develop 2-3 explicit and actionable recommendations. (Notes located in [Appendix F.](#))

The definitions of the eight most urgent challenges are listed after the descriptor assigned in the pre-summit survey. The full list of recommendations from the 1st round of small group conversations follows:

Value of **education/certification for technicians AND credentialing model - certificate/degree not required by technicians:** To attract and generate competent, valued Technicians who are committed to the profession, we must overcome the lack of return on investment for education or certification and generate new collaborations that support the expansion and growth of the Technician workforce. Technological advances and innovation will define future Technician practice, roles, critical competencies and certifications, as well as the optimal educational model and appropriate credentialing process.

- Consolidate assistant and technician programs as a combined care extender role
- Complete workforce study to assess/demonstrate value of certification in terms of productivity, safety, quality of work, etc...
- Develop leadership credential to train technicians in a lab manager role; incorporate digital techniques.
- Technicians need to be certified as an industry standard.
- Garner industry buy-in and support for certification O&P technicians.
- Re-brand to “What is POT” (Prosthetics/Orthotics/Technicians)
- ABC should study the need for the current technician certification, and if the need is not measurable consider revising the certification model and commit to one pathway.
- Explore other models of technician education (e.g. stacked credentials, short certificates, portfolios) to create more value for the potential technician and employer.
- Creation of hybrid education model for technicians.
- Eliminate the experiential pathway for certification.
- Marketing push to the profession on the value of an educated, trained and certified technician.
- NCOPE should collaborate with ABC to assess current practice demands for a Technician.
- NCOPE should evaluate an education model that promotes shorter focused training (i.e. micro-credentialing in the present educational environment) and adjust the standards to match.
- NCOPE should promote the O&P Technician Educational Pathway to encourage the development of Technician Education programs in the United States.
- Identify areas for micro credentialing within the O&P technical level that is linked with formal O&P technical education and experience supervision via a CTP/CTO/CTPO.
- Develop formal agreements between industry and the O&P technical schools based on a shared investment and guarantee of employment during and after school.
- Have major employers of O&P technicians make formal commitments to value formal O&P technical education.

## Appendix E: Recommendations *(cont.)*

- Incentivize a reason to hire certified technicians. Define credentialing pathways for technicians similar automotive.
- Require education and credentials for technicians. Develop credentialing courses for working technicians. Tie education of technicians to facility accreditation.
- Generate new collaborations eg: Every technical program partners with a practitioner program to share projects, reduce costs, and lower risk to patients. Case presentations with work order.
- Collaborate with the profession to create tech summit at AOPA or Academy.
- Potential High School Vocational track to teach basic Tech skills which then allows for a Micro-Credential path to upscale with small course to help achieve an Associate degree and have a track to lead to clinician or assistant program.
- Create an updated practice analysis for certified assistants.
- Stakeholders meeting to define role and value of a certified tech.

**Communication between education and practice:** Inconsistent communication between O&P education programs and clinical practices inhibits collaboration needed to align curriculum content with practical needs, facilitate residency opportunities, and maintain evidence-based techniques. There are limited partnerships, ill-defined expectations, a potential misunderstanding of graduate abilities, and inconsistent dialogue to promote transparency between schools and clinics in the O&P profession.

- Facilitate annual roundtable discussions between educators and business owners/practice managers.
- Create and distribute an easily digestible document detailing the educational standards of practitioner programs and require residency sites to acknowledge receipt of the document.
- Consider an integrated residency model with a designated faculty member responsible for communicating with residency sites, placing students, and managing expectations.
- Create a survey to determine domains pertinent to clinical practice for educational programs to implement.
- Survey administered by NCOPE at first and third quarter of residency and shared with the educational programs.
- Require completion of surveys as part of NCOPE residency standards.
- Facilitate communication (local advisory board, facilitated meetings, digital messaging, etc.) between residency directors and education programs to better align expectations of graduate abilities.
- Hold more frequent “TOPER” sessions (Talk O&P Education/Residency, similar to at Academy meetings) on a virtual platform for easier access and more participation.
- Create and publish standards of clinical practice care for residency host sites.
- NCOPE host an annual collaborative meeting between academic educators and clinical educators away from annual meetings (could be tied presenting ACM)
- NCOPE should develop Entrustable Professional Activities (EPA) for educational programs to meet practice expectations.
- NCOPE should explore other methods of communication between education and practice that are beyond current advisory board and survey tools.
- Make a centralized communication hub for equitable access for academia and the profession to interact.

