Homework Assignment for Lecture 1
Design, Subjects and Randomization
Winter 2017 Clinical Trials Course (Epi 205)
Faculty: Dennis Black, Alka Kanaya

Reading Assignment for Lecture 1

Required Reading:

- Designing Clinical Research (4th Edition), Chapter 10, pages 142-147 and Chapter 11, pages 151-158.
- Lippman S, et al. Effect of selenium and vitamin E on risk of prostate cancer and other cancers. JAMA. 2009;301(1) (doi:10.1001/jama.2008.864)
  [Note: read abstract and comment sections, review the tables and figures and skim the rest]
- Gaziano J, et al. Vitamins E and C in the prevention of prostate and total cancer in men: The Physicians' Health Study II randomized controlled trial. JAMA 2009;301(1) (doi:10.1001/jama.2008.862) [Note: read abstract; skim the rest]
- Black DM, et al. PaTH Study Investigators. The effects of parathyroid hormone and alendronate alone or in combination in postmenopausal osteoporosis. N Engl J Med. 2003;349:1207-15. [Note: read abstract]
- Section from PaTH Protocol

Homework Assignment for Lecture 1

Total score = 12 points

Assignment file: AssignL1_2017.doc
Assignment due:

- email to Tina Bhutani & Melisa Wong (UCSFClinicalTrials2017@gmail.com) by January 17, 2017; 5pm.
  - Make sure that your NAME is on the top of the document
  - Use this format to name your homework documents: LastnameFirstname_L#, for example: SmithJohn_AssignL1
  - Subject Line of email: SmithJohn_L1
- bring a copy of homework to Section I on January 26, 2017

---

1. Please read the following abstract and answer the questions below:

Family Practice 2010; **27**:135–142
doi:10.1093/fampra/cmp094
Advance Access published on 23 December 2009

A primary care pragmatic cluster randomized trial of the use of home blood pressure monitoring on blood pressure levels in hypertensive patients with above target blood pressure

Marshall Godwin[a,*], Miu Lam[b], Richard Birtwhistle[c], Dianne Delva[d], Rachelle Seguin[e], Ian Casson[c] and Susan MacDonald[c]

[a]Family Medicine, Memorial University of Newfoundland, St. John's, [b]Department of Community Health and Epidemiology Kingston, [c]Family Medicine, Queen's University, Kingston, [d]Family Medicine, Dalhousie University, Kingston, and [e]Department of Family Medicine, Queen's University, Kingston, Canada.
*Correspondence to Marshall Godwin, Primary Healthcare Research Unit, Room 1776, 300 Prince Philip Drive, St. John's, NL Canada A1B 3V6; E-mail: godwinm@mun.ca

Received 9 March 2009; Revised 22 October 2009; Accepted 30 November 2009.

Background. The measurement of blood pressure (BP) at home by patients with hypertension is increasingly used to assess and monitor BP. Evidence for its effectiveness in improving BP control is mixed.

Methods. To determine if home BP monitoring improves BP a pragmatic cluster randomized contolled trial was carried out in family practices in southeastern Ontario, Canada. Family practice patients with uncontrolled hypertension were recruited to the trail. Patients were divided into two groups: one with at least weekly measurements of BP at home, recording those measurements and showing those to the family physician during office visits for hypertension and the control group were given usual care. The primary outcome was mean awake BP on ambulatory monitoring at 6- and 12-month follow-up and the secondary outcomes were mean BP on full 24-hour ambulatory blood pressure monitoring (ABPM), mean sleep BP on ABPM and BP on the BpTRU device, all at 6- and 12-month follow-up.

Results. Home BP monitoring did not improve BP compared to usual care at 12-month follow-up: mean awake systolic BP on ABPM [141.1 versus 142.8 mmHg, mean difference 1.7 mmHg; 95% confidence interval (CI) –0.6 to 4.0, $P = 0.314$] and mean awake diastolic BP on ABPM (78.7 versus 79.4 mmHg, mean difference 0.7 mmHg; 95% CI –7.7 to 9.1, $P = 0.398$). Similar negative results were obtained for men and women separately. However, outcomes using the full 24-hour ABPM and the BpTRU device showed a significantly lower diastolic BP at 12 months. When analysis was done by sex, this effect was shown to be only in men.

Conclusion. Home BP monitoring may improve BP control in men with hypertension.

Keywords. Home blood pressure monitoring, hypertension, pragmatic randomized trials, primary care.

From the methods section of this abstract:

> *Randomization*
> Cluster randomization was conducted. After all the physician's eligible consenting patients had baseline data collected, the physician and all his participating patients were randomized as a cluster to either the intervention arm or the control arm of the study. The research assistant (RA) collecting the baseline data contacted the project coordinator to determine

a. What is the type of randomized trial and what is the unit of randomization? (1 pt)

b. Describe the intervention vs. the control (1 pt)

c. How could this study have been designed to use a standard parallel group design (i.e., randomization of individual patients)? (1 pt)

d. For this study, what are some advantages of this design compared to randomizing individual patients? Name at least 2. (2 pts)

e. What are some disadvantages of clustered randomization in this trial? Name at least 1. (1 pt)

---

2. Please read the following abstract and answer the questions below:

BACKGROUND: Nut consumption lowers cardiovascular disease (CVD) risk. Studies are lacking about the effects of pistachios, a nutrient-dense nut, on CVD risk factors, dose-response relations, and lipid-lowering mechanisms.

OBJECTIVE: We evaluated the effects of 2 doses of pistachios, added to a lower-fat diet, on lipids and lipoproteins, apolipoprotein (apo)-defined lipoprotein subclasses, and plasma fatty acids. To investigate the mechanisms of action, we measured cholesteryl ester transfer protein and indexes of plasma stearoyl-CoA desaturase activity (SCD).

DESIGN: In a randomized crossover controlled-feeding study, 28 individuals with LDL cholesterol > or = 2.86 mmol/L consumed 3 isoenergetic diets for 4 wk each. Baseline measures were assessed after 2 wk of a typical Western diet. The experimental diets are as follows:

a. A lower-fat control diet with no pistachios
b. 1 serving/d of a pistachio diet (1 PD; 10% of energy from pistachios)
c. 2 servings/d of a pistachio diet (2 PD; 20% of energy from pistachios).

RESULTS: The 2 PD decreased ($P < 0.05$ compared with the control diet) total cholesterol (-8%), LDL cholesterol (-11.6%), non-HDL cholesterol (-11%), apo B (-4%), apo B/apo A-I (-4%), and plasma SCD activity (-1%). The 1 PD and 2 PD, respectively, elicited a dose-dependent lowering ($P < 0.05$) of total cholesterol/HDL cholesterol (-1% and -8%), LDL cholesterol/HDL cholesterol (-3% and -11%), and non-HDL cholesterol/HDL cholesterol (-2% and -10%).

CONCLUSIONS: Inclusion of pistachios in a healthy diet beneficially affects CVD risk factors in a dose-dependent manner, which may reflect effects on SCD. (Gebauer, et al. Am J Clin Nutr. 2008;88:651-9).

---

a. What is the study design? (1 pt)

b. How could the investigators have designed this trial as a randomized, controlled, blinded, parallel groups clinical trial? (2 pts)

c. What are the advantages of this study design for this study vs a parallel groups design (2 or more) (2 pts)?

d. What are the disadvantages of the study design vs a parallel groups design (at least one) (1 pt)?