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## Staff Education to Improve Medicare Lung Cancer Screening and Processes

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# Walden University

College of Nursing

This is to certify that the doctoral study by

Ashley Ruth McCammon

has been found to be complete and satisfactory in all respects,  
and that any and all revisions required by  
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Walden University

2025

Executive Summary: Staff Education Project  
Staff Education to Improve Medicare Lung Cancer Screening and Processes

by

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MS, Walden University, 2020

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ASN, Vincennes University, 2004

Executive Summary Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Nursing Practice

Walden University

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## Summary

The doctoral project was a staff education initiative to address underutilization of low-dose computed tomography (LDCT) lung cancer screening among Medicare-eligible patients at the project site. Lung cancer is the leading cause of cancer death, and LDCT screening reduces mortality by up to 20%. Internal data from the project site revealed that only 20.13% of eligible patients completed screening, underscoring the need for structured staff education to improve knowledge and support early detection.

The practice focused question asked: Will a staff education on Medicare LDCT screening and processes increase staff knowledge towards the ultimate goal of increasing LDCT screening rates? The project was aimed at preparing staff to identify eligible patients, conduct shared decision-making, and accurately order and document LDCT screenings in the electronic medical record (EMR).

I used a pre-/posttest design with descriptive and inferential statistics to evaluate the intervention. Participant mean pretest scores were 76.1%, and they increased to 96.5% after the staff education, a 20.4 percentage point suggesting a knowledge gain. Ten of 13 questions achieved 100% accuracy posttest. A paired *t* test confirmed statistically significant results ( $t(12) = 5.78, p < .001$ ). The effect size was large (Cohen's  $d = 1.60$ ), and the 95% confidence interval (12.7%-28.1%) confirmed knowledge gains.

This project demonstrates that brief education improves staff knowledge of LDCT screening and processes. My recommendations include broadening the education to other medical offices within the organization. The project's implications for nursing practice include strengthening evidence-based preventive care, improving access to screening, and promoting health equity and early detection to reduce lung cancer mortality.

## Background

Lung cancer is the leading cause of cancer death in the United States, causing more deaths yearly than breast, colon, and prostate cancers combined (American Cancer Society, 2025). LDCT screening identifies lung cancer at an earlier, more treatable phase, reducing lung cancer mortality by 20% (Hoffman et al., 2020). Despite these benefits, LDCT screening remains underutilized. At the project site, internal quality metrics demonstrated that only 20.13% of Medicare-eligible patients received LDCT screening, indicating a large practice gap that increased the risk for late-stage diagnosis and poor patient outcomes.

The gap is mainly due to provider knowledge deficits regarding Medicare eligibility criteria, shared decision-making requirements, and EMR workflows. The practice-based question guiding this doctoral project was: Will a staff education on Medicare LDCT screening and processes increase staff knowledge towards the ultimate goal of increasing LDCT screening rates? I conducted the project to educate staff, including medical assistants, nurses (i.e., RNs and LPNs), physicians, and advanced practice providers, to accurately document smoking history that would lead to EMR identification of eligible patients, have shared decision-making discussions, and correctly document and order LDCT screenings in the EMR.

A substantial body of evidence exists regarding the ability of staff education to improve adherence to lung cancer screening guidelines. In a systematic review, Coughlin et al. (2020) identified workflow inefficiencies and knowledge gaps among providers as significant screening barriers and that EMR decision support and standardized provider education improved uptake. Provider education in a quasi-experimental study improved

LDCT screening rates from 27% to 61.5% (Sedani et al., 2022). Online intervention training significantly improved provider knowledge ( $p < .001$ ) and intention to engage in shared decision-making (Symvoulakis et., 2025). Additional evidence highlights that combining training with EMR workflow optimization improves documentation accuracy and enhances times referrals (Akhtar et al., 2021).

The evidence supporting this practice change is strong and consistent, based on the John Hopkins Evidence-Based Practice appraisal tool, which identified multiple Level I randomized controlled trials and Level II quasi-experimental studies. The evidence provided strong justification for implementing a formal staff education program at the project site to close the knowledge gap, increase LDCT screening rates, and reduce lung cancer mortality among the population served.