## Appendix E: Recommendations *(cont.)*

- Require O&P students perform an Inservice to a local O&P clinical site that covers a topic or topics of interest to local clinicians.
- Create a guideline that encourages O&P schools to create contemporary clinically relevant/applicable resources for mentors that ideally offer CEUs as a gratis service in exchange for supervising/mentoring students.
- Have the O&P schools showcase the positive relationships they hold between clinic/industry and the academic programs.
- Align trichotomy of what is taught, what is expected by industry, and what is examined for certification via Industry clinicians helping at O&P Program mock exams.
- Invite practitioners into the clinical class in order to standardize the needs of the practitioner. NCOPE can require more involvement of the curriculum advisory committee.
- Increase frequency of the education summit - every 5 years and add in a mini summit at an industry conference. Each meeting sets the agenda for subsequent meetings.
- NCOPE to formally create a set of questions to be distributed (within the resident directors' survey) that queries inconsistencies and develop solutions that align curricular content with practical needs.
- Have each practitioner program provide a concise and truthful list of competencies and projects completed to show exactly what each student has completed.
- Have resident directors create a profile of expectations of what a will be successful for that residency program or facility.

**Clinical practice model - consensus for Assistants:** The OP profession does not have enough data to form a consensus on the necessity, the role and the scope for the assistant. In addition, there is lack of understanding on the delineation of the assistant from the other credentialing levels.

- Embed both technical and fitter standards into the assistant education program so that students are eligible for all three ABC credentials.
- Use the NCOPE website to highlight how an assistant might fit into the care delivery model as an extension of the practitioner.
- Host a workshop on how practices can utilize different care extenders based on their individual practice needs/ patient population.
- Assistant credentialing is essential for anyone involved in direct patient care.
- Practices share their data/experiences using care extenders.
- Sharing private practice analysis with NCOPE for care extenders.
- Survey the profession (NCOPE or ABC?) (employers, practitioners, educators, Assistants) on the necessity, role and scope of the Assistant.
- Study O&P and other professions for models on the use and value of an assistant level role.'
- NCOPE should develop and/or modify standards for practitioner educators that guide educators to learn about extended care models and to teach them to students.
- ABC should look at methods of communication to the profession of current levels of credentialing/ roles.
- Conduct a survey of employers on the necessity, role and scope of the assistant in their practice.
- Investigate the viability of the assistant as a stand-alone profession level.

## Appendix E: Recommendations *(cont.)*

- Establish and identify the independence level for the assistant within practice, in effort to reduce privileging and add value to the assistant.
- NCOPE should collaborate with ABC to assess current practice demands for an Assistant.
- NCOPE should evaluate a practice modality that models the medical assistant for O&P Assistants and adjust the standards to match this model.
- NCOPE should develop Entrustable Professional Activities (EPA) for O&P Assistants to define baseline competencies for use in practice.
- Perform a comprehensive evaluation of the care an O&P assistant can provide throughout an entire episode of care (from eval through follow-up), determine if the scope needs to be expanded given their education, identify practitioner to assistant ratios to ensure appropriate care is provided. Finally, disseminate via multiple channels to the profession and integrate the model into O&P education programs.
- Review requirements for a PTA and OTA and consider parallels for the CPOA credential.
- Where do residents fit into the roles.
- Develop stacked credentials and micro credentials.
- Create a task force composed of representatives from different areas of the profession to work collaboratively on consensus building. Create pathways through upskilling and micro credentials.
- Develop pathways through upskilling and micro credentials.

**Curriculum content for practitioners:** Educational institutions need strategies to evolve curriculum to ensure efficient integration of appropriate technologies as well as to establish a balance between foundational skills and stakeholder expectations to ensure relevance to real-world clinical practice. adopted).

- Revise the educational standards to include contemporary practice coursework that includes both developed (ex. MPKs) and emerging technologies.
- Enhance the feedback loop from residents-NCOPE-universities detailing what KSAs students adequately mastered in school so that educators can incorporate this into curriculum development.
- Provide that same feedback that's being given to educational institutions to residency sites to better manage expectations of students and identify deficiencies in curriculum.
- NCOPE should consistently re-evaluate educational standards to reflect real-world clinical practice.
- NCOPE's clinical standards committee should have a defined makeup of stakeholders for equitable representation.
- The input from the clinical standards committee should be shared with ABC to ensure accreditation matches current clinical practice.
- Identify the strategies, perhaps by assembling a group of educators, for efficient integration of technology into the curriculum.
- Revise standards to provide more flexibility and allow innovation in the teaching of technologies.
- Survey the stakeholders to look at their expectations of the foundational skills (competencies) with respect to technologies needed to provide real-world clinical practice.
- Create a process to educate and inform the residency/clinical sites on what occurs in academic setting to set expectations of their baseline knowledge and skill.

