Chronic Debilitating Conditions in Women: the Heart of the Matter

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No Conflicts of Interest

Heart disease is number 1 killer- also causes extensive morbidity

- And what about numbers 2, 3, 4, 5 and so on?
  - Cancer
  - Diabetes
  - Depressive Disorders
  - Autoimmune diseases
  - Headache (e.g.migraine)
  - Muskuloskeletal disorders
  - Alzheimers

The list is long

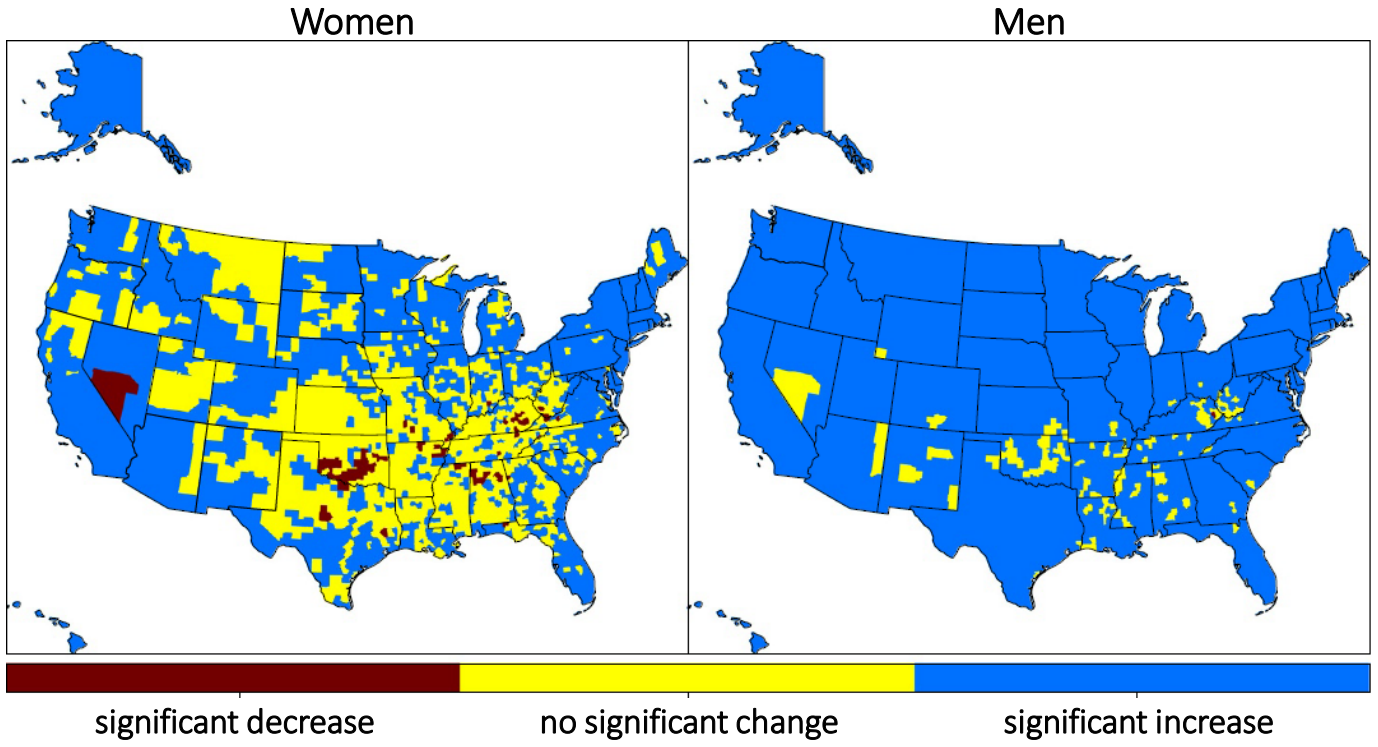
Condition Type	Condition (2019 DALY)								
Female Specific	Cancers of the female reproductive tract* (900,843)	Dys-menorrhea/ Menstrual Abnormalities (289,608)	Fibroids* (64,009)	Endometriosis * and Adenomyosis (53,777)	Infertility*/ Early Pregnancy Loss (26,355)	Polycystic Ovarian Syndrome (42,738)	Pelvic floor disorders, Organ prolapse (21,613)	Menopausal symptoms Pelvic Inflammatory Disease* Vulvodynia/Chronic gynecologic pain disorders – pelvic and vulvar Vaginosis	
More Common in Women/ Higher Morbidity for women	Depressive Disorders (1,704,524)	Migraine/ Headache (1,573,325)	Breast cancer* (1,387,670)	Sexually transmitted infections (37,316)	Rheumatoid Arthritis* (187,902)	Autoimmune diseases (*including RA) •SLE* •Sjögren's Syndrome* •Scleroderma*	Temporomandibular Muscle/Joint Disorder (TMJD) Chronic Fatigue Syndrome* Fibromyalgia* Candidiasis Post-traumatic stress Irritable Bowel syndrome HPV infection Osteoporosis Fibromyalgia		
Occur in both sexes, higher morbidity/ potentially neglected in women	Unintentional Injuries (including intimate partner violence*) (2,050,026)	Alzheimers/ Dementia* (1,296,376)	Osteo-arthritis (1,257,042)	Endocrine, metabolic, blood, and immune disorders (853,247)	Recurrent UTI/ Interstitial Nephritis (201,529)	Multiple Sclerosis (143,123)	HIV (118,596)	Contraception- Exogenous hormone use- Neuropathy Overactive bladder/Incontinence Chronic pain including chronic pelvic pain	
High morbidity for women	Musculo-skeletal disorders (8,170,164)	Cardio-vascular Disease (7,538,622)	Mental Health (4,164,912)	Chronic respiratory diseases (3,643,271)	Substance Use Disorders (2,736,126)	Stroke (2,098,900)	Diabetes (2,010,853)	Chronic Kidney Disease (1,105,286)	Obesity/metabolic disease Comorbidity with aging