### **Staff Education Project Development**

Project members comprised of 21 employees who were medical assistants, nurses, physicians, and advanced practice providers at the project site. Project mentorship directed the design and implementation phases, weighing in on organizational priorities and evidence-based practice facilitation. The office manager assisted with scheduling to allow for stakeholders to gain early buy-in through the inclusion of the lead physician and nurse leader to address workflow concerns.

A needs assessment identified low completion rates for LDCT screening (i.e., 79.87% unmet) as the primary practice deficit. Evidence from systematic reviews and quasi-experimental studies guided the creation of the educational materials. The training session was conducted in a 30-minute session. I began by giving a pretest to assess the learners' baseline knowledge (see Appendix A). A PowerPoint presentation was then

delivered that included proper EMR documentation of smoking history, where to locate smoking history documentation in the EMR, how to properly calculate smoking history in packs per year, shared decision-making discussions, Medicare criteria for LDCT screening, and EMR prompts for providers (see Appendix B). All participants were provided with a printed flyer summarizing eligibility criteria and EMR ordering steps for future reference (see Appendix C). Participants then completed a posttest consisting of the exact questions on the pretest (see Appendix A). The pre-/posttest questions were directly linked to the learning objectives to facilitate alignment of the project.

I collected and summarized the anonymous data using descriptive statistics to estimate mean pre- and posttest scores and percentage of improvement. Evaluation of the program consisted of both formative and summative aspects. The formative evaluation included a review of instructional materials by stakeholders and mentor for accuracy and clarity prior to implementation. Summative evaluation included participant pre-/posttest scores and completion of the program evaluation survey rating the education's relevance, clarity, and delivery (see Appendix D).

## **Results**

Posttest results revealed excellent improvement in employee knowledge following the LDCT educational intervention. The pretest mean score was 76.1%, increasing to 96.5% on the posttest for a 20.4% increase in knowledge. Table 1 shows that participants' scores on all 13 questions improved, with 10 participants posting 100% correct on the posttest. The most significant improvement was for Question 7 (i.e., maximum years since quitting smoking), improving from 50% to 100% correct.

**Table 1***Pre- and Posttest Scores for Knowledge Assessment (N = 21)*

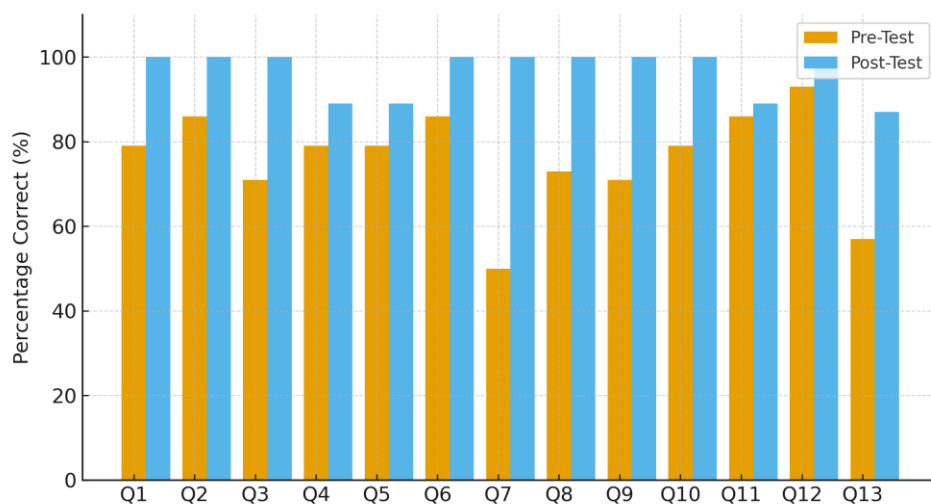
Question	Pretest <i>M</i> (%)	Posttest <i>M</i> (%)	<i>M</i> difference (%)
Q 1	79.0	100.0	+21.0
Q 2	86.0	100.0	+14.0
Q 3	71.0	100.0	+29.0
Q 4	79.0	89.0	+10.0
Q 5	79.0	89.0	+10.0
Q 6	86.0	100.0	+14.0
Q 7	50.0	100.0	+50.0
Q 8	73.0	100.0	+27.0
Q 9	71.0	100.0	+29.0
Q 10	79.0	100.0	+21.0
Q 11	86.0	89.0	+3.0
Q 12	93.0	100.0	+7.0
Q 13	57.0	87.0	+30.0

*Note.* Pre- and posttest scores represent the percentage of participants selecting the correct response for each item. Mean difference scores reflect the change from pretest to posttest.