## Appendix E: Recommendations *(cont.)*

- Creation of a “task force” comprised of community partners to address and monitor state of practice, with technology being included to fill the feedback loop to academic and clinical training.
- Create a self-assessment tool that the resident completes at start of residency that would be shared with the academic programs. A residency mentor would also complete an assessment of the resident which would be sent back to the academic programs.
- NCOPE should work with educational programs to develop a repository of clinical resources to assist practitioner programs to focus and refine curriculum.
- NCOPE should develop a committee to review and make recommendations to define appropriate technology and foundational skills.
- NCOPE should work with ABC to ensure curriculum content, certification exam content, and practice analysis are congruent.
- Develop CAAHEP standards that remove “device driven” language under Appendix B - Section C.9, and instead focus on a patient centric view so programs can evolve without constant revision to the “device list” currently housed in C.9.
- Develop post-academic learning opportunities for new graduates/certifies that enable them to integrate present technologies into their clinical practice.
- Create a “what to expect of a new O&P school graduate” course/pamphlet and disseminate using multiple communication channels to the residency sites.
- Define objective measures/threshold of quality, e.g., What are the parameters of psychomotor skills, e.g., rubrics - <https://www.acgme.org/globalassets/PDFs/Milestones/PMRMilestones.pdf> and [https://store.aamc.org/downloadable/download/sample/sample\\_id/63/](https://store.aamc.org/downloadable/download/sample/sample_id/63/)
- Meeting with ABC, NCOPE, Academy, AOPA, and practitioner program directors to update curriculum content with stakeholder’s interests.
- Use NCOPE data from Resident Tracker to give practitioner programs a yearly practice analysis from the aspect of a resident and director

**Limited entry skills of practitioner graduates (i.e. inadequate preparation):** Employers expect new graduates to have a consistent/predictable baseline skill level to enter a real-world clinical setting. There is little consensus between the O&P residency sites and the O&P school faculty defining a baseline level of psychomotor, cognitive, and affective skills to allow residency sites to implement a consistent residency curriculum.

- Move to the integrated residency model to establish a standard for baseline skills.
- Require knowledge of educational standards in the residency mentor/director training.
- Share an abbreviated version of educational standards during annual Academy and AOPA meetings to better inform the profession of students’ KSAs.
- Define realistic expectations via the residency standards for entering residency and ensure responsibilities are clear for all parties.
- Survey residency sites to define and prioritize baseline skills to be taught in the educational program and which skills are to be acquired in residency.
- Develop a repository of information for residents, residency sites, and educational programs (housed by NCOPE) with evaluation tools and rubric for skills assessments.

## Appendix E: Recommendations *(cont.)*

- Develop consensus between residency sites and educators through e.g., Delphi method or focus groups regarding entry level skills (competencies) of new graduates.
- Revise Education Standards to account for the results of the consensus work.
- Revise Residency Standards to account for the results of the consensus work.
- Create a self-assessment tool that the resident completes at start of residency that would be shared with the academic programs. A residency mentor would also complete an assessment of the resident which would be sent back to the academic programs.
- Create and define between the academic and clinical baseline skill set for graduates to enter the profession.
- Create a review process to assess the differences between the traditional model and integrated model for residency that identifies knowledge/skill gaps.
- NCOPE should develop Entrustable Professional Activities (EPA) for graduating students to define baseline residency competencies.
- Use the current NCOPE residency standards to begin the framework for the EPA.
- Promote the EPA to the profession.
- Create a self-assessment instrument for new graduates to complete at the onset of residency and at the conclusion of every quarter to enable the resident and mentor to develop a mutual plan for their residency training. Make the self-assessment a required submission.
- As NCOPE refines residency standards, integrate language and terminology that is clear to directors/mentors/residents and measurable in nature.
- Create a dissemination process when education standards and processes are revised that engages residency directors/mentors and is shared using multiple communication channels.
- Define objective measures/threshold of quality, e.g., What are the parameters of psychomotor skills, e.g., rubrics - <https://www.acgme.org/globalassets/PDFs/Milestones/PMRMilestones.pdf> and [https://store.aamc.org/downloadable/download/sample/sample\\_id/63/](https://store.aamc.org/downloadable/download/sample/sample_id/63/)
- Build stronger relationships and efficient feedback mechanism between O&P schools and residency sites to align expectations and improve preparation.
- Improve and Work with professional associations to advocate for policy changes that recognize and support implementation of government support/funding.

