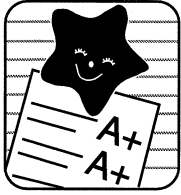


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Radiation Protection

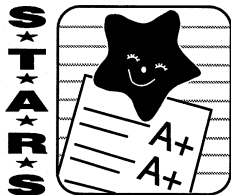
for

Our Patients, Our Co-workers and Ourselves

Prepared by

Carolyn J. Frigmanski, M.A., B.S.R.T. ®
Founder, S.T.A.R.S.

**All post tests must be returned for the
designated and Ohio Department of Health
approved 2 continuing education credits.**



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Welcome to your **S.T.A.R.S.** self-learning product that has been approved by the Ohio Department of Health for continuing education credits for licensed gxmos and radiographers for license renewal.

Instructions:

- ❖ Please complete **both sides of this page** with your answer selections for all the units in this product! CE credit will **NOT** be provided for incomplete submissions.
- ❖ Do **NOT** send the question pages or return the booklet. It is yours to keep as a resource.
- ❖ You can use a standard envelope and postage when you return this page **ONLY** to the **S.T.A.R.S.** office at the address listed above.
- ❖ You will receive a signed certificate of completion from an official at **S.T.A.R.S.** upon successful evaluation of all your post test answers.
- ❖ Please **print the following information legibly** for record-keeping and accurate certificate completion.

Name _____

Address _____

City, State and Zip Code _____

Desired Number for Certificate i.e. social security number/last 4 digits of social security # or License number:

Date of Submission _____

Thank you very much. I hope you enjoy this educational product!

Carolyn J. Frigmanski, M.A., B.S.R.T. ®
Founder



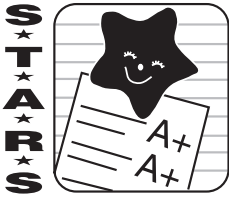
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Unit 11 Protecting Our Patients	Unit 12 Protecting Co-workers & Ourselves
1.	1.
2.	2.
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Dear GXMO/LSO/LSR participant,

Welcome to your selected S.T.A.R.S. developed continuing education home study!

In the spring of 2013, The Ohio Department of Health (ODH) approved ALL of them for GXMO license renewal. Please check with your state licensing agency if you are not a licensed GXMO in Ohio to be sure your state accepts these ce credits for your state license renewal requirement.

This product consists of a text on a desired topic and multiple question, short answer post test(s) pages. The number of Ohio Department of Health approved continuing education (ce) credits is listed on our order form. This home study product was originally developed for radiographers across the country who were registered with the American Registry of Radiologic Technologists (ARRT) and approved by the American Society of Radiologic Technologists (ASRT). Please disregard any reference to the ASRT/ARRT within this product, if any.

You must complete the reading and questions with a **75% or higher score** on the post test(s) to get your approved CE credit!

Please return all the post test pages to the **S.T.A.R.S.** address listed on our letterhead **BEFORE** your license expires. We will forward your certificate of completion on the same day your post test(s) were evaluated (except for holidays and Sundays). If you did NOT receive a 75%, we will send the pages back with the questions needing a new answer selection. Send them back for a **FREE** re-evaluation. No refund will be provided for unsatisfactory personal performance on any ce product.

Plan the return of your post test(s) pages in a timely manner. I cannot accept emailed or faxed copies since I need to retain my **ORIGINAL** records for the ODH for 3 years in case you may be audited.

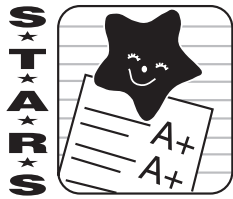
Remember to get your envelope weighed at the post office whenever submitting more than 4 pages. The post office will return it to you if you have insufficient postage, thereby delaying it for my evaluation and your certificate of completion.

Feel free to contact me by email: info@xrayhomestudies.com or telephone: **419 471-1973** if you have any questions. Please share with others in the future.

Thank you for selecting **S.T.A.R.S.** to meet your continuing education needs!

