monitoring the altered circulatory process closely, taking appropriate

The perfusionist is responsible for operating the machine during surgery, specifically as a member of an open-heart, surgical team. Perfusionists are responsible for the selection, setup, and operation of a mechanical device commonly referred to as the heart-lung machine. During open heart surgery, when the patient's heart is immobilized and cannot function in a normal fashion while the operation is being performed, the patient's blood is diverted and circulated outside the body through the heart-lung machine and returned again to the patient. In effect, the machine assumes the function of both the heart and lungs.

The perfusionist is responsible for operating the machine during surgery, monitoring the altered circulatory process closely, taking appropriate corrective action when abnormal situations arise and keeping both the surgeon and anesthesiologist fully informed. In addition to the operation of the heart-lung machine during surgery, perfusionists often function in supportive roles for other medical specialties in operating mechanical devices to assist in the conservation of blood and blood products during surgery, and provide extended, long-term support of patients circulation outside of the operating room environment.

Career Outlook

Increases in technologies of cardiovascular medicine, such as the use of ventricular assist devices, the total artificial heart, and coronary angiography and angioplasty, have further increased the demand for perfusionists. Perfusionists work in hospital settings and most are employed either by hospitals, individual surgeons, surgical groups, or private health care corporations. Experienced perfusionists may find career opportunities working for companies who manufacture perfusion supplies and equipment. These individuals may be employed in research and development, or in some cases, may be employed in marketing or sales.

A typical work week consists of a 40-hour schedule with additional on-call coverage for emergencies. Perfusionists may be called to work evenings and weekends. Perfusionists enjoy starting yearly salaries that range from $85,000 to 90,000. In most cases additional compensation in the range of 10-25 percent of base salary may be earned for "on-call time" and shift differentials.

Find out how you can be a part of this challenging and rewarding career! Read more in this Department of Labor article>> (http://www.bls.gov/careeroutlook/2002/winter/yawhat.pdf)

Admissions

Perfusion Education

Admission Requirements

Enrollment in each program is limited and competitive. The admissions committee of each program, composed of program faculty and administration, evaluates the qualifications of each applicant and makes the final selections for admission.

To be considered for admission, the applicant must possess a bachelor’s degree and be well rounded in the biological sciences, chemistry and mathematics. These studies must include:

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**Biological Sciences:**

Twelve (12) semester hours are required which may include laboratory sessions. Such courses should emphasize body structure, development, tissue organization and function. These courses may include but are not limited to general biology, cell biology, microbiology, physiology, anatomy, zoology, histology, embryology, genetics and immunology.

**Physical Sciences:**

Six (6) semester hours of chemistry are required. Such courses should emphasize physical principles and may include but are not limited to general chemistry, qualitative analysis, quantitative analysis, and organic chemistry. Additionally, three (3) semester hours of physics including laboratory session are required. Such courses may include general physics, quantum physics, or physics for life sciences.

**Mathematics:**

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**Degree Offered**

Master of Perfusion Science (MPS)

Additionally, the CPE Program offers an online Masters of Perfusion Science (MPS) Degree Advancement Option (http://www.unmc.edu/alliedhealth/education/online/mpsdao) (DAO) for those who have already completed a CAAHEP-accredited perfusion education program. DAO participants are part-time students, and are allowed up to five years to complete a 17-hour curriculum.

**Length of Program**

The Clinical Perfusion Science Education (CPE) Program at UNMC is 21 months in length. Upon successful completion of the program, UNMC awards the Master of Perfusion Science degree, making graduates eligible for national certification. The first two semesters (Phase I) consist of didactic course work with an introduction to perfusion science. The remaining 11 months (Phase II and III) consist of clinical rotations, a research project and elective courses.

**Degree Requirements**

Graduation requirements include successful completion of the following:

1. Pass, with a greater than 70% grade, a comprehensive written objective test which focuses on problems encountered in the practice of clinical perfusion.

2. Complete thorough and comprehensive evaluations of different patients who are to undergo clinical perfusion. The student must be able to differentiate between abnormal and normal variations and to design a pump circuit that would meet the physiological needs of the patient undergoing surgery. Demonstrate through appropriate consultation with the faculty member that a suitable circuit has been selected and that the patient can be safely supported on cardiopulmonary bypass.

3. Meet all standards as established by the clinical competency committee.

**Certification and Licensure for Perfusionists**

Certification in Clinical Perfusion is attained by satisfactory performance on the American Board of Cardiovascular Perfusion certification examination (http://www.abcp.org).

Licensure varies from state to state.

**About the Profession**

A perfusionist is a skilled, allied health professional, trained and educated specifically as a member of an open-heart, surgical team. Perfusionists are responsible for the selection, setup, and operation of a mechanical device commonly referred to as the heart-lung machine. During open heart surgery, when the patient's heart is immobilized and cannot function in a normal fashion while the operation is being performed, the patient's blood is diverted and circulated outside the body through the heart-lung machine and returned again to the patient. In effect, the machine assumes the function of both the heart and lungs.

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Clinical Perfusion

Three (3) semester hours are required.

**Academic Criteria**

- A minimum cumulative grade point average of 3.0 (A=4.0) or last 40 hours of course work of 3.0 is required.
- Courses used for required prerequisites must be a letter grade of "C" or above.
- Any repeated course grades will be considered if improvement was achieved.

**Graduate Record Examination (GRE)**

The General Test of the Graduate Record Examination (verbal, quantitative and analytical writing) is required. Scores must be sent using the UNMC Institution Code 6896, and received by the application materials deadline.

**Conversation Time**

Three (3) unique conversations with a Perfusionist are required. Three separate Conversation Confirmation Forms (https://www.unmc.edu/alliedhealth/education/cpe/admission/cpe-conversation-confirmation.pdf) reflecting these experiences must be received by the application materials deadline.

**Application Deadline**

Get complete application details on How to Apply (https://www.unmc.edu/alliedhealth/education/cpe/admission/apply.html).

**Curriculum**

**Plan of Instruction**

The program is 21 months in length.

**Phase I**

The first two semesters consist of clinical experience plus didactic course work that includes classes in clinical perfusion, pathology, pharmacology, research methodology, management, and electronics.

**Phase II**

The Summer Session, in between the first and second years, introduces the student to the applied aspects of extra-corporeal circulation through wet-lab experiences and simulated cardiopulmonary bypass procedures. During this semester the students also continue their clinical education at The Nebraska Medical Center.

**Phase III**

The remaining 8 months consist of clinical rotations (1 to 2 months in length) at outside clinical affiliate hospitals. Finalization of the student’s research project is also completed.

Outside employment is discouraged during the the program. While every effort will be made to assist a student if a difficulty should arise due to classes or health, the student must complete the previous classes or rotations before advancing to the next semester.

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**First Year**

**Fall**

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<tr>
<th>Course Code</th>
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<tr>
<td>CLPR 502</td>
<td>INTRO PERFUSION TECHNOLOGY</td>
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<td>CLPR 505</td>
<td>PERFUSION CONCEPTS I</td>
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<td>CLPR 506</td>
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**Spring**

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<td>PAMM 690</td>
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<td>CAHP 723</td>
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<td>CAHP 630</td>
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**Second Year**

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<td>CAHP 626</td>
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**Total Credit Hours**

82