**Value of education/certification for assistants:** The challenges associated with the value perceived for assistants having a degree/certification include exploring career prospects, salary expectations, program requirements, job responsibilities, job outlook, and the impact of certification on job opportunities and career advancement. Given these challenges there remains a lack of consensus on the role of the Assistant and the value of education and certification.

- Embed both technical and fitter standards into the assistant education program so that students are eligible for all three ABC credentials.
- Use the NCOPE website to highlight how an assistant might fit into the care delivery model as an extension of the practitioner.
- Host a workshop on how practices can utilize different care extenders based on their individual practice needs/ patient population.
- Develop a career pathway for CFO to care coordinator to assistant.
- Practices share their data/experiences using care extenders.

## Appendix E: Recommendations *(cont.)*

- Sharing private practice analysis with NCOPE for care extenders.
- Develop consensus among business owners and practitioners through e.g. Delphi method or focus group regarding the role of the assistant and the value of certification.
- Survey certified assistants and non-certified assistants regarding their perceptions on career aspects, job outlook, salary expectations, responsibilities, etc.
- Look at similar roles in other professions and how it might inform on career prospects, salary expectations, job responsibilities, etc.
- Develop a survey for employers to identify how assistants are utilized within practice.
- Host a consensus conference for the profession to define the specific scope and role for the assistant.
- Investigate how the technician and assistant curriculum complement each other to produce a graduate that is more marketable meet workforce needs.
- NCOPE should collaborate with ABC to assess current practice demands for an Assistant.
- NCOPE should evaluate a practice modality that models the medical assistant for O&P Assistants and adjust the standards to match this model.
- NCOPE should promote the O&P Assistant Educational Pathway to encourage the development of Assistant Education programs in the United States.
- Perform a comprehensive evaluation of the care an O&P assistant can provide throughout an entire episode of care (from eval through follow-up), determine if the scope needs to be expanded given their education, identify practitioner to assistant ratios to ensure appropriate care is provided. Finally, disseminate via multiple channels to the profession and integrate the model into O&P education programs.
- Implement a phase out process for assistant certification that will ultimately result in requiring a CAAHEP accredited O&P assistant education to become certified.
- Amend existing orthotic & prosthetic license acts to include the recognition of assistants with an appropriate license and scope.
- Require education and credentials for assistants. Tie education of assistants to facility accreditation.
- Seek consensus agreement on requirements.
- Organize and Implement a Consensus mtg with shareholders.
- Provide transparent salary structure which clearly show benefit of holding degree/certification (tangible benefits).
- Curricular guidelines updates and integration with modern practices.

**Residency - quality and oversight:** Quality of a residency is not clearly defined and mentorship is often inconsistent across sites, leading to undesirable variability in the residency experience.

- Use the ABC accreditation survey process to also conduct onsite residency inspections.
- Add a synchronous residency director/mentor component to the existing training such as a live workshop that includes conflict resolution and other relevant scenarios.
- Reassess the current role of regional residency liaisons and determine how they can be utilized to improve residency quality and oversight.
- Define a quality residency experience.
- Require ongoing training for residency mentors/directors/sites/preceptors.
- Ensure standards are enforced to reduce the variability of residency experiences.

## Appendix E: Recommendations *(cont.)*

- Require continuous training (e.g. initial training, refresher courses, courses that provide new skills/knowledge) of residency mentors/directors in the educational process (learning objectives, task practice and assessment of achieved objectives, i.e. attaining learning goals). Evaluate well established models of how this training of allied-health preceptors has been improved in other professions.
- Host a profession-wide discussion on the future of residency and the implications of moving to a different model.
- Provide recognition for sites/residency directors similar to fellowship designation and center of excellence designation to incentivize investment in quality improvement.
- Create a community of academic programs and clinical sites. Academic programs develop clinical mentorship workshops.
- Develop a definition of quality.
- Create a survey of residents to identify the components of what made their residence experience valuable.
- NCOPE should reevaluate the requirements for residency in conjunction with stakeholder expectations to better standardize the residency experience.
- NCOPE should develop a tool to evaluate/rate a residency site's experience and use it to help residency sites improve their quality.
- NCOPE should develop education and self-assessment tools to equip the residency sites to meet standards.
- Require all residency mentors complete the online development course every 3 years.
- Require all residents complete pre-residency training that requires they demonstrate an aptitude and understanding of the NCOPE residency standards and conflict resolution.
- Create resources to enable development of a residency curriculum that clearly aligns with the NCOPE standards and can be tailored to the unique residency site's needs.
- Developing Entrustable Professional Activities and identifiable (objective) levels of performance will involve a big effort but also solve this issue (and more). EPA's can be developed for technicians, students, residents, and even clinical specialists. E.g., Develop a list of quality standards, clinical care standards and fitting standards (explicit criteria of competencies), e.g., what qualifies as a "good fit" Baseline standards/schedule on how and when items should be completed, outside of just the proficiencies.
- Oversight: Develop an explicit list of expectations for the residency sites e.g., Site visits by NCOPE members need to be added to the scope to make sure there is consistency between the residencies eg Track harassments, increase introspection and feedback from residency sites.
- Recertification for Mentors every 3 years and every 5 years for Directors to keep up on NCOPE standards. review and revise standards for certified mentors.
- Create Site Visits (Audits) for residency during time like an ABC site visit (can be virtual).
- Publish results of NCOPE Resident Survey at 6 months - 12 months.
- Plus to current online training: Establish evolving training modules for residency mentors to provide constructive feedback and difficult dialogue. (Ted talk approach) Possibly interactive to practice skill sets learned from training for application.
- Review standards and create skill level for competency.
- Develop a way to have poor quality sites have corrective action plans or loss of residency status.

