OFFICE OF WORKFORCE STRATEGY
CONNECTICUT

2023
Report to the General Assembly

To: Chairs and Ranking Members of the Higher Education and Employment Advancement Committee

From: Kelli-Marie Vallieres, Chief Workforce Officer

In accordance with Section 2 of Special Act 22-9, I hereby submit to the Higher Education and Employment Advancement Committee the report and recommendations of the working group tasked with developing a plan to work with high schools across the state to develop and strengthen pathways that encourage students to pursue careers in healthcare. The working group hopes the committee will give these recommendations strong consideration as a basis for legislation in the 2023 Legislative Session.

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Glossary

Career Clusters: Provide a structure for organizing and delivering quality CTE Programs of Study. There are 16 National Career Clusters found in the National Career Clusters Framework developed in 1996 by the U.S. Department of Education, the Office of Vocational and Adult Education (OVAE), the National School-to-Work Office (NSTWO), and the National Skill Standards Board (NSSB). These clusters provide standardization and consistency across an ever-evolving labor market. Career Clusters assist secondary and postsecondary institutions with:

- Developing programs of study bridging secondary and postsecondary curricula
- Creating individual student plans of study for a complete range of career options
- Empowering students to choose the CTE pathway that can lead to success in their academic and career endeavors

Career Pathways: Connecticut follows the Carl D. Perkins Definition of a career pathway which, in summary, is a coordinated program of rigorous, high-quality education and work-related training that aligns to industry needs and advances students in their career of choice. A career pathway is seamless and includes multiple possibilities leading to an industry-recognized credential, certificate, or licensure, and/or an associate or baccalaureate degree and beyond. The approved CT Health Science Career Cluster Career Pathways are:

1. Diagnostic Services Career Pathway
2. Health Informatics Career Pathway
3. Support Services Career Pathway
4. Therapeutic Services Career Pathway
5. Medical Biotechnology Career Pathway

Program of Study (POS): Part of a student's career pathway and consists of a non-duplicative sequence of academic and technical content at the secondary and postsecondary level. The POS progresses in specificity (beginning with all aspects of an industry or career cluster and leading to more occupation-specific instruction) and has multiple entry/exit points culminating in the attainment of a recognized postsecondary credential. A POS includes a minimum of a two-course sequence in a single CTE content area.

Executive Summary

The healthcare field has an abundance of career opportunities for all education levels and professional experience. However, the field is experiencing severe workforce shortages. Since the height of the COVID-19 pandemic, healthcare and social assistance jobs have hovered around 20,000 open positions per month and are consistently the most in-demand sector in every region of the State.[1] High school career cluster programs are a useful strategy to develop interest and talent early by introducing students to available careers and provide a dynamic, career-focused education. Connecticut has a strong foundation in high school Career Cluster programs across multiple sectors, including healthcare, that can be leveraged to create a coordinated and statewide approach to engage high school students in healthcare careers.

Introduction

Per Special Act 22-9, *An Act Expanding Training Programs for Careers in Health Care*, the Office of Workforce Strategy (OWS) was charged to collaborate with relevant state agencies and organizations to develop a plan to work with high schools across the state to develop and strengthen health science career cluster programs to encourage students to pursue high-demand careers in healthcare.

[1] Connecticut Department of Labor. Connecticut Help Wanted OnLine Data Series. December 2022. Accessed here.

This is a needed and timely endeavor given two significant challenges. (1) The healthcare field has experienced severe labor shortages, exacerbated by the COVID-19 pandemic, that have elevated concerns over recruiting and retaining the next generation of the healthcare workforce. As concerns over the supply of workers rise, the need for the public and private sector to bolster and support the healthcare workforce remains critical to meeting Connecticut residents' health and human service needs. At the same time, (2) Connecticut also is facing significant education shortfalls. More than 20% of the state's public high school students graduate without a job offer, college acceptance, military, or career and life plan, accounting for the highest achievement gap of any state in the US.[2] When students are given an understanding of the opportunities within the profession along with meaningful coursework, the healthcare sector, the state's largest employer representing 16% of the workforce, presents major career opportunities for these young adults.[3]

Labor Market Analysis

Healthcare has the largest and fastest-growing workforce with employment opportunities across multiple settings, including hospitals and health systems, post-acute settings, and community-based care. Nationally, healthcare occupations are projected to grow 13% over the next decade, resulting in 2,000,000 newly anticipated positions across the United States.[4] In Connecticut, the Governor's Workforce Council (GWC), the state's workforce board, identified the need to produce 7,000 new healthcare workers per year to keep up with demand. This number includes approximately 3,000 nurses,[5] as well as a significant and diverse number of other healthcare roles, including Certified Nursing Assistants (CNA), Licensed Practical Nurses (LPN), Registered Nurses (RN), Medical Assistants, skilled

[2] *How to Help Disengaged and Disconnected Youth in Connecticut*. (2021, January 1). Accessed here.

[3] *November Labor Situation*. Connecticut Department of Labor. (2022, December 15). Accessed here.

[4] Occupational Outlook Handbook, Healthcare Occupations. US Bureau of Labor Statistics. Accessed here.