A paired-samples *t* test confirmed that knowledge improvement was statistically significant,  $t(12) = 5.78$ ,  $p < .001$ , and was of large effect size (Cohen's  $d = 1.60$ ). The 95% confidence interval for the difference in means (12.7%–28.1%) indicates knowledge improvement in all participants. Figure 1 shows the vast knowledge improvements by comparing pre- and posttest scores across all questions.

**Figure 1**

*Comparison of Pre- and Posttest Scores by Question*



*Note.* Figure shows percentage of participants selecting the correct response for each item before and after the educational intervention.

The intervention positively impacted the project site by simplifying knowledge among clinical personnel, improving adherence to Medicare LDCT screening guidelines, and improving EMR documentation practices. The intervention facilitated team- and evidence-based practice among providers, nurses, and medical assistance and the development of a workflow supporting ongoing screening procedures. The increased knowledge base positions the project site to improve screening rates, facilitate earlier detection of lung cancer, and ultimately reduce morbidity and mortality.

The primary limitation of this project was the small sample size ( $N = 21$ ), which may limit generalizability. The short duration of the project made it unfeasible to measure the long-term retention of learning or actual changes in screening rates postimplementation. Single education session data collection is unlikely to be

representative, and repeated or multiple sessions may provide evidence regarding whether knowledge acquisition is maintained over the longer term.

The project has broad implications beyond the project site. There is underuse of LDCT screening at the national level, with fewer than 6% of patients eligible annually being screened (Poon et al., 2022). To close this national gap, standardized provider education and workflow training can be replicated in other offices in the project site system and other healthcare systems. Scaling up this initiative can promote health equity by providing evidence-based screening to patients that are at high risk for lung cancer, ultimately improving population health and reducing health disparities.

### **Conclusions**

This staff education program increased staff knowledge of Medicare LDCT screening guidelines and EMR processes, evidenced by the increase in mean scores from 76.1% on the pretest to 96.5% on the posttest. Staff demonstrated greater confidence in identifying eligible patients, completing shared decision-making, and accurately entering orders, enabling improved screening workflow and guideline adherence. Such changes have the potential to increase screening rates, promote earlier lung cancer detection, and ultimately reduce morbidity and mortality in the patient population.

The initiative recognizes the overarching role of education in empowering staff to deliver evidence-based preventative care. This project enables staff to identify high-risk patients and guide them through screening, improving population health outcomes. The project's implications for positive social change include the promotion of health equity by implementing the program in other offices in the project site system, ensuring all eligible patients receive equal access to screening services. This is especially important

for the at-risk population in the community who may face obstacles to preventative care.

Through the encouragement of an equitable, learning-based environment, the project supports activities to decrease lung cancer outcomes and enhance community health disparities.

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## Appendix A: LDCT Screen Pre-/Posttest

### LDCT Screening Pre/Post Test

1. What is the minimum Medicare recommended age group for LDCT screening?
  - A.) 45 years
  - B.) 50 years
  - C.) 55 years
  - D.) 60 years
2. What is the maximum Medicare recommended age group for LDCT screening?
  - A.) 68 years
  - B.) 78 years
  - C.) 88 years
  - D.) 98 years
3. What is the minimum smoking history (in pack-years) required for Medicare-covered LDCT screening?
  - A.) 10 pack-years
  - B.) 20 pack-years
  - C.) 30 pack-years
  - D.) 40 pack-years
4. Which of the following statements about lung cancer screening is *incorrect*?
  - A.) Detects lung cancer at an early, treatable stage
  - B.) Reduces mortality rates in high-risk populations
  - C.) Is a U.S. Preventive Services Task Force (USPSTF) Grade B recommendation
  - D.) Is recommended for all adults over age 40 regardless of smoking history.
5. In which situation would a patient **NOT** be eligible for Medicare-covered LDCT screening?
  - A.) The patient quit smoking 10 years ago
  - B.) The patient has significant comorbidities that limit life expectancy
  - C.) The patient is asymptomatic
  - D.) The patient is over 50 years old

6. A patient is 78 years old, has a 40 pack-year history, and quit smoking 10 years ago. Are they eligible for LDCT screening under Medicare guidelines?

