The three articles reprinted below and overleaf are from *different* newspapers but describe the *same* medical invesigation; it is of interest to compare the articles with respect to the reporting of the *statistical* issues involved. For comparison, the abstract of the original journal article is reprinted overleaf.

EM9602a: The Record, Kitchener, Ontario, January 2, 1996, pages A1, A2

Estrogen therapy cuts health risks, study finds

A new American study provides strong evidence that taking estrogen hormone pills provides protection against heart attacks and strokes and significantly reduces the rate of death from all causes for postmenopausal women.

The study found that women who took the pills enjoyed a 46-per-cent reduction in the rate of death from all causes, and even greater reductions in the death rate from the leading cardiovascular killers, said Dr. Bruce Ettinger, lead author of the research.

A report on the study is being published today in the American journal *Obstetrics and Gynecology.*

Ettinger said the research evaluated the medical history of 454 women born between 1900 and 1915 and compared the health outcomes of those who started estrogen hormone replacement therapy and those who did not.

About half of the group, 232, used estrogen therapy for at least a year starting in 1969. An age-matched group of non-users totalled 222. Only women who were generally healthy at the start of the data collection were selected.

All of the women in the study were members of the Kaiser Permanente Medical Care Program in Oakland, Calif.

Among those women who did not use estrogen therapy, there were 87 deaths from all causes. Among the estrogen users, there were 53 deaths.

"The overall benefit of long-term estrogen use is large and positive", the study found, noting that women who use this "relatively inexpensive drug can substantially reduce their overall risk of dying prematurely."

Overall mortality rate for users was 46 per cent below that of non-users, said Ettinger, and most of the benefit was connected to preventing heart attack and stroke, the leading killers of women.

For coronary heart disease, estrogen users had a 60-per-cent reduction in mortality risk. For other cardiovascular problems, such as stroke, the estrogen users had a 73-per-cent reduction in mortality.

The study also compared the death rate from cancer and from all other causes, and Ettinger said, "There was no statistically significant difference".

There was a slightly higher rate of breast cancer death among estrogen users, he said, but this was statistically offset by a slightly lower rate of death from lung cancer.

Other studies have analysed the effects of estrogen, but none has followed a group of women for such a long period of time, Ettinger said.

Estrogen-users in the study started taking the hormone before it was known that the drug had any major health benefits, said Ettinger.

"They were taking the drug back then to treat hot flashes caused by menopause", he said. Only later did doctors begin to recognize that estrogen had other medical benefits.

Now the hormone is being prescribed to treat or prevent a variety of conditions, including osteoporosis, a bone-thinning disorder.

EM9602b: The Toronto Star, January 1, 1996, page A1

Study finds estrogen saves lives

Death rate down 46% for women who take hormone after menopause

WASHINGTON (AP) – A new study provides strong evidence that taking estrogen hormone pills significantly reduces the rate of death from all causes for postmenopausal women and offers even greater protection against heart attacks and strokes.

The study found women who took the pills enjoyed a 46 per cent reduction in the rate of death from all causes, and even greater reductions in the death rate from the leading cardiovascular killers, said Dr. Bruce Ettinger, lead author of the research.

A report on the study is published today in the journal *Obstetrics and Gynecology.*

Ettinger said the research evaluated the medical history of 454 women born between 1900 and 1915 and compared the health outcomes of those who started estrogen hormone replacement therapy and those who did not.

About half of the group, 232, used estrogen therapy for at least a year, starting in 1969. An age-matched group of non-users totalled 222. Only women who were generally healthy at the start of the data collection were selected.

All those in the study were members of the Kaiser Permanente Medical Care Program in Oakland, Calif.

Among those women who did not use estrogen therapy, there were 87 deaths from all causes. Among the estrogen users, there were 53 deaths.

"The over-all benefit of long-term estrogen use is large and positive", the study found, noting women who use this "relatively inexpensive drug can substantially reduce their overall risk of dying prematurely."

Over-all mortality rate for users was 46 per cent below that of non-users, said Ettinger, and most of the benefit was connected to preventing heart attack and stroke.