## Appendix E: Recommendations *(cont.)*

**Curriculum content for technicians:** There is a consensus that the technician curriculum is not aligned to the most current industry fabrication practices; the skills needed to fabricate devices with current practice are maligned with ABC certification standards. There is a lack of understanding of the current technician curriculum in general, and specifically in regard to its relevance for teaching future technicians.

- Verify that there is consensus that the technician curriculum is poorly aligned with current industry fabrication practices.
- Create and distribute an easily digestible document detailing the educational standards of technical programs.
- Revise educational standards to reflect current technology and reconsider the review timeline as technicians are substantially impacted by ongoing changes in manufacturing processes. Consider utilizing the Academy's Scientific Societies to help bring the educational standards into alignment with clinical practice.
- Re-analyze latest technical practice survey industry data and apply it to the standards.
- Revisit standards regularly.
- Ensure standards are applicable to current practice. Standards should be process based instead of device based.
- Survey to establish current fabrication practices and compare to current education standards to determine alignment or misalignment.
- Establish ongoing communication between tech programs and the profession with the intent of informing curriculum.
- Create a communication campaign (to business owners, lab managers and other stakeholders) to create more understanding of the technician curriculum and its relevance for teaching future technicians.
- Identifying the most basic skills required for the technician.
- Develop a micro credentialing for the technician.
- Work with ABC to assure that practice analysis and the curriculum reflect current technical practice.
- NCOPE develop a rich repository of technical resources to assist technician programs in standardizing curriculum among programs.
- NCOPE should explore other educational models such as micro-credentialing.
- NCOPE should make the technician standards less device prescriptive.
- Create a forum for industry (manufacturers/c-fabs) and certified O&P technicians to define their needs resulting in a consensus statement. This subsequent consensus statement must be integrated into subsequent revisions of standards and weighed appropriately.
- Define current industry standards and reduce emphasis on outdated curriculum via a tech summit from different technical environments. develop specialty courses.
- Align trichotomy of what is taught, what is expected by industry, and what is examined for certification via technician practice analysis.
- Standardize education through consistent curriculum.
- Create an updated practice analysis of certified technicians.
- Organize and Implement a Consensus mtg with shareholders.
- Curricular guidelines updates and integration with modern practices.

## Appendix F: Recommendation Refinement

**Round 1:** Each table was tasked with providing three recommendations to address the eight prioritized challenges. (Notes located in Appendix E)

**Round 2:** Each table was assigned one topic area to synthesize and develop 2-3 explicit and actionable recommendations.

The final recommendations and suggested milestones and resources from the 2nd round of discussions are listed below.

### **Priority Challenge A: Value of education/certification for technicians AND credentialing model - certificate/degree not required by technicians**

*Is there data/research/information/knowledge that would help us advance this recommendation?*

- There is an outdated practice analysis (2017) that could be modeled but should be updated to current trends.
- Would need to conduct a literature review on educational models that are used in similar fields (automotive, physical therapy, etc).

*Are there specific resources that would help advance this recommendation?*

- What is Pop?