[5] *Workforce Strategic Plan.* The Governor's Workforce Council. (2020, October 22). Access here.

technicians, emergency medical providers, and mental health workers – especially social workers, who are in persistent short supply. According to the Connecticut Department of Labor (CT DOL), many of these positions have above average projected growth from 2020 – 2030, specifically Nurse Practitioners (48% growth), Dental Hygienists (35% growth), Physician Assistants (30% growth), Respiratory Therapists (22% growth), Home Health Aides (21% growth), and Mental Health Counselors (20% growth).[6]

To fill these roles and provide safe, high-quality patient care across the entire healthcare continuum, there is a critical need to fortify the education pipeline to produce specialized staff with certifications, technical training, college level education, advanced degrees, and continuing professional education. The majority of in-demand and common job titles in healthcare require some form of post-secondary education, with 83% of healthcare jobs requiring education above a high school diploma and 59% requiring at least an associate's degree.[7]

Earning a postsecondary credential in the healthcare field pays off. Healthcare professionals who pursue higher education experience significantly higher earnings. On average, the annual wage for healthcare job titles that require a high school diploma is $36,840, while jobs that require an Associate's and/or Bachelor's degrees average above $75,000.[8]

Equity within the healthcare workforce is a challenge in this regard and must be addressed. Not all healthcare positions provide a family-sustaining wage or other benefits that make a job a "good job," including benefits, flexibility, regular schedules and a clear path for ongoing professional growth and promotion. Lower wage healthcare occupations are primarily filled by historically underserved and minority populations, who face a range of financial obstacles – tuition, childcare, transportation – in pursuing the additional education and/or training that will enable them to move up the career ladder.

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[6] State of Connecticut Occupational Projections: 2020 – 2030. Connecticut Department of Labor. Accessed here.
[7] Connecticut Career Paths. Connecticut Department of Labor. Accessed here.
[8] Ibid

For example, the RN workforce, which requires an Associate's or Bachelor's degree, is predominantly white, with only 13% of the population being Black or Hispanic, while 41% of LPNs, which requires a certificate degree, are people of color.[9] According to CT DOL data, the wage difference between these professions is approximately $21,000.[10]

Incorporating Equity in High-Quality Health Science Career Cluster and Associated Career Pathways

Through informational interviews with subject matter experts and desktop research, a common theme that emerged is the central role equity must have in high school career cluster and associated career pathway programs. Many high school administrators raised the historical context and stigma of "vocational" education programs that tracked low-income and minority students into jobs, while higher-income children went to college. Today's Career and Technical Education (CTE) programs are open to all students and emphasize a course of studies that prepare young people for college *and* career. Even as CTE has evolved, it is imperative that public school districts, and particularly Connecticut Alliance School Districts, pay special attention to designing programs of study that enable students to move seamlessly along an integrated high school to postsecondary to career pathway that leads to family-sustaining career opportunities. While programs should provide on- and off-ramps for students, and while graduating high school with entry-level certificates is a useful building block for young people, quality programs should offer dynamic coursework, Work-Based Learning (WBL) opportunities, and holistic supports that encourage students to persist through a rigorous but ultimately rewarding education journey.

This is especially relevant in the healthcare field. A cross-sectional study of the 2019 American Community Survey compared the diversity of the 10 most common healthcare occupations that have health diagnosing and treatment authority. After developing a health workforce diversity index, the

[9] CT Data Collaborative "Nurses in Connecticut". 2020. Accessed here.
[10] Connecticut Department of Labor, Occupational Employment & Wages. 2019. Access here.

study found that Black, Hispanic and Native American people were underrepresented in these positions in comparison to their participation in the general workforce, accounting for a weighted percentage as low as 6.6% in some professions.[11] However, entry-level positions like Personal Care and Service Occupations (Home Health Aides, Personal Care Assistants, etc.) are the most diverse occupational group, with Hispanics having the highest representation across these occupations.[12] These entry-level positions are often part-time or per-diem and pay either minimum wage or only slightly above minimum wage.

Engaging High School Students in Healthcare Careers and Training Opportunities

To meet the current and growing demand of healthcare workers, while preparing young adults for stable and family-sustaining careers in the healthcare field, Connecticut needs to understand the current offerings available, determine those that have the most significant outcomes on student achievement and student pursuit of careers in the healthcare industry, and then grow its capacity to educate and train its future workforce through the most high-impact partnerships with comprehensive and technical schools, high schools, community colleges, colleges and universities.

The following list provides a description of the most common programs of study that high school students enrolled in Connecticut's Health Science Career Cluster, Therapeutic Services Career Pathway offer:

1. Certified Nurse Aide (CNA)
2. Emergency Medical Technician (EMT)
3. Pharmacy Technician

In addition to the programs within school districts, the state's workforce development boards (WDBs) implement the Connecticut Youth Employment program, a year-round program that increases youth

[11] Salsberg E, Richwine C, Westergaard S, et al. Estimation and Comparison of Current and Future Racial/Ethnic Representation in the US Health Care Workforce. *JAMA Netw Open.* 2021;4(3):e213789. doi:10.1001/jamanetworkopen.2021.3789

[12] *Sex, Race, and Ethnic Diversity of U.S. Health Occupations (2011 – 2015)*. U.S. Department of Health and Human Services, Health Resources and Services Administration. 2017. Accessed here.

leadership, improves job readiness, and improves economic stablity. Through local partnerships with school districts, WDBs provide youth employment services and are proponents of career pathways. Additionally, many of the WDBs are conveners of Regional Sector Partnerships (RSPs), which pull together employers, education, nonprofits, and the public sector to advance an industry and create a thriving economy. Three healthcare RSPs have identified engaging K-12 students as a priority and developed actions to move this work forward.