*Per MCS-WH reporting guidance, the following RCDC disease categories are particularly relevant to women's health

Problem

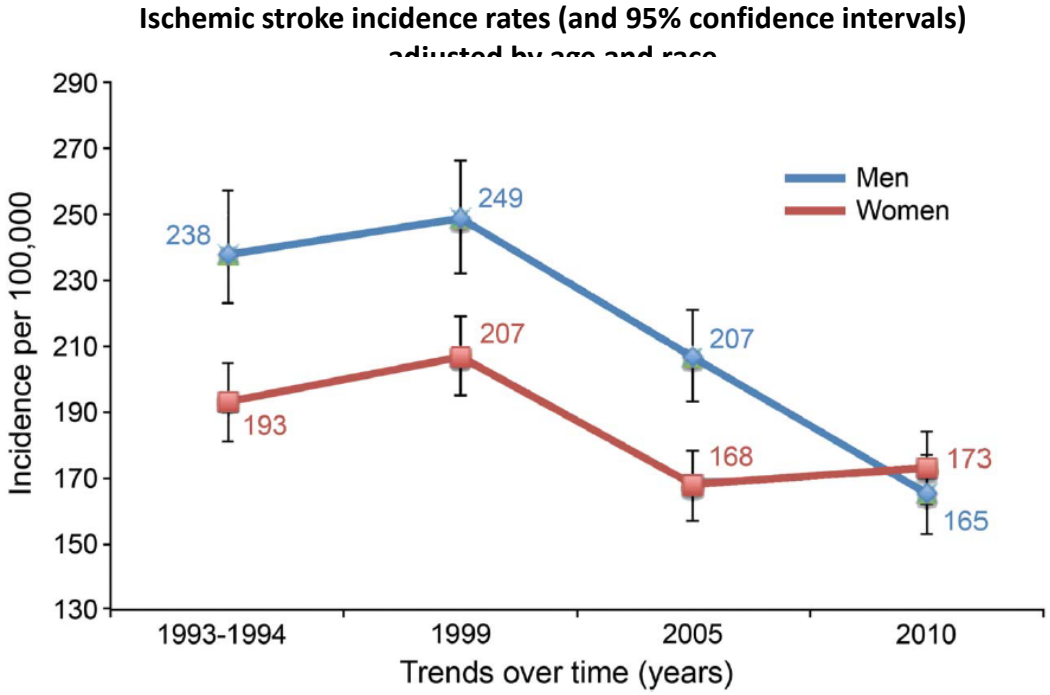
- Women's health is still very understudied
  - Treatments still based on data in men
  - Few sex specific treatment guidelines
  - In some cases progress is slowing or being reversed

From 1985 to 2010, gains in life expectancy occurred in fewer U.S. counties for women than men