Sincerely,

Carolyn J. Frigmanski, M.A.,B.S.R.T. ®, Founder



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How to renew your GXMO license in Ohio:

The Ohio Dept. of Health (ODH) requires a **minimum of 12 continuing education credits (ceus) to be completed every 2 years (your biennium) BEFORE your license expires.** You may do more than 12 ceus, but not less than 12 ceus, if you so choose. Ceus in excess of 12 cannot be carried over to the next biennium.

You will receive a hard copy renewal notice by mail from the ODH 60 days **BEFORE** your license expires. **It is your responsibility to amend your personal information to the ODH whenever you change your name, address or place of employment as soon as possible by using the ODH website or contacting the ODH by telephone at 614 752-4319 for assistance. Failure to receive an ODH notice is not an acceptable reason for failing to renew on time.** You can add completion of clinical modules to your GXMO license on the ODH web site.

Your ODH notice informs you that you may renew online or request a hard copy form from them. **You must have your S.T.A.R.S. certificate(s) of completion immediately available when you renew since your course title(s), number of ceus, and ODH accreditation number(s) and date(s) of completion are printed on it.**

You can renew immediately when you receive your notice or you have 30 days to complete the renewal process and payment to the ODH after your license expires. Online renewal requires your credit card for payment. If you chose hard copy renewal, you may submit a check or money order.

You and/or your employer can view and/or print your renewed license on line upon completion of the process. Problems that exist with renewal should be addressed to the ODH by calling for assistance.

S.T.A.R.S. personnel are NOT responsible for your renewal. Please direct any questions or needed assistance with renewal to the ODH personnel.

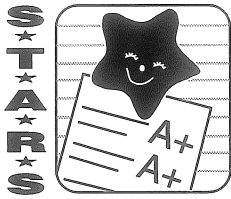
GXMOs must notify the ODH in writing within 30 days of any changes in the physician providing direct supervision. If your scope of practice changes (e.g. chiropractic to podiatric), a competency form must be completed and submitted to the ODH.

You may also want to check the ODH web site periodically for changes that may have occurred during your biennium and to share this information with your co-workers and/or administrative staff members.

The ODH website is: <http://www.odh.ohio.gov/odhPrograms/rp/rlic/ristatus.aspx>

Email is: BRadiation@odh.ohio.gov

Thank you very much.



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Instructions for Mailing your Continuing Education Post Tests

Complete ALL hard copy unit post tests for the products you purchased in legible printing BEFORE your license expires. Mail is processed the same day it is received.

You may want to copy them BEFORE you mail them to the S.T.A.R.S. office to minimize mail delivery complications. They will NOT be returned to you unless you get a 75% or less. If you do NOT get a 75% or better after evaluation, the post tests will be sent back to you with the questions needing a new answer selection. After completing the questions, send them ALL back to the S.T.A.R.S. office for re-evaluation.

Be sure to use the CORRECT postage by having it weighed at the post office if it consists of more than 5 pages. Envelopes with INSUFFICIENT POSTAGE will be sent back to the participant and delay your post test evaluation and certificate creation.

I do NOT accept faxes since faxes fade over time and I need to keep my records for 3 years in case you would get audited by the Ohio Dept. of Health for some reason.

I do NOT accept scanned pages because I do NOT want you putting your private, personal information on the internet. I do NOT open attachments due to the threat of virus contamination that may jeopardize my web site and computerized databases.

Do NOT send your study media i.e. CD, DVD, booklets and/or books back to me.

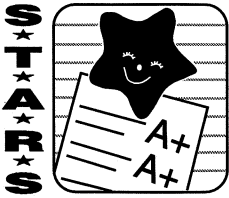
United States Postal Service (USPS):

If you are using USPS for priority or express mailing, please keep your receipt with the tracking number in case of a problem with the delivery. Please mark the section for NO SIGNATURE REQUIRED for express mail and send it to my home address: Carolyn J. Frigmanski, MA, BSRT (R) 3134 Aldringham Road Toledo, Ohio 43606. The USPS does NOT deliver to my P.O. Box address. Please call to let me know I should be expecting it at 419 471-1973.