Students Access to Healthcare Coursework: The Role of Career and Technical Education (CTE)

Many students in Connecticut are introduced to and educated on healthcare careers through CTE coursework. Overall, CTE provides an important avenue to success for high school students and offers each student opportunities to personalize their education based on their career interests and unique learning needs. At the high school level, CTE provides students with flexible experiences and learning that is responsive to learner and industry needs. High school CTE is best utilized when directly connected with and leading to postsecondary programs of study or additional training after high school, which may include more specialized technical instruction. These programs can culminate in postsecondary degrees, certificates and/or credits, apprenticeships, or employment.

CTE courses are available at both comprehensive high schools through various partnerships and programs, and through the Connecticut Technical Education and Career System (CTECS). CTECS offer high school students over 30 CTE programs, including a health science career cluster in health technology. The health technology program is available at 11 of the 20 CTECS high schools in the state.[13] In addition to course credit for high school graduation, the CTECS health science career cluster includes CNA certification and has incorporated credits for work-based learning.

[13] Health Technology Landing Page. Connecticut Technical Education and Career System. Accessed here.

According to **Edsight**, there were 6,803 Connecticut high school students enrolled in healthcare science courses during the 2021 - 2022 school year, accounting for less than 5% of total high school enrollment (165,658).[14] [15] There is no statewide public information available on how many students apply to be in these programs, but through informational interviews with high school administrators and teachers, some districts have reported accepting as few as 50% of students that apply to the programs due to limited capacity. While more data would be required to understand why capacity is so limited, common themes through informational interviews were a lack of qualified instructors, limits to the number of students that can be supervised by an instructor in practicums, cost of equipment for the programs, and insufficient space. To adjust for more student demand than available seats, districts use a variety of methods to accept students ranging from testing to lotteries for qualified students.

Primary funding for CTE coursework comes from the Carl D. Perkins Career and Technical Education Act. Each year under Perkins V, Congress appropriates $1.1 billion in state formula grant funds for developing and implementing career and technical education programs. In 2021 – 2022 Connecticut received $11,797,221 in Perkins V funds,[16] which are managed by the State Department of Education (CSDE). CSDE provides specific dollar allocations for eligible secondary and postsecondary CTE programs by formula. Biennial comprehensive local needs assessments demonstrate the need for a CTE career pathway program or program of study by presenting labor market data and economic development projections that indicate current or projected employment prospects in the program's occupational area.[17]

[14] EdSight Course Enrollment by Subject, 2021-2022, Statewide Grades 9-12, Health Care Sciences. Connecticut State Department of Education. Accessed here.
[15] EdSight Enrollment Report, Student Counts by Grade and Gender, Statewide, 2021-2022. Connecticut State Department of Education. Accessed here.
[16] 2022 State Allocations. Perkins Collaborative Resource Network. Accessed here.
[17] Comparing CT's Career & Technical Education Programs. School State Finance Project. 17 December 2021. Accessed here.

While Perkins V is a stable support for CTE programs, there are limitations. Perkins V funding is finite, allocated by formula, and can vary annually. Additionally, Perkins V funding for newly created CTE teacher salaries is capped at three years. Districts that wish to continue employing a teacher specific to a CTE Career Cluster, which is almost always necessary Health Sciences, must support these salaries under their own operating budgets, which requires approval from local Boards of Education. In short, Perkins V funding alone does not provide the necessary stability and security to build strong, sustained CTE programming. For Connecticut to scale the number of health science career clusters and related programming, the State must find additional public and private sources outside of Perkins V funding to support their success.

Comprehensive High Schools

There are 36 **CSDE Alliance schools** in Connecticut**.** Of these, CSDE has identified 19 Comprehensive High Schools with health science career cluster programs in the following Alliance School districts: Ansonia, Bridgeport, Bristol, Danbury, East Hartford, East Haven, Groton (Fitch), Meriden, Naugatuck, New Britain, New Haven (2), New London, Norwalk, Stamford, Stratford, Thompson (Tourtelotte), Waterbury, and West Haven. In addition, OWS research indicates four schools in Hartford, Middletown, Manchester, and Norwich that have significant health science career cluster programs.

State investments in high school capital projects could present additional opportunities to expand health science career cluster programs with the required infrastructure. For example, a $240 million investment is being made toward a new Westhill high school in Stamford that will include a health science career cluster offering, and Danbury will be launching a new Career Academy to open for the 2024 – 2025 school year.

These health science career programs vary in size, enrollment criteria, course offerings, credits awarded, work-based learning opportunities, industry recognized credentials, number of instructors, budgets, and program outcomes. According to CSDE, Waterbury Career Academy High School has the largest health

science career cluster program in the state, with an extremely robust Therapeutic Services career pathway program that is continually growing and expanding. This program has benefitted from a committed Program Director, location in a school that specializes in career readiness, and strong relationships with regional healthcare employers.

Other programs that were interviewed that include similar elements in their health science career cluster programs are Ansonia High School, Bristol Eastern High School, and Danbury High School. New Haven's Hillhouse High School is the newest healthcare career program, called Health Careers Academy Pathway (H-CAP), which launched in the 2021-22 school year. H-CAP leverages a 28-credit Health Career Certificate that is currently available at Gateway Community College (GCC) and other CT State locations. When teacher qualifications allow, the core courses of the certificate are offered within Hillhouse, and the courses necessary for four career tracks: (1) Exercise Science and Wellness, (2) Nutrition and Dietetics, (3) Surgical Technology, and (4) Radiology are offered on-campus at GCC. Students pursuing these tracks can earn up to 43 college credits by high school graduation that are transferable to Gateway Community College, accelerating the completion of an associate degree in one of these career tracks by one year or more.