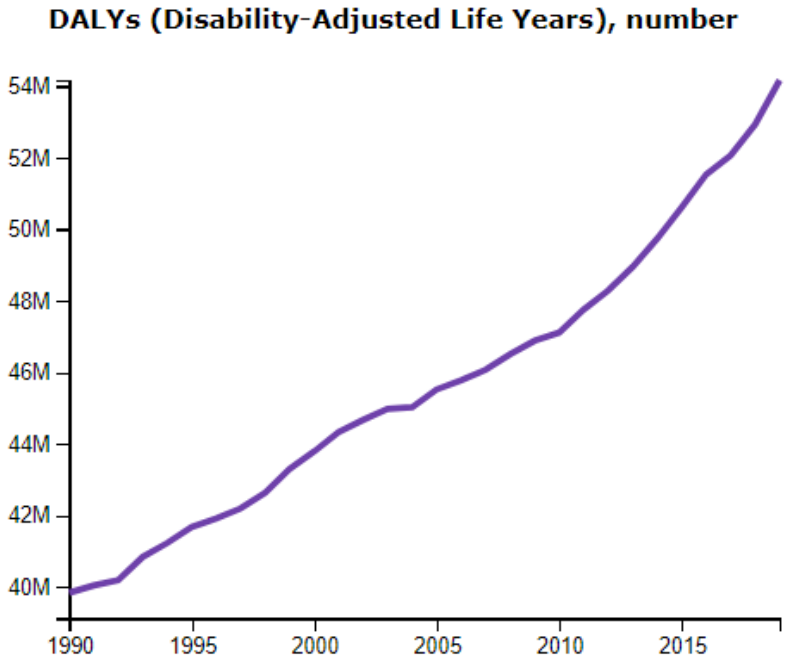
Wang et al. 2013. Left behind: widening disparities for males and females in US county life expectancy, 1985–2010. *Population Health Metrics* **11**: 8.

From 1993/94 to 2010, risk of stroke declined for men but not women



Madsen et al. 2017. Sex-specific stroke incidence over time in the Greater Cincinnati/Northern Kentucky Stroke Study. *Neurology* **89**: 990-996.

Rising rates of chronic debilitating conditions in women



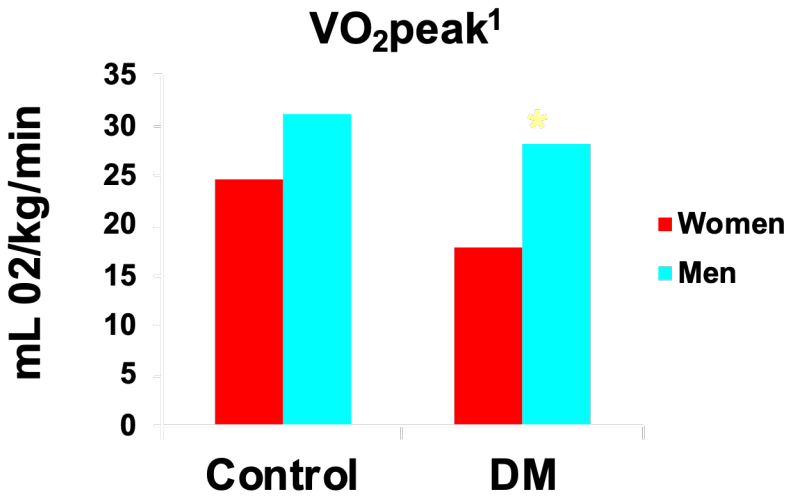
DALYs Definition:

DALYs = Disability Adjusted Life Years
The sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.

IHME GHDx

NIH National Institutes of Health
Office of Research on Women's Health

Impact on QOL is profound:
Exercise Tolerance Is Less in Women Than in Men with Type 2 diabetes



	Nondiabetic Women (*n*=21)	Women with T2D (*n*=15)	Nondiabetic Men (*n*=13)	Men with T2D (*n*=14)
Peak exercise test[2]				
VO_{2peak} (mL min^{-1})	1764.5 ± 400.0	1370.3 ± 154.4*,**	2462.1 ± 495.7	2257.4 ± 408.1***
VO_{2peak} (mL kg^{-1} min^{-1})	22.4 ± 5.2	18.0 ± 2.4*,**	28.1 ±7.4	24.3 + 6.0*
Peak RER	1.21 ± 0.07	1.17 ± 0.06	1.19 ± 0.07	1.22 ± 0.10
Tau 2 (s)	31.5 ± 11.9	37.1 ± 17.1	34.8 ± 9.2	45.1 ± 17.9***