### **Priority Challenge B: Communication between education and practice**

*Is there data/research/information/knowledge that would help us advance this recommendation?*

- OandP Edge?
- NCOPE Data Committee

*Are there specific resources that would help advance this recommendation?*

- <https://www.aamc.org/about-us/mission-areas/medical-education/cbme/core-epas>
- <https://www.acgme.org/globalassets/PDFs/Milestones/PMRMilestones.pdf>
- [https://store.aamc.org/downloadable/download/sample/sample\\_id/63/](https://store.aamc.org/downloadable/download/sample/sample_id/63/)

*What are 2-3 milestones of achievement we would hope to see in 3 years?*

- Early adopters test drive the EPA's

*What are 2-3 milestones of progress we would hope to see in 1 year?*

- Create a task force to develop the EPA; Rough draft of initial EPA's.
- Develop draft of survey; add into tracker as quarter requirements?
- Implement at Academy and AOPA

## Appendix F: Recommendation Refinement *(cont.)*

### Priority Challenge C: **Clinical practice model - consensus for Assistants**

*Is there data/research/information/knowledge that would help us advance this recommendation?*

- A comprehensive assessment of care models that integrates care extenders to enable the creation of supporting educational standards.
- [https://store.aamc.org/downloadable/download/sample/sample\\_id/581/](https://store.aamc.org/downloadable/download/sample/sample_id/581/)
- [https://www.researchgate.net/profile/Rahizan-Zainuldin/publication/350728248\\_Development\\_of\\_entrustable\\_professional\\_activities\\_for\\_a\\_physiotherapy\\_undergraduate\\_program\\_in\\_Singapore/links/6119c46d0c2bfa282a495a32/Development-of-entrustable-professional-activities-for-a-physiotherapy-undergraduate-program-in-Singapore.pdf](https://www.researchgate.net/profile/Rahizan-Zainuldin/publication/350728248_Development_of_entrustable_professional_activities_for_a_physiotherapy_undergraduate_program_in_Singapore/links/6119c46d0c2bfa282a495a32/Development-of-entrustable-professional-activities-for-a-physiotherapy-undergraduate-program-in-Singapore.pdf)
- Creation of an up-to-date workforce demand study across the full scope of O&P and data points from the survey referenced in row 2E related to overlap in scope of residents and O&P assistants.

*Are there specific resources that would help advance this recommendation?*

- The ABC Practice Analysis of Assistants, the ABC Scope of Practice, and the results of the data identified in column F.
- Collaboration with AOPA or ABC to implement a modern comprehensive workforce analysis.

*What are 2-3 milestones of achievement we would hope to see in 3 years?*

- Year 1 - Administer the Survey; Investigation of various EPAs already in place in related health disciplines and formulation of a work group.
- Year 2 - Disseminate the Results and Seek Additional Input from Stakeholders; Create draft EPAs relevant to the O&P assistant.
- Year 3 - Develop Draft Standards and Seek Public Feedback on Draft Standards; Iteration of the EPAs via reflection and creation of dissemination plan.

*What are 2-3 milestones of progress we would hope to see in 1 year?*

- (see above)

### Priority Challenge D: **Curriculum content for practitioners**

*Is there data/research/information/knowledge that would help us advance this recommendation?*

- Ref 1: <https://www.acgme.org/globalassets/PDFs/Milestones/PMRMilestones.pdf>
- Ref 2: [https://store.aamc.org/downloadable/download/sample/sample\\_id/63/](https://store.aamc.org/downloadable/download/sample/sample_id/63/)

### Priority Challenge E: **Limited entry skills of practitioner graduates (i.e. inadequate preparation)**

*Is there data/research/information/knowledge that would help us advance this recommendation?*

- CAAHEP Standards/NCOPE Residency Standards

*Are there specific resources that would help advance this recommendation?*

- Create a summary/overview of CAAHEP standards to share with residency sites.

## Appendix F: Recommendation Refinement *(cont.)*

### Priority Challenge G: Residency - quality and oversight

*Is there data/research/information/knowledge that would help us advance this recommendation?*

- Define a quality residency experience
- Require ongoing training for residency mentors/directors/sites/preceptors
- Ensure standards are enforced to reduce the variability of residency experiences.

*Are there specific resources that would help advance this recommendation?*

- Chris Robinson

### Priority Challenge H: Curriculum content for technicians

*Is there data/research/information/knowledge that would help us advance this recommendation?*

- Existing ABC technician practice analysis
- ABC practice analysis documents
- Existing technician standards
- Existing standards for technicians in non-O&P related professions such as ophthalmic laboratory technicians
- Delphi process

*Are there specific resources that would help advance this recommendation?*

- AAOP Membership
- AOPA Membership
- CFab business owners
- Marketing consultant
- LinkedIn
- ABC
- AOPA
- AAOP

*What are 2-3 milestones of achievement we would hope to see in 3 years?*

- Publish results of survey/forum.

*What are 2-3 milestones of progress we would hope to see in 1 year?*

- Host forum and/or distribute survey.