With the support of ReadyCT, Hartford Public High School launched an Allied Health Pathway that offers themed health sciences instruction informed by an industry advisory board. As of July 2022, more than 100 students have participated in the program, which provides the opportunity to graduate with a suite of industry-recognized credentials. A partnership with Hartford HealthCare provides Work-Based Learning opportunities for students and supports a dedicated Career Pathway Program Manager who advises on industry-informed curriculum and stackable credentials, manages the Industry Advisory Board, and facilitates student opportunities at Hartford HealthCare. All students who participate can access a full career readiness workshop seres, a 120-hour paid internship experience, and dual enrollment is available through Capital Community College.

Of note, all CSDE schools with a health science career cluster program offer CNA programs. A CNA helps patients with direct health care needs, often under the supervision of a nurse. CNA programs that operate in high schools must meet requirements set by and receive approval from CSDE and the Connecticut Department of Public Health (CT DPH) to ensure the development of quality programs, proper licensure of CNA teachers and preparation of students to deliver safe patient care during clinical experiences in health care settings. Together, CSDE and CT DPH provide technical assistance to districts that wish to establish new CNA programs and work together to offer virtual and in-person professional learning for teachers of Health Science at all Connecticut high schools. More detailed information can be found at this link: Nurse Aide Training Program Information (ct.gov).

For CNA certification to be incorporated into a high school program, schools must include multiple elements and requirements:

- A minimum of 100 hours of didactic- and skill-based training must be completed prior to students taking the state exam for CNA certification. At least 60 hours must be skills training conducted in a chronic or long-term care facility.
- The teacher must possess a current Connecticut registered nurse (RN) license and Connecticut teacher certification, endorsement #103: Health Occupations- Comprehensive High School or endorsement #109: Vocational Technical School. Endorsement #103 is required for teachers working in comprehensive high schools, while endorsement #109 is required for teachers working in CTECS.

In addition to attaining a CNA certificate, completing a high school CNA program provides students clinical hours that are helpful should they choose to apply to an Associate's or Bachelor's degree program in nursing or related career. Early exposure also helps students decide if a career in direct patient care occupations is aligned to their expectations and something they would like to pursue. However, it is important to note that CNA positions are considered entry-level and have an average

hourly wage of $18.51.[18] While CNA positions can be a stepping stone toward other higher-paying careers in healthcare, they are primarily filled by low-income and minority women, who face financial and other barriers that prevent them from getting the additional training required to progress in the field. According to HRSA, 87% of Nursing, Psychiatric, and Home Health Aides are women, and 51% are Black or Hispanic.[19] (Please see Equity discussion above.)

Connecticut Technical Education and Career System (CTECS)

In addition to the comprehensive high schools with health science career cluster programs, 11 of the 20 CTECS high schools offer the health science career cluster in Alliance Districts. These programs are in Ansonia, Bristol, Danbury, Hamden, Hartford, Meriden, Norwich, Stamford, and Torrington. One school, Norwich Tech, offers Biotechnology. Four towns that have healthcare career programs at both CTECS and Comprehensive high schools are Ansonia, Bristol, Danbury, and Stamford. CTECS have a 97% graduation rate.

Students in these programs can earn up to 14 college credits at no cost. Twelve credits are in a Health Technology cluster or Bio-Tech cluster beginning in ninth grade, and in addition to the introductory health cluster courses, students take Medical Terminology. Many of the health technology programs are part of the Early College Experience (ECE) at the University of Connecticut (more on UConn ECE below). Some of the high schools also have strong relationships with local community colleges, including Norwich Technical High School, which offers a Biotechnology Course with Capital Community College, and Eli Whitney Technical High School, which offers an Introduction to Health Careers and Medical Terminology with Gateway Community College. Both courses offer dual credits through the no cost College and Career Pathways (CCP) Program.

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[18] Occupational Employment & Wages. Connecticut Department of Labor. Accessed here.
[19] *Sex, Race, and Ethnic Diversity of U.S. Health Occupations (2011 – 2015)*. U.S. Department of Health and Human Services, Health Resources and Services Administration. 2017. Accessed here.

A key benefit of these programs are the opportunities for work-based learning (WBL). Some CTEC Health Technology programs provide WBL opportunities for credit and are paid in grades 11 and 12. As a result, students pursung the Health Technology program qualify as CNAs at the end of grade 11 and can work with long-term care employers. CTECS have a strong employer partnership with Apple Rehab, the largest short-term rehabilitation company, with twenty-one locations within the state.

Because CTECS offer a standardized curriculum with WBL credits built in, and their education extends in year 12, this potentially enables students a pathway beyond CNA. Senior year job shadow experiences include Medical Administrative Assistant, Electrocardiogram (EKG), and Mental Health first aid. According to the CTECS website, some locations are looking to add Physical Therapy (PT) Aide, Phlebotomist (IV) and Patient Care Technician (PCT).

As part of the focus on equity, it is critical to note that since 2016 state funding cuts, LPN adult education is no longer available through CTECS. LPNs perform basic nursing functions, such as administering medication, updating patient health records, and assisting Registered Nurses. They earn a median salary of $52,780[20] - significantly higher than the salary of a CNA. This funding cut has led to a fragmented pathway toward earning RN credentials. The in-state avenue for obtaining an LPN certification is currently through two proprietary programs and one school of allied health, which are more expensive than community college. LPNs wishing to matriculate into an RN program will need to complete college general education courses in order to enter an RN program, which generally requires significant time and additional expenses after previously completing an LPN program. This lack of LPN training in high schools creates an additional barrier for disadvantaged populations to pursue a family-sustaining wage and enter the healthcare workforce without post-secondary education.