*** = p <0.05**

Regensteiner and Reusch, MSSE 2015
Regensteiner and Reusch, J Phys 2021
Kobayashi et al, Am J. Cardiol, 2021,

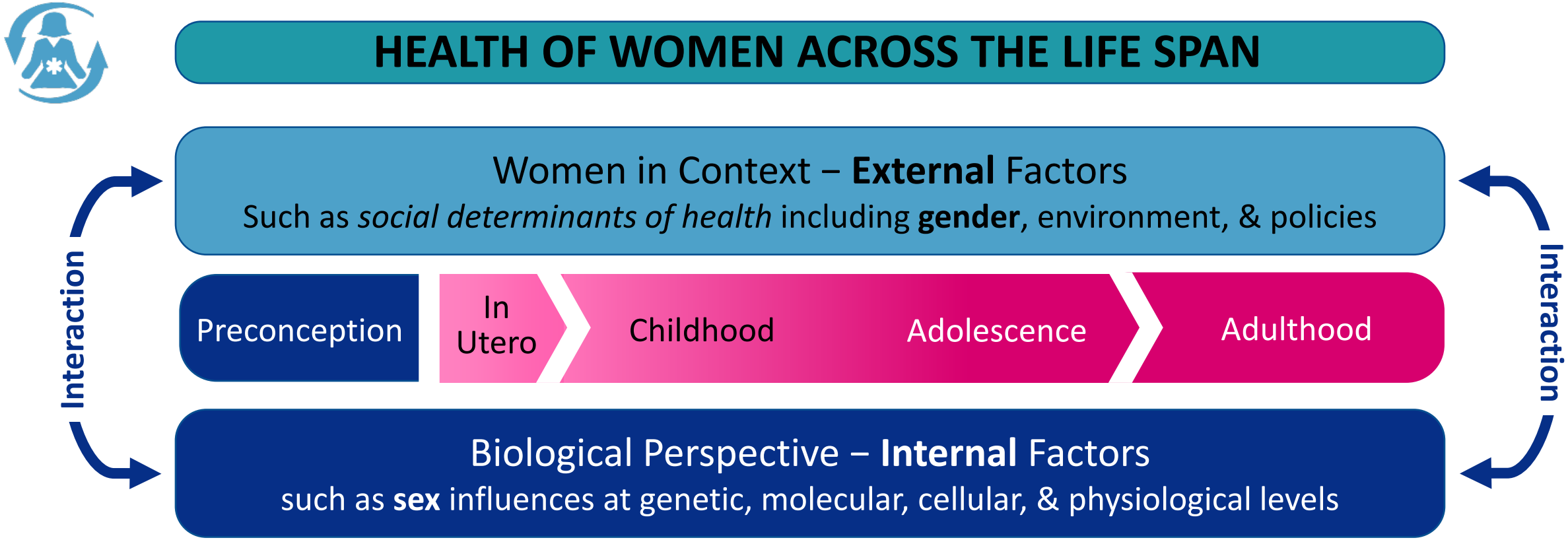
Modulating Considerations

- Intersectionality
- Life Course
- Sex vs Gender
- Multimorbidity

Need to consider intersectionality

- There is even less known about women of color- need additional studies.
- Women of color, older women have higher rates of chronic conditions than white women, younger women; Few health disparity-focused studies relevant to diverse populations of women across the life course