- A.) Yes, they meet all criteria
- B.) No, they are over the age limit
- C.) No, they must be a current smoker
- D.) Yes, if they have a family history of lung cancer

7. What is the maximum number of years since quitting smoking to still be eligible for Medicare LDCT screening?

- A.) 5 years
- B.) 10 years
- C.) 15 years
- D.) 20 years

8. Which of the following statements best describes shared decision-making in LDCT screening?

- A.) It is optional before ordering the scan
- B.) It involves the patient signing a consent form
- C.) It is a structured conversation outlining benefits and risks
- D.) It is a brief discussion on the patient's smoking history

9. Which of the following is a risk associated with LDCT lung cancer screening?

- A.) Increased cholesterol levels
- B.) False-positive results
- C.) Memory loss
- D.) Hypertension

10. Where in the Cerner EMR do you initiate the LDCT eligibility form?

- A.) Vital Signs section
- B.) 'My Orders' tab
- C.) 'AdHoc' form and 'Care Recommendations'
- D.) 'Radiology Imaging' tab

11. Where in the Cerner EMR is a patient's smoking history documented?

- A.) Social history
- B.) Past medical history
- C.) Family history
- D.) Vital signs

12. How often is LDCT screening performed?

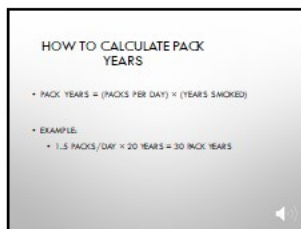
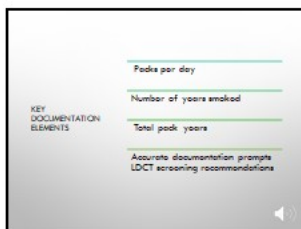
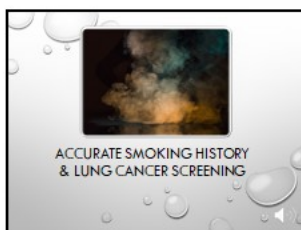
- A.) Every 3 months
- B.) Every 6 months
- C.) Every 9 months
- D.) Annually

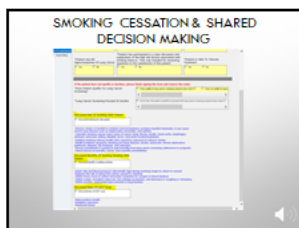
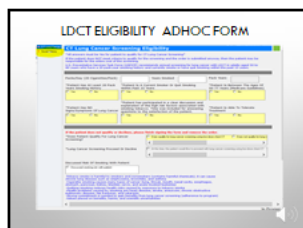
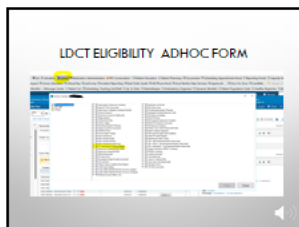
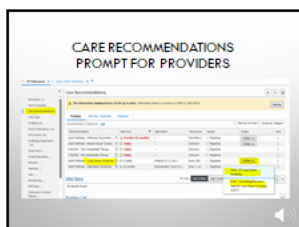
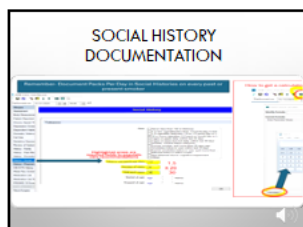
13. Within the Cerner EMR a provider can find the prompts to complete the LDCT screening eligibility form, order the LDCT screening test, and the counseling/discussion all from which tab?