Higher Educational Partnerships

UConn Early College Experience

[20] Occupational Employment & Wages. Connecticut Department of Labor. Accessed here.

The University of Connecticut's Office of Early College Programs supports a robust UConn Early College Experience (UConn ECE) Program. UConn ECE is a concurrent enrollment program that allows high school students to take UConn courses, taught by UConn-certified high school teachers, at their high schools for both high school and college credit. Established in 1955, UConn ECE is the nation's longest running concurrent enrollment program and is Connecticut's only program accredited by The National Alliance of Concurrent Enrollment Partnerships.

UConn ECE offers courses at a low cost of $50 per credit or no cost to students who meet income eligibility requirements. This is a 90% savings of a traditional on-campus UConn course. In 2022-23 alone, the UConn ECE program waived nearly $800,000 in registration fees to ensure students have equitable access to UConn coursework. Credits are fully transferrable if a student attends UConn, and transferrable to other colleges and universities at a rate of 87%.[21]

UConn ECE offers 87 UConn courses in 36 disciplines, partners with approximately 189 high schools around the state and serves over 15,000 students. UConn ECE offers three Allied Health courses yielding seven credits, made up of a one-credit basic introduction to health care, a two-credit medical terminology course and a four-credit EMT training program that leads to an in-demand industry-recognized credential.[22] It should be noted that while the technical requirements for the majority of EMTs are a high school diploma or equivelent, driver's license, EMT certification, and a handful of other certifications, the majority of ambulance employers do not hire EMTs until they're 22-years-old due to insurance rates.

The majority of Alliance District Network Schools have partnered with the UConn ECE program to offer UConn courses. As of the 2022-23 academic year, Winchester Public Schools (The Gilbert School) is the only identified Alliance District school not offering access to UConn courses through UConn ECE. While

[21] UConn Early College Experience Credit Transfer Information. University of Connecticut. Accessed here.
[22] UConn Early College Experience Allied Health. University of Connecticut. Accessed here.

overall course offerings vary from school to school due to numerous factors including enrollment demands, FTE availability and infrastructure issues, teacher certification has been identified as an area for growth by UConn's Office of Early College Programs as they work with UConn Faculty to explore multiple pathways for educators to become ECE Instructor certified.

It should also be noted that UConn ECE offers access to numerous UConn courses in addition to Allied Health offerings that would be required for a student pursuing an associates and/or Bachelor's degree in a healthcare field such as Biological Sciences, Chemistry, and Human Development & Family Sciences. Given that coursework through UConn ECE is tied to UConn's undergraduate catalog, while the program is unable to develop career certificates not currently offered by the University, credits earned through the UConn ECE program can be applied in partnership with other Connecticut higher education institutions to be marketed to students or families as a "health career" cluster. The collective capacity of these combined partnerships can serve as a powerful pathway for students pursuing the healthcare field.

Connecticut State Colleges, Universities, and Community Colleges

The Connecticut State College and Univeristy (CSCU) System, including CT State, partners with high schools through the College Career Pathways Program. Additionally, to increase transparency for potential students, CSCU has developed a Health Careers and Pathways web based portal enabling users to locate on-line and on-ground healthcare programs across Connecticut.

Eight CT State community colleges – Asnuntuck, Gateway, Housatonic, Manchester, Middlesex, Naugatuck Valley, Quinnebaug, and Tunxis- currently offer a Health Career Certificate. While the certificate does not prepare students to fill specific job roles, it provides the foundation for learning across many healthcare fields, and a significant number of these credits may be applied toward health career programs within the Community College, CSCU System as well as many of the private universities.

Additionally, CSCU partners with the University of Connecticut Health Center's Health Career Opportunity Programs to support pipeline programs including workshops with Hartford middle school students in their Great Explorations program, offers a pre-college experience in the summer before students enter college, and programs for college students in an effort to increase the number of qualified applicants of color to health careers.

Southern Connecticut State University's (SCSU) Early College Program partners with more than 60 high schools, providing students an opportunity to enroll in and earn up to 30 dual enrollment credits. The fee for college credits is waived for students at participating districts. High school teachers delivering SCSU courses at their high school do so as SCSU adjunct faculty and must meet the qualifications and requirements set for SCSU adjunct faculty members. Credit earned at through the program will be accepted at any CSCU location, and other colleges and universities at their discretion. Starting in Fall 2023, SCSU will offer a credit bearing CNA program that will be open to high school students enrolled in the Early College Program, which will allow students to work in area healthcare facilities while attending college, and potentially getting access to tuition reimbursement programs and other employer benefits. In addition to the Early College Program, SCSU offers targeted healthcare programs to high school students, including a Summer Nurisng Symposium in partnership with Yale New Haven Health (YNHH) and provides a two-week summer program that introduces students from underserved populations to the healthcare field through coursework and shadowing at YNHH. Through the SCSU Early College Pathways to Nursing program, SCSU works with area high school counselors to advise students and provide early college coursework that aligns with pre-requisited for entry into the SCSU nursing program, which can setup students to complete their nursing degree in 3 academic years.