FedEx or United Parcel Service UPS:

If you are using these delivery services, please keep your receipts with the tracking number in case of a problem with the delivery. Please mark the section for NO SIGNATURE REQUIRED for express mail and send it to my home address: Carolyn J. Frigmanski, MA, BSRT(R) 3134 Aldringham Road Toledo, Ohio 43606. Please call to let me know I should be expecting it at 419 471-1973.

Thank you very much.



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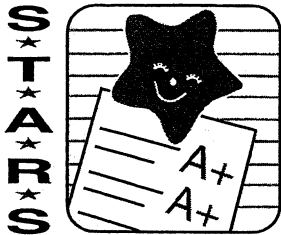
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Unit 11

Title: Common Methods used to Control Radiation Exposure to the Patient

1. United States medical physicists and radiation biologists are concerned about radiation amounts received by the general public because
 - a. the frequency of x-ray examinations is decreasing
 - b. the frequency of erythema is increasing from diagnostic procedures
 - c. multiple modalities are not available for diagnosis confirmation
 - d. physicians order more x-rays to protect themselves from litigation
2. With the increasing sophistication of angio-interventional procedures, the radiation exposures during fluoroscopy is
 - a. increasing
 - b. remaining the same
 - c. decreasing
 - d. insignificant
3. Quality control is different than quality assurance because it involves
 - a. only the x ray film processors
 - b. only the x ray generating equipment
 - c. only physicists and biomedical engineers
 - d. acceptance and performance evaluation radiographic equipment
4. The national program of accreditation utilized by hospital facilities receiving Medicare/ Medicaid funding is known as
 - a. IRS and NRC
 - b. IRS and FDA
 - c. JRCRT and ACS
 - d. The Joint Commission
5. The reason commonly used by radiographers for not using a gonad shield is
 - a. placing it incorrectly on the body
 - b. not important for use
 - c. diagnostic x rays have little dose
 - d. the radiologist/physician doesn't insist on it
6. A gonad shield that attaches to the collimator is called
 - a. shadow
 - b. contact
 - c. shaped
 - d. portable
7. Appropriate gonad shielding can reduce dose as great as ____% in males and ____% in females
 - a. 60:40
 - b. 95:50
 - c. 75:25
 - d. 50:95
8. The population(s) who need gonadal shielding include
 - a. children only
 - b. women in childbearing age
 - c. children and adults with reproductive potential
 - d. males up to age 65
9. To enhance communication with the patient, radiographers should always
 - a. hurry the procedure without explanation
 - b. disregard patient comprehension
 - c. be sympathetic
 - d. be empathetic
10. To minimize repeats due to respiratory activity, radiographers should always
 - a. consider sedation
 - b. select any exposure time
 - c. use the same time
 - d. watch the patient carefully

11. The movement of the stomach, small bowel and colon after ingesting a big lunch is a type of
 - a. involuntary motion
 - b. voluntary motion
 - c. self-conscious motion
 - d. automatic motion
12. The type of technique chart which reduces patient dose the best is called a
 - a. variable kVp, fixed mAs
 - b. high kVp
 - c. variable mAs, fixed kVp
 - d. phototiming chart
13. The biggest detriment to detail on a finished radiograph is created by
 - a. long S.I.D.
 - b. short O.I.D.
 - c. patient motion
 - d. slow film-screen combination
14. A radiographer interested in minimizing positioning errors will develop conscientious habits involving
 - a. fast positioning skills regardless of patient's physical challenges
 - b. allowance of just enough time regardless of patient comprehension or capabilities
 - c. student practice without supervision
 - d. periodically review of personal film quality and patient skills
15. If a x-ray examination is absolutely necessary on a pregnant patient, the radiographer should always
 - a. precisely collimate & carefully position protective shields
 - b. use longer times of exposure
 - c. do the routine number of views
 - d. take repeats as needed
16. When a fetal dose of 30 Rads (300 mGy) has been calculated by a medical physicist, the recommendation for a pregnant woman is to
 - a. continue the pregnancy
 - b. terminate the pregnancy.
 - c. not have additional pregnancies in the future
 - d. continue the pregnancy without any concern
17. — 20. Identify four technical choices in the list below to minimize patient dose:
 - _____ a. use high kVp
 - _____ b. skip gonad shielding
 - _____ c. hurry patients so you can go home on time
 - _____ d. use shortest time possible
 - _____ e. use long S.I.D.
 - _____ f. be careful while positioning
 - _____ g. take as many views as you can throw out repeats
 - _____ h. use ALARA concept