- A.) Care Recommendations Tab
- B.) Patient Education Tab
- C.) Order Entry Tab
- D.) Reminders Tab

## Appendix B: LDCT Accurate Smoking History & Lung Cancer Screening

### PowerPoint





### MEDICARE REQUIREMENTS

<p><b>PATIENT</b></p> <ul style="list-style-type: none"> <li>• AGE 65-77</li> <li>• RESIDES A US (AOR) TIME PERIOD</li> <li>• CURRENT SMOKER OR QUIT SMOKING &lt;13 YEARS AGO</li> <li>• NEVER HAD A LUNG CANCER</li> <li>• NO SIGNIFICANT HEALTH CONDITIONS THAT LIMIT LUNG EFFICIENCY</li> </ul>	<p><b>PROVIDER</b></p> <ul style="list-style-type: none"> <li>• SMOKING CESSATION DISCUSSION</li> <li>• SHARED DECISION MAKING TO INCLUDE RISK AND BENEFITS</li> </ul>
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### QUESTIONS/COMMENTS

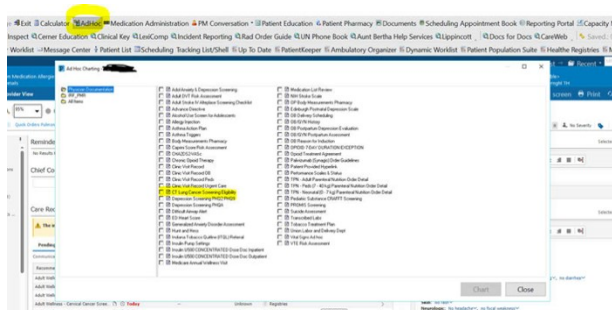
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- [U.S. PREVENTIVE SERVICES TASK FORCE \(USPSTF\), RISK-BENEFIT ANALYSIS: CHEST X-RAY FOR LUNG CANCER SCREENING IN CURRENT AND FORMER SMOKERS](#)

## Appendix C: Low-Dose CT (LDCT) Lung Cancer Screening Educational Guide for Medical Staff: Procedure for Ordering LDCT

### Step 1: Select Ad-Hoc Form

- Open patient's chart in EMR.
- Click on 'AdHoc' tab.
- Select 'CT Lung Cancer Screening Eligibility'.
- Ensure all criteria met (Yes answers required):
  - At least 20 pack-year smoking history
  - Current smoker or quit within past 15 years - Age 50-77 years
- No symptoms of lung cancer
- Has participated in clear discussion - Is able to tolerate treatment



 A screenshot of the 'CT Lung Cancer Screening Eligibility' form. The form is titled 'CT Lung Cancer Screening Eligibility' and includes the following sections:
 

- Qualification Criteria:**
  - Packs/Day (20 Cigarettes/Pack):  Years Smoked:  Pack Years:
  - \*Patient Has At Least 20 Pack Years Smoking History:  Yes  No
  - \*Patient Is A Current Smoker Or Quit Smoking Within Past 15 Years:  Yes  No
  - \*Patient Is Between The Ages Of 50-77 Years (Medicare Guidelines):  Yes  No
  - \*Patient Has NO Signs/Symptoms Of Lung Cancer:  Yes  No
  - \*Patient has participated in a clear discussion and explanation of the high risk factors associated with smoking tobacco. Time was included for answering questions to the satisfaction of the patient.:  Yes  No
  - \*Patient Is Able To Tolerate Treatment:  Yes  No
- Final Decision:**
  - \*Does Patient Qualify For Lung Cancer Screening?:  Does qualify for lung cancer screening using low-dose chest CT  Does not qualify for lung
  - \*Lung Cancer Screening Proceed Or Decline:  At This Time, the patient would like to proceed with lung cancer screening using low-dose chest CT  Decline
- Discussion:**
  - Discussed risk of smoking with patient:  Discussed smoking risk with patient

 The form also includes a detailed disclaimer at the bottom regarding the risks of smoking and the benefits of screening.