Western Connecticut State University (WCSU) has partnerships with Danbury High School Health Studies students, Henry Abbott Technical HS Health Science students and Immaculate High School students. The WCSU Deparment of Nursing hosts events for these students to promote the field of nursing and allied

health. Nuvance Health also participates in these events. Students have workshops with present undergraduate students and experience healthcare simulation. WCSU has a partnership with Danbury High School and offers Early College courses which can be applied to course work at the university. Eastern Connecticut State University has dual enrollment courses with several high schools for which students receive college credit, including Coventry High School in medical terminology course, and Bacon Academy, E.O. Smith, Norwich Free Academy, and RHAM High School in human biology.

CT Conference of Independent Colleges (CCIC)

Nine CCIC institutions participate in the CT Transfer Guarantee, a program that allows CT State associate degrees to transfer to four-year independent colleges, and includes some health professions majors. Additionally, the majority of CCIC schools answered affirmatively in UConn ECE surveys that they accept credit transfer, which allows high school students who completed UConn ECE courses to count toward their degree should they attend a CCIC institution.

Connecticut River Academy, a magnet high school of Goodwin University will be launching a healthcare pathway program in the 2023-2024 school year where students graduate with a CNA and transferrable credits. This program is being expanded through funding from CT Health Horizons to create a seamless CNA – ADN – BSN pathway to expand student access. The expansion will also include the opportunity for a junior in high school to earn their CNA certificate, expanding opportunities for them to explore other medical careers in their senior year through university coursework in medical assisting, public health, and other program offerings. All program and pathway development will be shared with partner districts in an effort to expand the opportunity for their students as well.

There is potential to expand dual enrollment/dual credit opportunities through private colleges and universities should funding and technical resources become available. CCIC institutions could leverage the curricula that exist through UConn ECE and CSCU to implement similar or enhanced offerings for high school students. More than half of the degrees in the health professions statewide are awarded at

the CCIC institutions so leveraging this sector is important. Cost per credit may be a factor but some institutions offer courses for free and Goodwin offer dual credit courses at the same price as UConn ECE.

Barriers to Expansion

Infrastructure needs

One of the challenges of creating robust health science career cluster programs are the significant infrastructure needs. These programs require dedicated classroom space, lab facilities, equipment, and hands-on learning materials, and some programs, including CNA programs, are subject to meeting CT DPH basic infrastructure standards. Through informational interviews with instructors and high school administrators, the infrastructure costs range from $30,000 - $100,000 to start a program. While schools that lack access to these facilities can partner with local community colleges and employer partners to provide certificate training, they must then contend with the costs of transporting students off campus to take courses and to fulfill clinical placement course obligations.

Teacher Certifications and Training

Having enough qualified teachers to teach dual credit and healthcare courses has a significant effect on schools' capacity to grow the number of students involved in these programs. Educators in the high school healthcare pathway face qualification challenges because they must abide by regulatory and accreditation requirements set forth by the three realms in which they operate: Higher Education Accreditation, Connecticut Educator Certification Requirements, and CT DPH Licensure requirements. The faculty employed Institutions of higher education are held to state academic standards under the Office of Higher Education, which place requirements on the qualifications, assignments, and academic advising. Additionally, all dual credit course instructors must meet New England Commission of Higher Education standards and be approved by the institution offering college credit. These requirements are compounded as instructor accreditation standards vary between community colleges and four-year higher education institutions, and Educator Certification Requirements are dependent upon whether

instruction is taking place within a Comprehensive High School or a Vocational-Technical School setting (e.g. CTECS), as shown below.

- Vocational-Technical High School (Endorsement 109)
    - High school diploma and 8 years of related work experience or a bachelor's degree and 3 years of related work experience
    - A letter from one's current and/or previous employers verifying their experience in the career
    - Valid health license
    - Six credits in teaching vocational and industrial education from a regionally accredited college or university
    - At least 36 clock hours in special education studies, including understanding the growth and development of exceptional children (children who are handicapped, gifted, talented, or require special education) and methods for identifying, planning for, and working effectively with them in the regular classroom.
- Comprehensive High School (Endorsement 103)
    - Bachelor's degree
    - One year experience in the occupation
    - A letter from one's current and/or previous employers verifying their experience in the career
    - Valid health license, if appropriate
    - Six credits in professional education from a regionally accredited college or university
    - At least 36 clock hours in special education studies, including understanding the growth and development of exceptional children (children who are handicapped, gifted,

talented, or require special education) and methods for identifying, planning for, and working effectively with them in the regular classroom.

As stated above, once certified, educators still need to hold the appropriate CT Department of Public Health License to teach within a healthcare pathway. In some instances, these regulatory requirements have a degree of specificity applicants may not have or go beyond what is required for teacher certification. For instance, to instruct in a a Vocational-Technical School, an applicant's eight years of experience must include at least one year of employment within a long-term care or rehabilitation facility in order to be eligible to teach within a CNA pathway.

Additional Barriers to Access and Expansion

Access. To participate in health science career cluster programs at CTECS, students must decide to participate in 9th grade. However, not all middle school students have exposure to the healthcare field, the programs available to them, or the career counselling that would be required to ensure all students are taking advantage of the opportunity and making informed decisions.

In addition, to participate in some programs, students must be recommended by teachers. There are no clear criteria for teacher recommendations, which as a result may be leaving out some students who would not only benefit but also shine in a health science career cluster program.

Finally, students need to complete prerequisite courses, and in some cases, meet postsecondary eligibility requirements for placement into college credit courses. While these requirements are put in place to ensure that students are able to manage the demanding coursework, they also create barriers to students who could succeed in a health science career cluster program. It is critical that access to college coursework includes multiple assessment measures that fairly and accurately determine student readiness to participate.