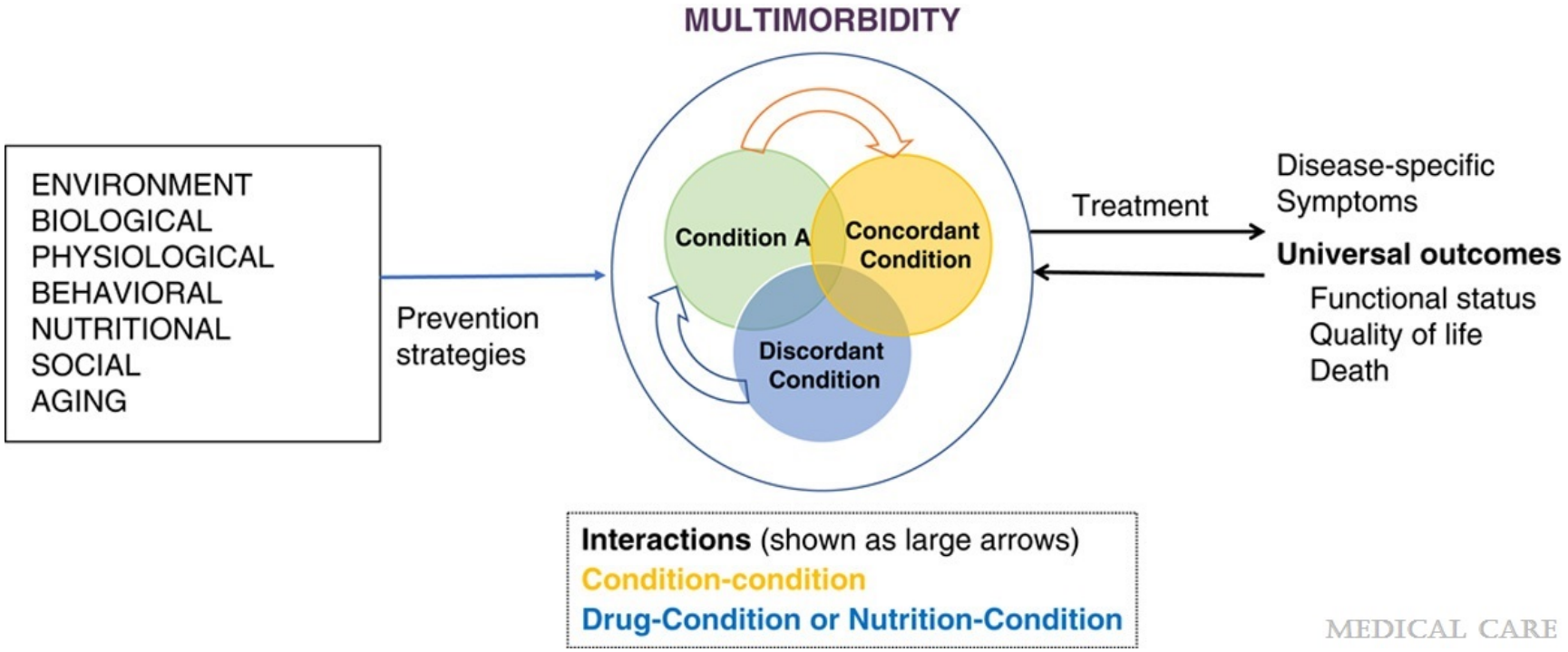
Multidimensional Framework represents intersection of factors affecting the health of all women



Influences of sex and gender

Figure taken from CIHR infographic

Conceptual Model of Multimorbidity



National Institutes of Health Advancing Multimorbidity Research Salive, Marcel E.; Suls, Jerry; Farhat, Tilda; Klabunde, Carrie N., Medical Care59(7):622-624, July 2021. doi: 10.1097/MLR.000000000000156,

Slide taken from NIDA presentation to ORWH.

Complex picture and so much remains unknown

- Need to know much more in order to provide evidence-based
  - Prevention
  - Treatment
  - Cure
- Research is needed- call to action for all of these diseases and conditions to reduce chronic debilitating conditions.
- Compelling clinical questions need to be answered.

Possible solutions/pathways

- Create infrastructure for research on health of women at NIH.
  - Common Fund for Women's Health
  - Other NIH-wide Women's Health Initiatives
  - ORWH should become a center (or even an institute) with grant-making authority
  - ORWH should work with NAS to define chronic diseases in women
- Partnership with the national professional and lay communities
  - Promote interprofessional and lay community-facing education on women's health.
  - Fund-raising with the community
- Continue and accelerate building the workforce of women and men, MD and PhD scientists who will do the critical research

Role of NIH

- NIH provides hope and promise for biomedical progress for the health of women-
  - Funding for women's health research and the workforce needs to increase across the organization
  - Enormous power to mobilize research efforts on behalf of the health of women and effect change.
- Scientists need to work within NIH as well as across the country to:
  - Do the research, however complex
  - Research will
    - Lead to preventions, treatments and cures
    - Lead to sex specific guidelines where needed

Summary

- Chronic debilitating diseases are very common and contribute greatly to poor morbidity, mortality, function and quality of life in women
- However, these diseases remain understudied.
- Need for greater research focus on these diseases
- NIH can lead the way
  - Fund more research on the health of women
  - Clear state the importance of this work by making ORWH a Center or an Institute.