## Key Components
- Candidate
- Career development plan
- Research plan
- Mentor’s statement
- Environment and institutional commitment

## Identifying a Mentor
- Has achieved national recognition for his/her research
- Track record of mentoring other successful early-stage investigators
- Provides timely feedback on manuscripts and grants
- Promotes trainee’s national reputation
- Allows trainee to take credit for his/her successes

## Candidate
- Demonstrate your commitment to a research career (discuss your career goals)
- Provide evidence of your potential to develop into independent investigator (highlight your accomplishments)
- Usually must commit at least 50%-80% effort to research program and training
- Often includes letters of recommendation addressing your potential for a research career

## Example of Career Goals
- The applicant’s long-term goal is to develop a career as an independent investigator in aging research with a primary focus on…(fill in the blank)
- Immediate goals are:
  - To study care fragmentation in older patients who receive care in multiple settings
  - To obtain additional methodologic expertise with formal coursework
  - To participate in a team research environment, learning all aspects of health services research in aging

## Career Development Plan
- Didactic training (typically decreases over time)
- Supervised research experience (typically increases over time with transition to independence)
- Tailored to needs of individual candidates and concordant with career goals and prior experience
- Advanced degree is a means to an end
- Describe “x”-year training program (be specific, plan to acquire new skills/techniques)
- Outline a plan in which you assume increasing independence (publications and future grant submissions)
- Provide time-line and break-down of effort (be ambitious, but realistic)

## Research Plan
- Specific aims
  - Should clearly articulate what you are trying to accomplish and why
  - Subsequent sections must flow logically
  - Highlight gap in knowledge
  - Provide overall objective, followed by more narrowly focused primary and secondary aims
  - Include at least one testable hypothesis
  - Define critical terms
- Research strategy
  - Significance
- Describe scope and significance of study problem
- Review relevant literature, highlighting potential gaps and limitations of prior research
- Link each subsection to the proposed research
- When applicable, include published reports of potential reviewers
- Present conceptual model (example infographic)
- **Innovation**
  - Does application challenge or seek to shift current research or clinical practice paradigms?
  - Are novel concepts/approaches/methods/instrumentation/interventions employed?
  - Do not simply reiterate the significance
- **Approach, including preliminary results**
  - Describes plan to accomplish the specific aims to proposed research
  - Provide information: research design, study population, data collection procedures and instruments, key variables, analytic plan (including sample size and power calculations)
  - Justify all important decisions
  - Consult biostatistician for complicated analyses
  - Highlight specific rigor (quality of data, including reliability and validity) and generalizability of anticipated findings
  - Include detailed timeline, denoting projected start and completion of important study tasks (should not be unrealistic or overly ambitious)

**Preliminary Results**
- Describe published and unpublished studies
  - Establishes competence and experience in relevant content area
  - Demonstrates capacity to successfully complete research project and present results in clear and thoughtful manner
- May describe relevant work completed by mentor or important collaborator
- Indicate relevance to proposed research

**Mentor’s Statement**
- Mentor’s qualifications and areas of expertise
- Nature and extent of planned supervision/mentoring
- Primary mentor (captain of the ship)
- Other mentors (content, methods, career development)

**Environment and Institutional Commitment**
- Document strong, well-established research and training program
- Letter from department chair or equivalent
  - Commitment to candidate’s development into independent investigator
  - Assurance that candidate will have sufficient protected time for training and research
  - Faculty appointed is not contingent on receipt of award
  - Availability of adequate resources, e.g. office, lab, administrative support, etc.

**Optimizing Success (ABCD’s)**
- Allow sufficient time, e.g. 6 months
  - Revise, revise, revise
  - Get feedback from colleagues, mentor
  - Do not submit prematurely
  - Allow time for Grants and Contracts
- Be hypothesis-drive
- Clearly state what impact your work will have on a field
- Don’t be overly ambitious
Always include preliminary data
Be considerate of reviewers
  - Use readable fonts and leave some white space
  - Minimize abbreviations
Convey your excitement and enthusiasm
Discuss data interpretation and alternative hypotheses
Ask a successfully funded researcher to critique your grant proposal before you submit it
Be organized
  - Use headings and diagrams to help reviewers get oriented
Call program officer (NIH)
Don’t be discouraged by rejection
Proposal should be easy to read and understand
  - Logical, clear, internally consistent
  - Cross-reference
Repeat same information, ideas, or themes in consistent way throughout proposal
  - Have section in methods for each specific aim
  - Repeat the aim verbatim at beginning of that section
Neatness counts
  - Avoid misspellings, grammar errors, and mistakes in references
Obtain copies of successful grants
Read instructions carefully

Useful Resource

“Hearing Loss and the Healthcare System”: A K23 Story
Mentee: Nick Reed
  - His background
What changed?
  - Sensory loss has been associated with delirium
  - Focusing in on hearing loss…
    - Case of delirium: 35-year-old, male, Von Hippel-Lindau (Tumors on spine, brain, lungs), recent MI, Neurologically normal
Enter Mentor Esther Oh
  - Expert in delirium and dementia
  - Decided to do something on hearing and healthcare
Preparing the Grant
  - Grant writing training
    - Graduate training in clinical investigation (PhD program)
    - Two grant writing courses (quarter 2 and quarter 4) separated by intense methodology courses
      - Conceptually: writing the framework and then filling in the approach with the appropriate course sequence
    - Lots of feedback from peers without any experience in your field
  - First draft completed after course
  - Key moment here was “slowing down!”
    - we didn’t have the preliminary data or strong outcomes identified (infographics for hearing loss and health care expenditures and utilization) came back to this data for the grant
    - the mentorship team was not thoughtfully put together
    - Dr. Oh “Submit this as if it’s going to be funded on the first try”
  - Planning a patient-provider communication QI (figures from grants shown)
- IOM 2001: patient-provider communication is a cornerstone of patient-centered care
  - “…care that is respectful of and responsive to individual patient preferences, needs, and value…”

### Conceptual Framework
- Showed flowchart/infographic (exposure, mediators, immediate outcomes, long-term outcomes)

### K23 Aims
- Aim 1: to investigate the association between hearing loss, communication impairment, and hearing aid use with health care outcomes in older adults in epidemiologic cohorts
- Aim 2: to characterize incidence of delirium among hospitalized older adults with and without hearing loss
- Aim 3: to refine and assess the feasibility and acceptability of implementing a comprehensive hearing loss screening and intervention program to improve care outcomes in the inpatient setting
- K23 is more than science…

### Story Telling
- A key aspect of writing the candidate background was telling a linear story that showed there was scientific competence and personal drive to move into this area of work
  - The preliminary studies were a key component of this

### Goal Setting
- Break into short term (1-5 year) and long term (6-10 year)
  - Short term: what will this grant provide me with (training oriented)
  - Long term: where can I go with the foundation from this grant (science oriented)
- Use SMART goal techniques (achievable, action-verbs)
- Parallel structure to didactic component of the grant

### Networking
- Primary mentors (2) and co-mentors (4)

### Mentor Team
- Spelling out exact responsibilities and how they relate to the grant was important
- Share the load across mentors!
- Shows an example
- Included roles in the training plan

### Aim 1
- Successfully added hearing measures to ARIC and NHATS studies
- Literature published suggesting hearing loss associated with reduced health literacy, reduced satisfaction with healthcare, changes in help-seeking behaviors, and unmet health needs
- Shows tables infographics from papers (in relation to all aims)

### COVID Impact

### Successful Relationship
- Different perspectives from different backgrounds
- Regular communication
- Introduction to network
- Dr. Oh has a knack for knowing when to push and giving space

### Questions and Answers