Coursework. There is a lack of standardization across high school health science career cluster programs with regards to curriculum, credit offerings, and evaluaation. While the CT DPH does provide a standard

curriculum for all CNA programs, there is room for growth in the way in which all health science career cluster programs are offered, administered, and evaluated.

In addition, WBL opportunities, which enable students to apply classroom learning in real workplace settings and are key to student interest and ongoing engagement, are difficult for students to attain due to age requirements and staffing capacity. This not only limits learning opportunities for students, but also limits approaches such as apprenticeships.

Partnerships. Schools wishing to add or expand their health science career cluster programs must develop their own partnerships with higher education institutions and employers. There is not a centralized entity negotiating, monitoring or evaluating these partnerships, which creates a barrier to program expansion. Additionally, high schools who wish to articulate dual credit courses must each sign their own articulation agreements with each higher education system partner, rather than being able to participate in a standard agreement that works across the system.

All high schools who receive Perkins V funding are required by federal law to have Business and Industry Advisory Boards, which are designed to facilitate the partnerships needed for successful programs. Board members come from a diverse group of business, industry, and community stakeholders, and they assist high schools in identifying entities for a variety of WBL experiences. The boards are also helpful in identifying additional potential employers beyond Advisory Board members due to the industry-specific contacts and professional association membership information at their disposal. Board members also review and make recommendations on curriculum in order to align the career ecosystem with current industry pipeline needs.

Best Healthcare Pipeline Practices from Other States

OWS conducted a landscape analysis of healthcare pathways programs in high schools across the country and identified three states in particular that have committed state-level funding and professional agencies leading their overall programs. This level of commitment is needed to recruit

students, teachers, and local Boards of Education; and importantly, provide program continuity for students, schools, communities, and local providers, and ensure access to the various healthcare programs offered. Detail on these state best practices are available through the links below**.**

California: The Future Health Workforce Commission was launched in 2017 to develop a strategic plan to build the future health workforce of California. As a result of this commission, the state made a significant investment of $16 million into a Health Career Opportunity Program, which includes a competitive grant program designed to recruit and support students from underrepresented regions and backgrounds to pursue health careers through pipeline programs, career exploration and summer internships. California funds health pathways programs through the Department of Education and the newly created Department of Healthcare Access & Information.

Florida: The Florida Department of Education funds a Health Sciences program that provides seven exploration courses for middle school students and five basic pathways and 16 potential career fields for high school students that include EMT and Acute and Long-term Nursing Assistant. More than 70,000 high school and middle school students are enrolled in the program.

Kentucky- Launched a 120-credit nursing pathway [CNA – LPN – associate degree in nursing – bachelor of science in nursing (BSN)] that begins in 9th grade with three pathway options, the most ambitious leading to a BSN two years after high school graduation. The Kentucky Department of Education and multiple districts and high schools participate in the pathway.

Table 1.1 SWOT Analysis of Connecticut's Current Health Science Career Cluster Programs

Strengths	Weaknesses
• Pockets of excellence in high enrollment Alliance School districts, including the Waterbury Career Academy.	• Lack of standardization across health science career cluster programs with regards to curriculum, credit offerings, and evaluation.

• More than 50% of CSDE Alliance schools offer a health science career cluster program, many of which meet CT DPH criteria to be CNA training providers and have basic infrastructure and educators with requirements to expand offerings. • UConn ECE is a nationally accredited, well-structured, and affordable program that includes healthcare pathway courses. • CTECS have a healthcare careers pathway program available at 11 locations, which offer a well-defined and scalable program offering up to 14 credits. • Seven CT State locations offer a 28-credit Healthcare Certificate that is transferrable within the CT State system toward associate degrees.	• Fragmented partnerships among high schools, higher education, and employers on a local, regional, and statewide level, with no single entity helping to manage partnerships. Among a number of issues, this impacts students' ability to earn the necessary patient care and clinical hours for to meet state requirements. • Perkins V is the only sustainable funding source for career cluster programs, which is awarded annually based on school districts' applications. • Employers' age requirements and insurance requirements limit student participation in employment and work-based learning opportunities. For example, EMT training and certification are available beginning at 16-years-old; however due to insurance rates, EMS providers do not typically employ EMTs under 22-years of age.
Opportunities • Perkins V plans, which are submitted by CSDE, and the WIOA Unified State Plan, which is submitted by OWS, could be submitted as a combined plan. Connecticut has not taken advantage of this opportunity to align career pathway education and training plans, which would help ensure that Connecticut's system support students for career pathways beyond high school. • Explore if high school career cluster programs that include WBL could qualify for CT Department of Labor pre-apprenticeship opportunities, which would provide students a headstart on hours counting toward future apprenticeships. • Reinstatement of adult LPN certification opportunities will create pathways to living-wage jobs. LPN programs were offered in CTECS high schools until 2016 but were cut due to funding constraints. • The development of Regional Sector Partnerships across the state in healthcare and other industries are aligning education, nonprofits, training	**Threats** • There are not enough teachers who are qualified to teach healthcare pathway courses, and getting qualification requires additional certifications with no additional pay. It can also be difficult for high schools to compete with the wages that certified healthcare practitioners earn in the field when attempting to recruit practitioners into the classroom. • The startup infrastructure costs, mainly equipment, are expensive and often prohibitive for school districts. • CSDE does not have the resources or funding allocation to dedicate the necessary staff time to coordinate or oversee health science career cluster programs. There is one Education Consultant at CSDE who manages the health science career cluster, but they also have oversight of three other Career Clusters among additional job duties. As healthcare is the largest growing field in the state, it is important to

providers, higher education, and employers to partner on programs, including the opportunity to work with employers to revisit hiring practices in regards to age, education levels, and acknowledgement of work-based learning for experience. • The UConn ECE health offerings and CT State healthcare certificate can help healthcare pathway programs scale quickly because they offer a "plug and play" curriculum for high schools without a healthcare career pathways plan. • State investments in CareerConneCT and CT Health Horizons are strengthening the overall statewide effort to increase the number of and access to healthcare education and training opportunities and serve as important follow-ons to health science career cluster programs.	provide additional staff resources and time to the oversight of the health science career cluster.