# Appendix G: Agenda

## Thursday, August 3, 2023

**Day 1 Objective:** Explain the challenges affecting the sustainability and vitality of O&P education programs in relation to workforce and practice demands for the profession.

**6:45 AM** Breakfast • Hotel

**7:30 AM** Bus ride to UM campus • HSEC 3-110

**8:00 AM** **Welcome and opening remarks** • Sue Spaulding, CPO • Mike Madden, CPO

### Setting the stage:

1. Sustainability of O&P Programs, Mike Madden, CPO
2. History of O&P Education Requirements, Robin Seabrook
3. O&P Professionals – scope of practice and education pathways, Steve Fletcher, CPO & Robin Seabrook
4. NCOPE O&P Residency Programs, Mark Clary, CPO
5. Numbers in O&P Education, Chris Robinson, CPO
6. The Practice Setting, Charles Kuffel, CPO, Arise O&P and Eric Weber, CPO, Hanger P&O

**9:15 AM** **Challenges identified in the pre-summit survey**  
Discussion: Review the main challenges affecting the sustainability and vitality of O&P education programs (big picture) (Fig 1-4)

Review the challenge of technician, assistant, practitioner, and residency programs (Fig 5-10)

**Activity 1:** To meet the workforce and practice demands, how important is the challenge?

**Activity 2:** How do you rank the level of importance of the challenges identified in the pre-summit survey?

Lunch

**Activity 3a:** Develop questions to explain the challenges of meeting the workforce and practice demands.

**Activity 3b:** Review and develop additional questions to further explain the challenges of meeting the workforce and practice demands.

**Activity 3c:** View all notes and synthesize. Write a sentence(s) for each challenge of program sustainability and vitality to clearly define it based on the questions identified by the groups

Share out

**5:00 PM** **Closing remarks – end day 1**  
Bus to hotel

**6:00 PM** **Reception/cocktails** -50th Floor Universe Room

**7:00 PM** **Dinner** - 50<sup>th</sup> Floor Universe Room

# Appendix G: Agenda *(cont.)*

## Friday, August 4, 2023

**Day 2 Objective:** Prioritize the challenges affecting the sustainability and vitality of O&P education programs and suggest recommendations specific to NCOPE's responsibility to develop a skilled O&P professional workforce.

**6:45 AM** Breakfast • Hotel

**7:30 AM** Bus ride to UM campus HSEC 3-110

**8:00 AM** **Welcome and introduction for the day**

**Activity 3d:** Revisit and refine the explanations of the challenges affecting the sustainability and vitality of O&P education programs in relation to workforce and practice demands for the profession.

Break

**Activity 1:** How urgent/critical are the following issues to the profession to meet the workforce and practice demands?

**Summary of pre-summit survey:** What are the strengths of the O&P education programs? How do we make formal education more valuable for the future profession?

### Envision the Future

**Activity 2a:** Visualize future health systems and workflow processes.

- How can education (technicians, assistants, and practitioners) adapt and stay relevant to current and future technology advancements?
- What are the unique skills of O&P professionals as compared to other healthcare providers who provide O&P care
- As our clinical care model shifts, what are the key competencies (knowledge, skills, professional behaviors) needed for best practice and sustainability of the next generation of O&P care providers (technicians, assistants, and practitioners)?
- In the next 5-10 years, for practitioners and assistants, is school or residency the more appropriate place to emphasize fabrication skills? And why?

**Activity 2b:** Summarize notes

Lunch

### Develop Recommendations

**Activity 3a:** Develop Recommendations to address the most urgent issues.

**Activity 3b:** View combined notes from all 8 tables and refine recommendations.

Share out

### Pulling It All Together: Next Steps

**5:00 PM** End of Summit  
Bus to hotel

***Please note that this agenda is fluid and flexible, activities may be adjusted as the meeting develops and discussions occur.***

## Appendix H: List of Attendees

Forty-nine (49) individuals, representing a diverse array of settings and professional roles, attended the 2023 Education Summit. The affiliations listed below are those at the time of the event.