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Unit 12

Title: Common Methods Used to Control Radiation Exposure to the Operator

1. Time, distance and shielding are considered the
 - a. ACR recommendations
 - b. cardinal principles of radiation protection
 - c. IRS guidelines
 - d. NCRP recommendations
2. The ALARA concept includes stipulation(s) such as
 - a. risks of radiation exposure must outweigh the benefits
 - b. specific dose limits can be exceeded
 - c. repeats are justified to get a good examination
 - d. all exposures should be kept as low as reasonably achievable
3. The maximum permissible dose is now called the
 - a. ALARA unit
 - b. maximum limit
 - c. dose limit
 - d. maximum dose limit
4. A 30 year old radiation worker could have a cumulative whole body dose limit of
 - a. 300 mSv
 - b. 30 Sv
 - c. 150 mSv
 - d. 15 Sv
5. A 26 year old radiation worker could have a dose limit of ____ or less during her pregnancy.
 - a. 26 mSv
 - b. 2.6 mSv
 - c. 5 mSv
 - d. 10 Sv
6. Declaring a pregnancy to your supervisor is important because
 - a. your dose limit becomes 1.5 mSv/month
 - b. it will determine the need to change your scheduled rotations in fluoroscopy
 - c. it requires the use of two personal monitoring devices
 - d. your supervisor should review your previous radiation records with you
7. Managers following good radiation protection principles for their personnel should
 - a. provide annual in-services on radiation protection
 - b. provide counseling opportunities during pregnancy
 - c. provide new employees with policies and procedures about radiation protection
 - d. all of the above
8. The most practical and inexpensive personnel monitoring device in existence today is a
 - a. TLD
 - b. Film badge
 - c. pocket dosimeter
 - d. Geiger counter
9. Lithium fluoride chips/powders are found in the
 - a. TLD
 - b. pocket dosimeter
 - c. film badge
 - d. Geiger counter
10. The personnel monitoring device that provides immediate results is the
 - a. film badge
 - b. TLD
 - c. pocket dosimeter
 - d. Geiger counter

11. Personnel monitoring device reports should contain
- a. current exposure only
 - b. cumulative monthly exposure
 - c. last year's exposure results
 - d. year-to-date exposure
12. If you lose your film badge, you should
- a. use the control badge
 - b. report it immediately and get a replacement from the commercial vendor
 - c. wait for the next shipment
 - d. use someone else's during their absence
13. Since the film badge is your "personal" monitor, you may
- a. not wear it during personal medical exams
 - b. wear it to the beach
 - c. wear it during your dental x-rays
 - d. share it with others who lose theirs
14. Exposure switches on the operator console should be
- a. 6 feet or longer for mobility
 - b. located within a secondary barrier
 - c. fixed permanently to the console
 - d. removable
15. When an x-ray tube is replaced, the medical physicist should check for
- a. accurate billing
 - b. leakage radiation
 - c. delivery date
 - d. remnant radiation
16. A protective barrier which requires 1/16" Pb or 4" of masonry is called
- a. secondary
 - b. tertiary
 - c. control booth
 - d. primary
17. The control booth is considered a
- a. primary barrier
 - b. tertiary barrier
 - c. secondary barrier
 - d. controlled work space
18. — 20. Match 3 of the following items that will reduce your risk of radiation exposure
- _____ a. stay as close as possible to the patient or volunteer to hold patients
 - _____ b. collimate the beam to the anatomy under investigation
 - _____ c. use ALARA concepts all the time
 - _____ d. give your Pb apron and gloves to the physician
 - _____ e. use intensifying screens at all times