Suggested Actions to Strengthen and Expand Access to High-Quality Health Science Career Cluster Programs

There are several actions required to create comprehensive, coherent, and equitable health science career cluster programs that address labor shortages and engage all students in meaningful learning toward well-paying careers. While we have grouped these actions into the following areas: Data, Academic Coursework and Workbased Learning, Teachers, Partnerships, and Program Supply – all recommendations require significant funding and/or changes in policy to move forward.

Data

To improve the oversigh and understanding of current health science career cluster programs, strengthen the data tracking systems of comprehensive, technical, and CTECS schools and their students. Data tracking should include their enrollment by demographic, curriculum offerings, and outcomes data (high school graduate, college enrollment, college completion by degree, apprenticeship and career attainment, wages, etc.).

Academic Courses, Work-Based Learning, and Credentialling

- Align the curriculums and credits of health science career cluster programs to offer a standardized healthcare career certificate that includes industry-recognized credentials and transferrable credits in healthcare programs throughout the public and private postsecondary education system. This requires collaboration between CSDE, UConn, CSCU/CT State, CCIC, OWS, and healthcare employers, including trade associations like the Connecticut Hospital Association.
- Expand opportunities for students to earn credit for WBL experiences towards their 25 high school diploma credit requirements, thus making health science career cluster programs more accessible to students. Some schools offer credit for WBL, but not all, even though a CSDE metric for Carl D. Perkins Program Quality is participation in WBL and endorses WBL resulting in course credit.
- Develop a centralized registry to match healthcare employers and high schools for WBL opportunities.

Regulatory and Credentialling

Review the clinical hour requirement discrepancies between CSDE and DPH for healthcare courses and industry-recognized credentials in healthcare professions.

Teachers

- Create pathways for teachers to become certified to instruct dual enrollment courses, including modernizing certification regulations to streamline the teacher credentialing process. This requires collaboration between CSDE, specifically the Bureau of Certification, as well as DPH and OWS.
- Provide incentives or other financial support for teachers to become endorsed as a Cooperative Work Experience (CWE) teacher, which positions them to prepare students to make responsible career and personal life decisions, set goals, and develop plans for classroom and WBL. A major barrier is that teachers must pay for the three required courses necessary to earn a CWE endorsement themselves if their district does not offer tuition reimbursement.

- Provide additional incentives and flexible arrangements for healthcare professionals to teach courses in high school settings.

Partnerships

- Determine the benefit of submitting a combined Perkins V and WIOA plan. Perkins V plans are submitted by CSDE and the WIOA Unified State Plan is submitted by OWS. Connecticut has not taken advantage of this opportunity to align career pathway education and training plans, which could help ensure that students, especially from low-income backgrounds, have a pathway for learning beyond high school. However, submitting a combined plan can leave out individual school districts from participating in the planning process.
- Develop official state recognition for hospitals and healthcare systems that partner with local high school programs. Formal partnerships could include hospitals loaning facilities and materials, co-creating course curricula, hosting WBL experiences, and loaning healthcare professional staff to co-teach courses.
- Leverage Regional Sector Partnerships (RSPs), which promote collaboration between employers, education, nonprofits, and the public sector in a targeted industry on a local level. Four healthcare RSPs have launched since 2022 and are working on high school pathways.
- Provide resources for industry specific units within CSDE to oversee the career cluster programs to expand efforts, encourage robust partnerships, and improve oversight and evaluation capabilities. CSDE has staff dedicated to each of the 12 CT approved career clusters, but each staff member oversees four career clusters.

Program Supply

- Conduct a feasibility study on reinstating LPN programs in CTECS and CT State and on adding them in comprehensive high schools. Other states have programs where high school students attain their LPN certification prior to graduation, providing a pathway to a living-wage career.

- Expand the health science cluster in CTECS from 11 to all 20 locations to introduce more students to healthcare careers.

Suggested Next Steps

Significant planning, buy-in, and resources are needed to expand health science career cluster programs in Connecticut high schools, specifically in Alliance School Districts. To begin to address the recommendations provided above, OWS suggests the following steps:

Landscape Analysis. A landscape analysis is needed to understand the current state of health science career cluster programs, their enrollment, curriculum offerings, outcomes data, etc. across the state. Until a data system is in place for this, OWS suggests a required survey for all publicly funded school districts asking for the data above. OWS will analyze the results and work in collaboration with CSDE to determine how the results will be shared publicly.

Best Practices. Based on the survey results, conduct more in-depth research to identify specific best practices that should be elevated, funded and replicated across the state. While many healthcare programs exist, they vary in transferrable college credits, WBL, and certifications. To ensure all students can access equitable programs, it is suggested to identify a gold standard model(s) with model curriculum for school districts.

Expand Access. Provide technical assistance to schools in Alliance School Districts without health science career cluster programs to help implement them, utilizing Perkins V and other sources of funding.

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