For coronary heart disease, estrogen users had a 60 per cent reduction in mortality risk. For other cardiovascular problems, such as stroke, the estrogen users had a 73 per cent reduction in mortality.

The study also compared the death rate from cancer and other causes, and Ettinger said, there was "no statistically significant difference".

There was a slightly higher rate of breast cancer death among estrogen users, he said, but this was statistically offset by a slightly lower rate from lung cancer.

Estrogen-users in the study started taking the hormone before it was known the drug had any major health benefits.

(*continued overleaf*)

EM9602c: The Globe and Mail, January 2, 1996, page A8

Estrogen pills linked to longevity

Associated Press

WASHINGTON – A new study provides strong evidence that taking estrogen pills offers protection against heart attacks and strokes and significantly reduces the rate of death from all causes for postmenopausal women.

The study found that women who took the hormone had a 46-per-cent reduction in the rate of death from all causes, and even greater reductions in the death rate from the leading cardiovascular killers, said Bruce Ettinger, lead author of the research.

A report on the study was published yesterday in the journal *Obstetrics and Gynecology.*

Dr. Ettinger said the research evaluated the medical history of 454 women born between 1900 and 1915 and compared the health outcomes of those who started estrogen hormone replacement therapy and those who did not. About half of the group, 232, used estrogen therapy for at least a year starting in 1969. An age-matched group of nonusers totalled 222. Only healthy women were selected.

The women were all members of the Kaiser Permanente Medical Care Program in Oakland, Calif.

Among those women who did not use estrogen therapy, there were 87 deaths from all causes. Among the estrogen users, there were 53 deaths.

"The overall benefit of long-term estrogen use is large and positive", the study found, noting that women who use this "relatively inexpensive drug can substantially reduce their overall risk of dying prematurely."

Overall mortality rate for users was 46 per cent below that of nonusers, said Dr. Ettinger, and most of the benefit was connected to preventing heart attack and stroke, leading killers of women.

For coronary heart disease, estrogen users had a 60-per-cent reduction in mortality risk. For other cardiovascular problems, such as stroke, stroke, the estrogen users had a 73-per-cent reduction in mortality.

Other studies have analyzed the effects of estrogen, but none has followed a group of women for such a long period of time, Dr. Ettinger said.

Estrogen users in the study started taking the hormone before it was known that the drug had any major health benefits. "They were taking the drug back then to beat hot flashes caused by menopause", Dr. Ettinger said.

REFERENCE: Ettinger, B., Reduced mortality associated with long-term postmenopausal estrogen therapy. *Obstetrics and Gynecology* **87**(#1): January, 6-12 (1996). [DC Library electronic journal]

It is of interest to compare the newspaper articles to the *abstract* given in the original article, which is:

Objective: To compare all-cause and specific-cause mortality rates in women who had or had not used long-term postmenopausal estrogen replacement therapy (ERT).

Methods: We identified women who used long-term postmenopausal ERT and compared them with a sample of age-matched postmenopausal nonusers. Through linking of these subjects' medical record numbers to various data bases, we examined survivorship and cause of death among estrogen users and nonusers. The risk of death in 232 postmenopausal women who began ERT within 3 years of menopause and used it for at least 5 years was compared with that of 222 age-matched postmenopausal nonusers. In the users, the mean length of estrogen use was 17.1 years.

Results: Statistically significant reductions in all-cause mortality were found in users compared with nonusers. For death from any cause, the age-adjusted relative risk (RR) and associated 95% confidence interval (CI) in estrogen users was 0.54 (0.38-0.76). The reduction in all-cause mortality was largely due to reductions in coronary heart disease (RR 0.40, CI 0.16-1.02) and other cardiovascular disease (RR 0.27, CI 0.10-0.71). Overall cancer mortality was similar in the two groups (RR 0.85, CI 0.46-1.58), although estrogen users had a higher risk of death from breast cancer (RR 1.89, CI 0.43-8.36) and lower risk of death from lung cancer (RR 0.22, CI 0.04-1.15).

Conclusion: Long-term ERT use is associated with lower all-cause mortality and confers this apparent protection primarily through reduction in cardiovascular disease.

The presentation of the abstract in four *sections*, similar to stages of our PPDAC cycle, is noteworthy.