**\*Denotes NCOPE Board Member**

**+Denotes Planning Committee for Summit**

**Chris Baschuk**, CPO, FAAOP(D)  
Point Designs, LLC

**Stephen Blas**, CPO  
Kootenai Prosthetic Orthotic Services, Inc.

**Alisha Brennon**, CTPO  
Joliet Junior College

**+Scott Bretl**, MPO, CPO  
Alabama State University: College of Health Sciences

**Robert Carlile**, CPA, CTPO  
Scottish Rite for Children

**Michael Carroll**, PhD, CPO, FAAOP(D)  
Orlando VA Medical Center

**Cathy Carter**, MA  
American Board for Certification in Orthotics, Prosthetics and Pedorthics (ABC)

**Michael Cavanaugh**, CPO  
Northwestern University P&O Center

**Ambrose Cavegn**, CPA, CTPO  
Spokane Falls Community College

**\*Mark Clary**, CPO, FAAOP  
Xtremity

**Helen Cochrane**, CPO(c)  
University of Pittsburgh

**Bria Collins**, CPO  
Virginia Prosthetics

**J. Chad Duncan**, PhD, CPO  
Salus University

**Tim Fair**, CPO  
Hanger Fabrication Network

**Stefania Fatone**, PhD, BPO(Hons)  
University of Washington

**Steve Fletcher**, CPO  
American Board for Certification in Orthotics, Prosthetics and Pedorthics (ABC)

**Arlene Gillis**, M.Ed, CP, LPO, FAAOP  
International Institute of Orthotics & Prosthetics (IIOP)/ Florida International University (FIU)

**Leslie Gray**, Med, CPO, LPO, FAAOP  
University of Texas Southwestern P&O Program

**Wade Hallstrom**, CPOA  
Heidi's Legs, LLC

**Adrienne Hill**, MHA, CPO  
Kennesaw State University

**Shandon Hime**, CPO  
Anatomical Designs, Inc.

**Chris Hovorka**, PhD, CPO, FAAOP  
Brook Army Medical Center

**Nathan Kapa**, CP  
Bremer Prosthetic Design  
Representative from NAAOP

**Susan Kapp**, CPO, FAAOP  
University of Washington  
Representative of AAOP

**Joanna Kenton**, CPO  
Concordia University – St. Paul

## Appendix H: List of Attendees *(cont.)*

**Aileen Kingsley**, CPO  
Loma Linda University

**Charlie Kuffel**, CPO, FAAOP  
Arise Orthotics & Prosthetics, Inc.

**Teri Kuffel**, JD  
Arise Orthotics & Prosthetics, Inc.  
Representative of AOPA

**\*+Jonas Ljung**, CPO  
Hanger Prosthetics & Orthotics, Inc.

**\*+Mike Madden**, CPO, FAAOP  
Bluegrass Community & Technical College

**Greg Mattson**, CPA, CTPO  
Fabtech Systems

**Martin McDowell**, CPO  
Veterans Administration

**\*June McKoy**, MD, MPH, JD, LLM(hons), MBA  
Northwestern Medicine, Feinberg School of  
Medicine, Division of Geriatrics

**Ashley Mullen**, PhD, MSAT, CPO  
Baylor College of Medicine

**Mark Muller**, MS, CPO, FAAOP  
California State University – Dominguez Hills

**Matthew Parente**, MS, CPO, FAAOP(D)  
University of Hartford

**Shane Pope**, CTPO  
Kenney Orthopedics of Carmel, LLC

**Ciera Price**, CPO  
Center for the Intrepid

**Chris Robinson**, MS, MBA, CPO, ATC, FAAOP(D)  
National Commission on Orthotic and Prosthetic  
Education (NCOPE)

**\*Erin Ruxton**, CPO  
RISE Prosthetics + Orthotics

**\*+Sheryl Sachs**, CPO  
Dankmeyer, Inc.

**\*+Robin Seabrook**  
National Commission on Orthotic and Prosthetic  
Education (NCOPE)

**\*+Jaclyn “Meg” Sions**, PT, PhD  
University of Delaware

**\*+Sue Spaulding**, MS, CPO, FAAOP  
University of Washington

**\*Rebecca Spragg**, MSPO, CPO  
Eastern Michigan University

**\*Heidi Truman**, CPO  
UCSF Orthotic and Prosthetic Center

**+Josh Utay**, EdD, CPO  
Scottish Rite Hospital for Children

**Brad Watson**, BOCO, COCP, LPO  
Clarksville Limb and Brace, Inc. a Bionics  
Company  
Representative from BOC

**Eric Weber**, CPO, FAAOP(D)  
Hanger Prosthetics & Orthotics West, Inc.



***Improving lives and strengthening the profession through education.***

**1970 Education Summit in Ponte Vedra, FL**

**1976 Education Summit in Ponte Vedra, FL**

**1990 Education Summit in Phoenix, AZ**

**1991 Task Force Report**

**2005 Education Summit in New Orleans, LA**

**2006 Strategic Planning Meeting in Scottsdale, AZ**

**2009 Strategic Planning Meeting in Portland, OR**

**2013 Strategic Planning Meeting in Vancouver, BC**

**2015 Education Summit in Tampa, FL**

**2023 Education Summit in Minneapolis, MN**

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