### Step 2: Shared Decision-Making & Counseling

- Discuss risks of smoking with patient
- Discuss benefits of quitting smoking with patient - Discuss risks of LDCT scan

**CT Lung Cancer Screening Eligibility**

\*Performed on: 02/27/2025 20:22 EST

\*Patient Has NO Signs/Symptoms of Lung Cancer:  Yes  No

\*Patient has participated in a clear discussion and explanation of the high risk factors associated with smoking tobacco. Time was included for answering questions to the satisfaction of the patient.  Yes  No

\*Patient is Able To Tolerate Treatment:  Yes  No

If the patient does not qualify or declines, please check **sliding the form and remove the order.**

\*Does Patient Qualify For Lung Cancer Screening?  Does qualify for lung cancer screening using low-dose chest CT  Does not qualify for lung cancer screening

\*Lung Cancer Screening Proceed Or Decline:  At this time, the patient would like to proceed with lung cancer screening using low-dose chest CT

**Discussed Risk of Smoking With Patient**

Discussed smoking risk with patient

Tobacco smoke is harmful to smokers and nonsmokers (contains harmful chemicals); it can cause chronic lung disease such as emphysema, bronchitis, and asthma. Cigarette smoking causes many types of cancer (lung, throat, esophagus, stomach, pancreas, cervix, and acute myeloid leukemia). Quitting smoking reduces health risks caused by exposure to tobacco smoke. Health problems caused by smoking are heart disease, stroke, aortic aneurysm, chronic obstructive pulmonary disease, hip fracture, and cataracts. Quitting or decreasing the amount of tobacco smoked reduces the risk of death from lung cancer screening (adherence to program). Quitting or decreasing the amount of tobacco smoked reduces the risk of death from lung cancer screening (adherence to program).

**Discussed Benefits of Quitting Smoking With Patient**

Discussed benefits of quitting smoking

Heart rate and blood pressure (abnormally high during smoking) begin to return to normal. Reduces the risk of dying from cancer caused by smoking. Within hours, level of carbon monoxide (poisonous for oxygen) in blood declines. Within weeks, circulation improves, less phlegm produced, and decrease in coughing or wheezing within months. Substantial improvements in lung function.

**Discussed Risks of LDCT Scan**

Discussed risks of LDCT scan

False positive results  
radiation exposure  
emotional stress

### Step 3: Order LDCT

- Navigate to 'Care Recommendations' in patient's chart.
- Select 'Adult Wellness - Lung Cancer Screening.'
- Click 'Orders' and choose 'CT Lung Screening (LDCT).'
- Confirm order and sign electronically.

**Care Recommendations**

The information displayed may not be up to date. Information shown is current as of FEB 27, 2025 09:25.

Recommendation	Next Due	Last Action	Recurrence	Source	Orders
Adult Wellness - Influenza Vaccination	Overdue (6 months)		One-time a.	Registries	Orders
Adult Wellness - Breast Cancer Screen.	Today		Unknown	Registries	Orders
IV/ICD - CAG Antiplatelet Therapy	Today		Unknown	Registries	
IV/ICD - DIO Antiplatelet Therapy	Today		Unknown	Registries	
Adult Wellness - Lung Cancer Screening	In 4 weeks	Ordered (In 32 days)	Every 365	Registries	Orders
Adult Wellness - Depression Screening	In 10 months	Documented (Yesterday)	Every 1 yr.	Registries	

**Vital Signs**

All Vitals **Last 1 day** **Last 1 mo**

No Results Found

Dry/Dryness 1 list

### Educational Points to Highlight with Patients

- Importance of smoking cessation.
- Early detection significantly reduces mortality.
- Risks include false-positive results, radiation exposure, emotional stress.

### For Additional Training or Questions:

Ashley McCammon FNP

## Appendix D: Program Evaluation

### Program Evaluation

Your responses and comments will help improve future educational programs. Please circle your rating on each item below:

**Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)**

Criteria	SD	D	U	A	SA
Program objectives were clearly defined.	1	2	3	4	5
All of the program objectives were met.	1	2	3	4	5
The materials were the right level of complexity for my background.	1	2	3	4	5
The course materials helped to support the program objectives.	1	2	3	4	5
The content was relevant to my needs.	1	2	3	4	5
The facilitator demonstrated a good understanding of the program materials.	1	2	3	4	5
The facilitator encouraged questions.	1	2	3	4	5
The facilitator made the subject understandable.	1	2	3	4	5
The presentation slides were clear.	1	2	3	4	5
The program content was presented clearly.	1	2	3	4	5
The time allowed for this program was right.	1	2	3	4	5
The setting was conducive to my learning.	1	2	3	4	5

**Please complete the following**

The most useful part of the education program was:

The least useful part of the education program was:

The session could have been improved by: