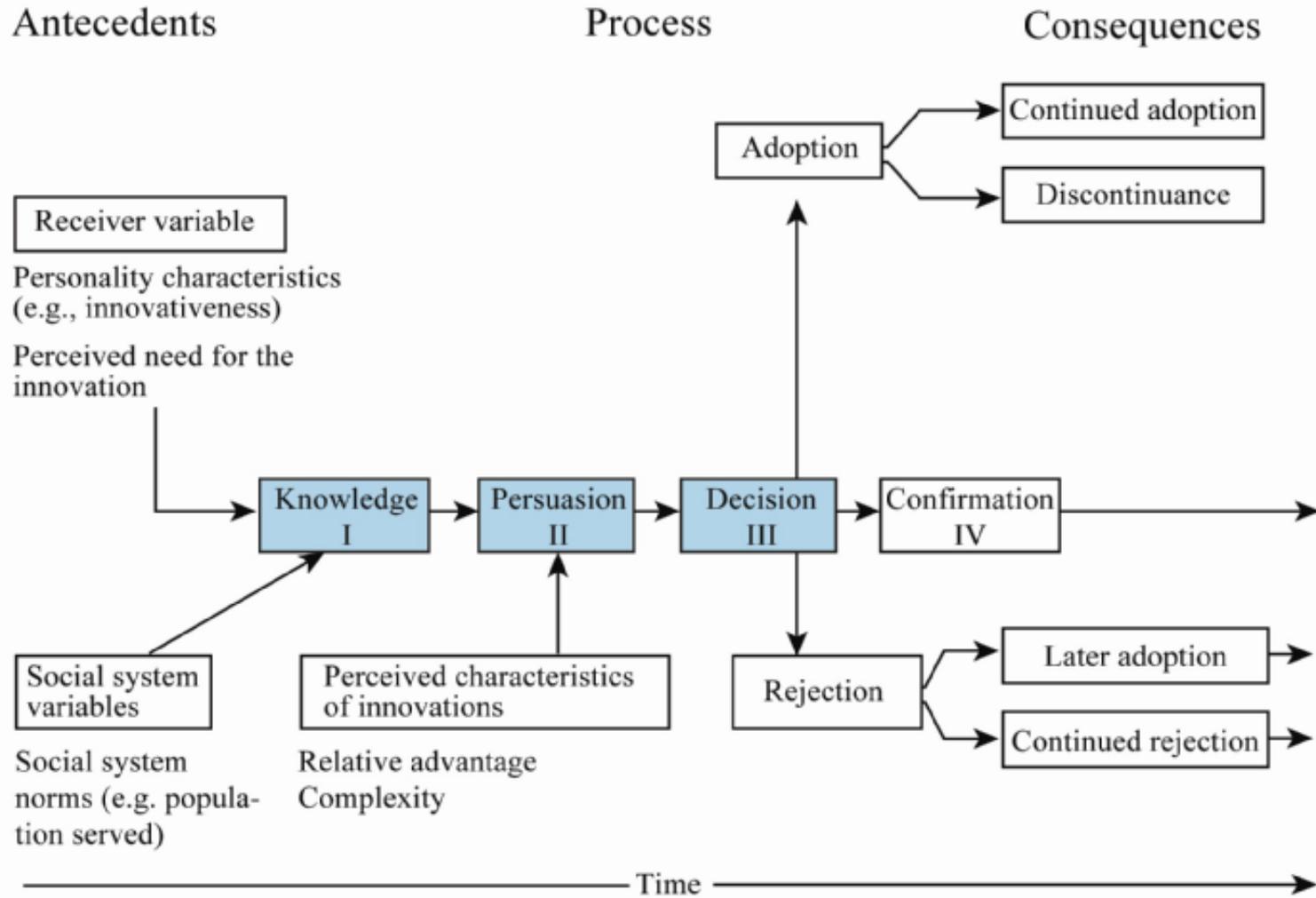


MINC Model

**Kathleen Calzone, PhD, RN, APNG, FAAN
Center for Cancer Research,
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National Cancer Institute**

Rogers Diffusion of Innovations



Reasons for Limited Progress

- Top down approach does not engage the end user
 - Limited outcome evidence
- Relevance of genomics to practice is not fully appreciated
 - Knowledge deficits persist
 - No trialability/observability
- Previously existing competencies were long, not realistically achievable given packed curricula and busy professionals with limited time for CE
- Insufficient numbers of faculty/CE educators prepared to teach this content
- Accrediting bodies did not consider genomics in their evaluations
- State Boards and certifying groups are inconsistent in requiring evidence of genomic competency as part of licensure, re-licensure, or certification

Accelerating Innovation Diffusion Using Opinion Leaders (Champions)

- Inclusion and support of respected members or organization opinion leaders
 - Peer influence
 - Peer education
 - Peer networks
- Use of Opinion leaders has been shown to accelerate adoption of evidence-based practices has been shown to accelerate change

Valente, TW, Davis, RL. (1999). Accelerating the Diffusion of Innovations Using Opinion Leaders. *The ANNALS of the American Academy of Political and Social Science* 1999 566: 55

Valente TW, Pumpuang P. (2007). Identifying opinion leaders to promote behavior change *Health Educ Behav.* 34(6):881-96

Method for Integrating a New Competency into Practice (MINC): Aims

- Develop, implement and evaluate a year-long genomic education program to train, support, and supervise institution administrator and educator **dyads** to increase nursing capacity to integrate genomics
 - Expand the Global Genetics and Genomics Community to support education initiatives
- Evaluate institutional nursing workforce attitudes, practices, receptivity, confidence and competency in genomics of common disease and utilization of family history
 - Establish GGNPS reliability using test/retest methods to further refine the instrument
- Describe the impact of study participation on policies that support genomic integration including privacy/confidentiality, research, and electronic health records

Methods

➤ Instrument

- Genetic/Genomic Nursing Practice Survey
 - Attitudes, receptivity, confidence, competency, knowledge, decision, adoption, demographics
 - Format-multiple choice, dichotomous yes/no, Likert scale
 - Focus on genomics of common disease and family history
- Online using SurveyMonkey™
- Baseline survey July-August 2012
- Post intervention survey July-August 2013
- 4 weeks to complete
- Eligibility-all registered nurses

Calzone, K., et al. (2014). Introducing a new competency into nursing practice. *Journal of Nursing Regulation*, 5, 40-47.

Calzone, K., et al. (2016). Test-Retest Reliability of the genetics and genomics in nursing practice survey instrument. *Journal of Nursing Measurement*, 24, 54-68.

Intervention Methods

- Baseline education content
 - Champion Kick-off meeting
 - Study orientation
 - Relevancy of genomic information to clinical, policy, regulatory, and delivery infrastructure
 - Core genomic knowledge
- Ongoing education and support
 - Dyad personal needs assessment
 - Ongoing education and support targeted to the identified group learning needs
 - Monthly conference calls
 - Dyad presentations
 - Group discussion

Intervention Methods

➤ Institutional Action Plans

- Institutional Action Plan
 - Personal development needs, policy and education assessments
 - Objectives, strategies or methods to achieve aims
 - Timeline allocated to accomplish tasks
- Virtual site visits and quarterly action plan reports
 - Monitor institutional progress
 - Obstacles encountered in achieving their objectives
 - Strategies to overcome those obstacles

Population

Intervention Group

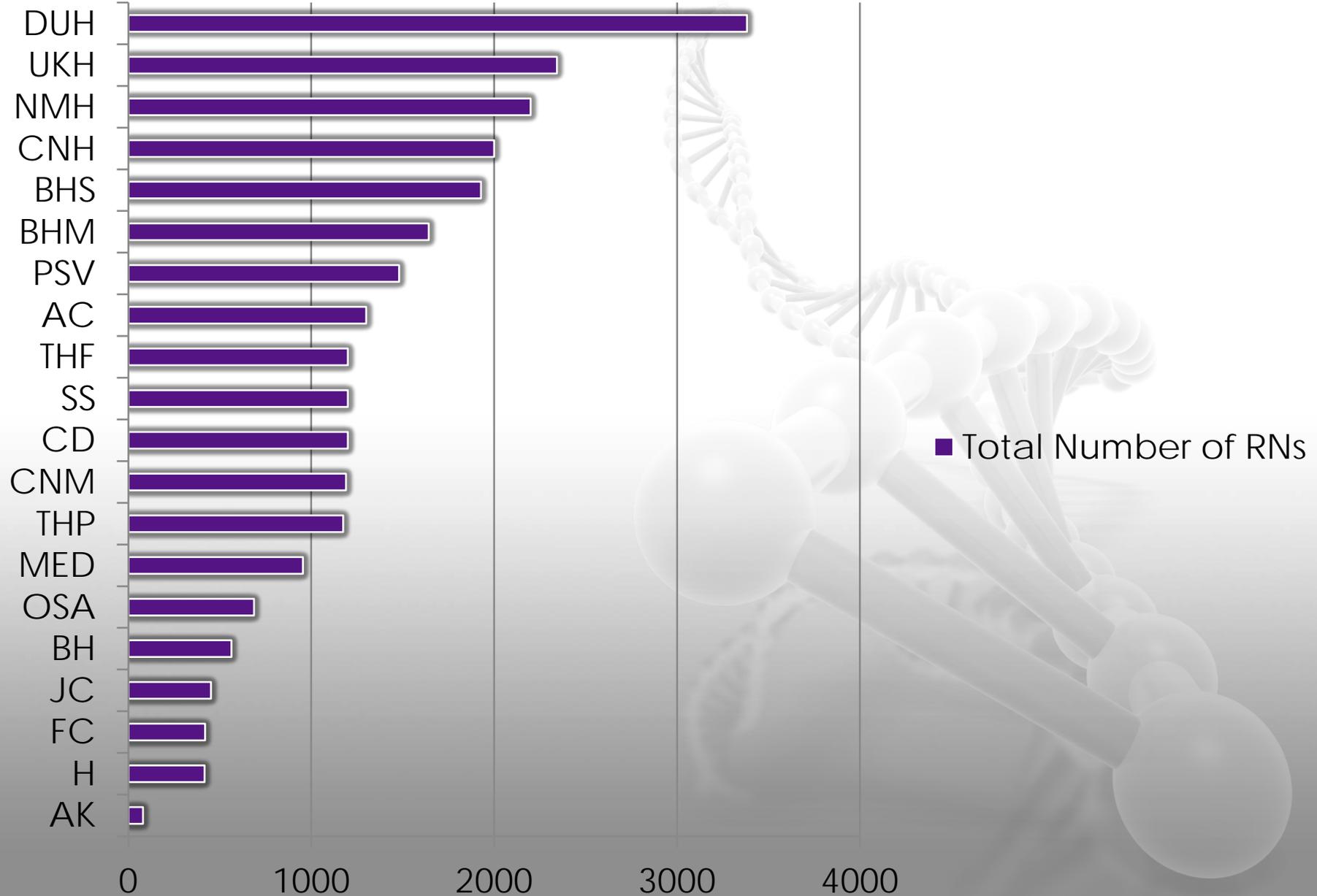
- 21 Magnet Recognition Program® Designated Hospitals from 18 States
 - 1 rural Hospital
 - 3 Children's Hospitals
 - 1 VA Hospital
 - 1 Cancer Center
 - 1 Psychiatric Hospital
- Number of nurses employed ranged from 80-3382

Control Group

- 2 Magnet Recognition Program® Hospitals
 - 2 additional states



Number of Nurses Intervention Hospitals



Baseline Intervention Survey Population

Overall Response Pre

- 29 did not answer institutional affiliation so were excluded from analysis
- 17-63% Range of hospital specific response rates
- 12 excluded from analysis because they were not a registered nurse
 - 7 LPNs
 - 5 non-RNs

Final Response for Analysis N=7,306/25,630

- 29% Overall average response rate

Post Intervention Survey Population

Overall Response Post

- 111 did not answer institutional affiliation so were excluded from analysis
- 19-70 % Range of hospital specific response rates
- 31 excluded from analysis because they were not a registered nurse
 - 9 LPNs
 - 22 non-RNs

Final Response for Analysis N=7,813/25,814

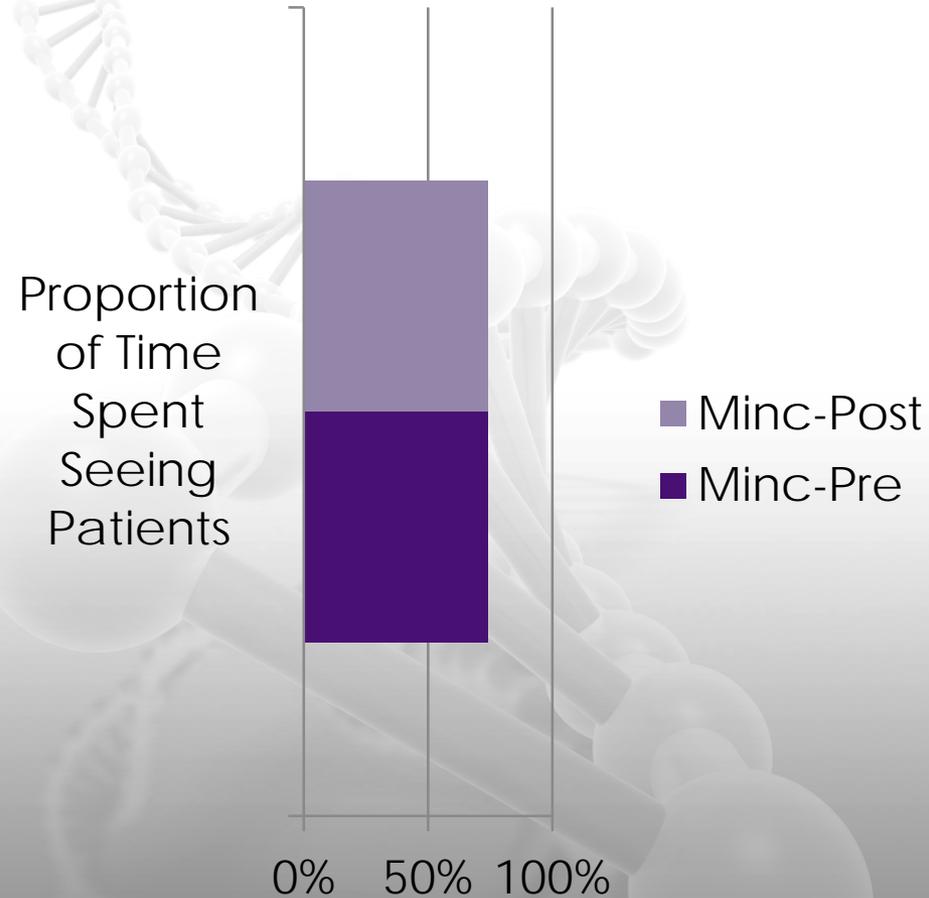
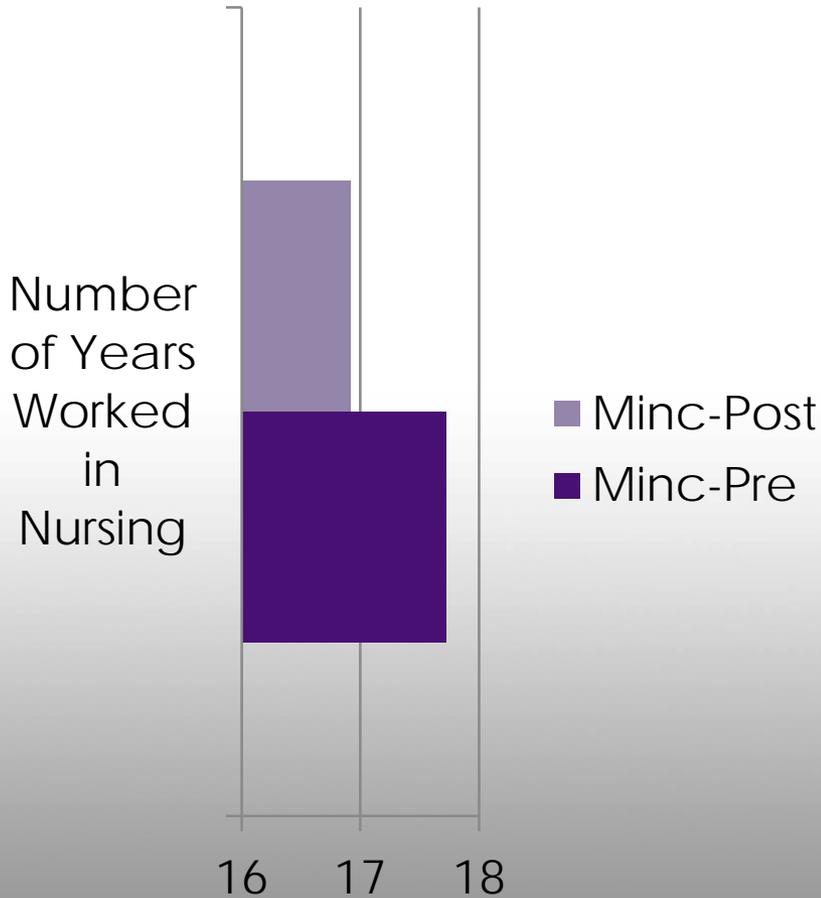
- 30% Overall average response rate

Clues to Educational Needs

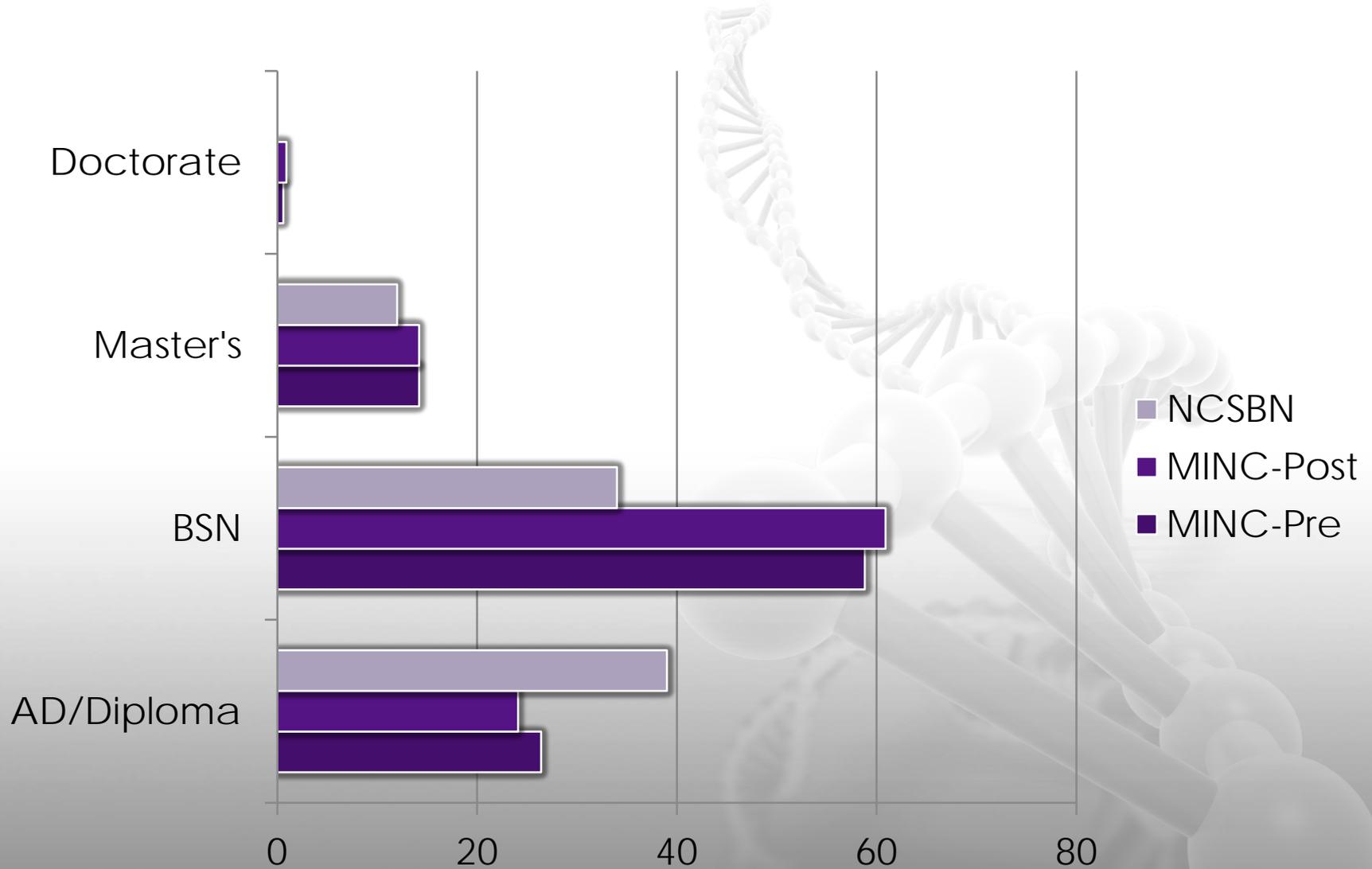
Most:

- Indicate a potential disadvantage to integrating genomics into practice was that it would increase insurance discrimination
- Felt that genetics could increase patient anxiety about risk, despite behavioral studies in many conditions indicating that most patients do well with genetic information
- Felt genetics is not reimbursable or too costly
- Feel genetics is important BUT do not think that senior staff feel it is important to their role
- Are willing to learn more, and are willing to do so on their own time

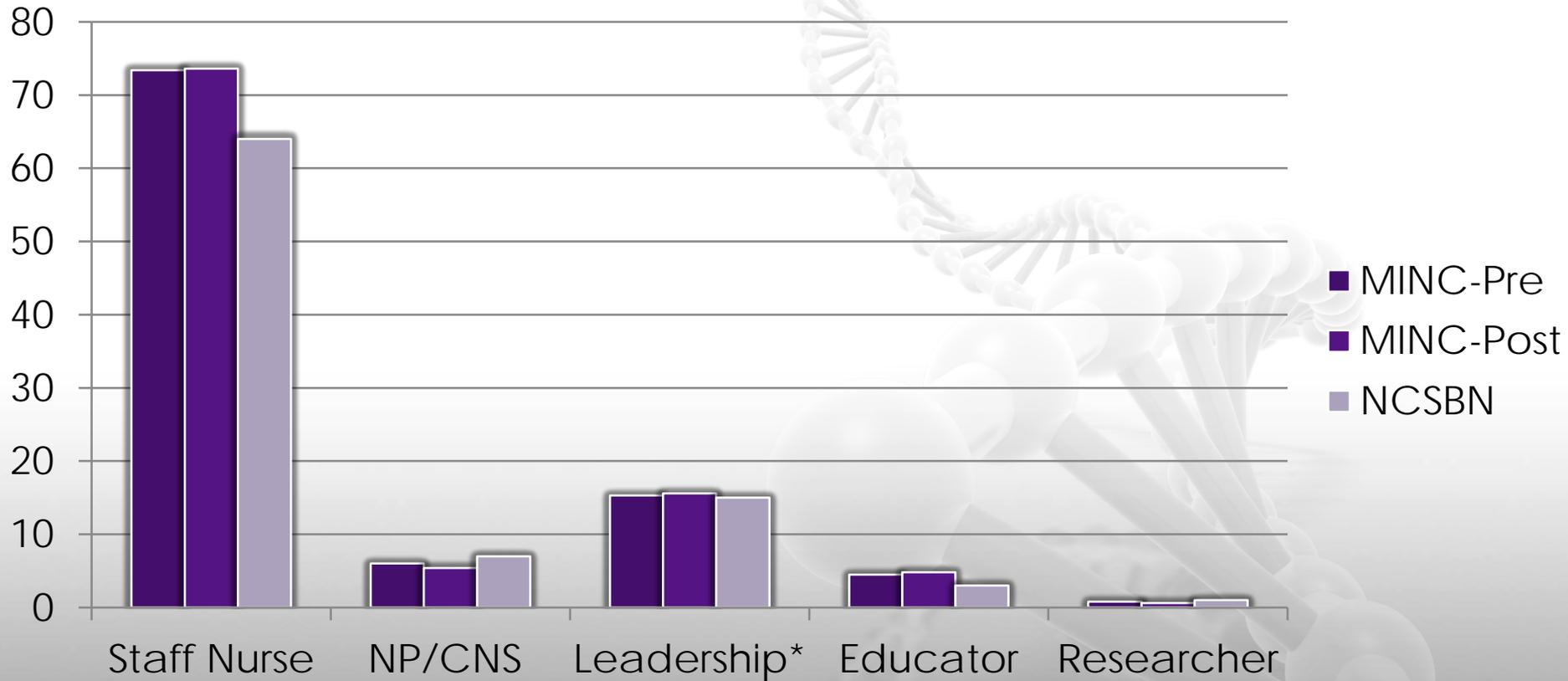
RN Number of Years in Nursing and Time Spent Seeing Patients



Highest Level of Nursing Education



Primary Area of Practice

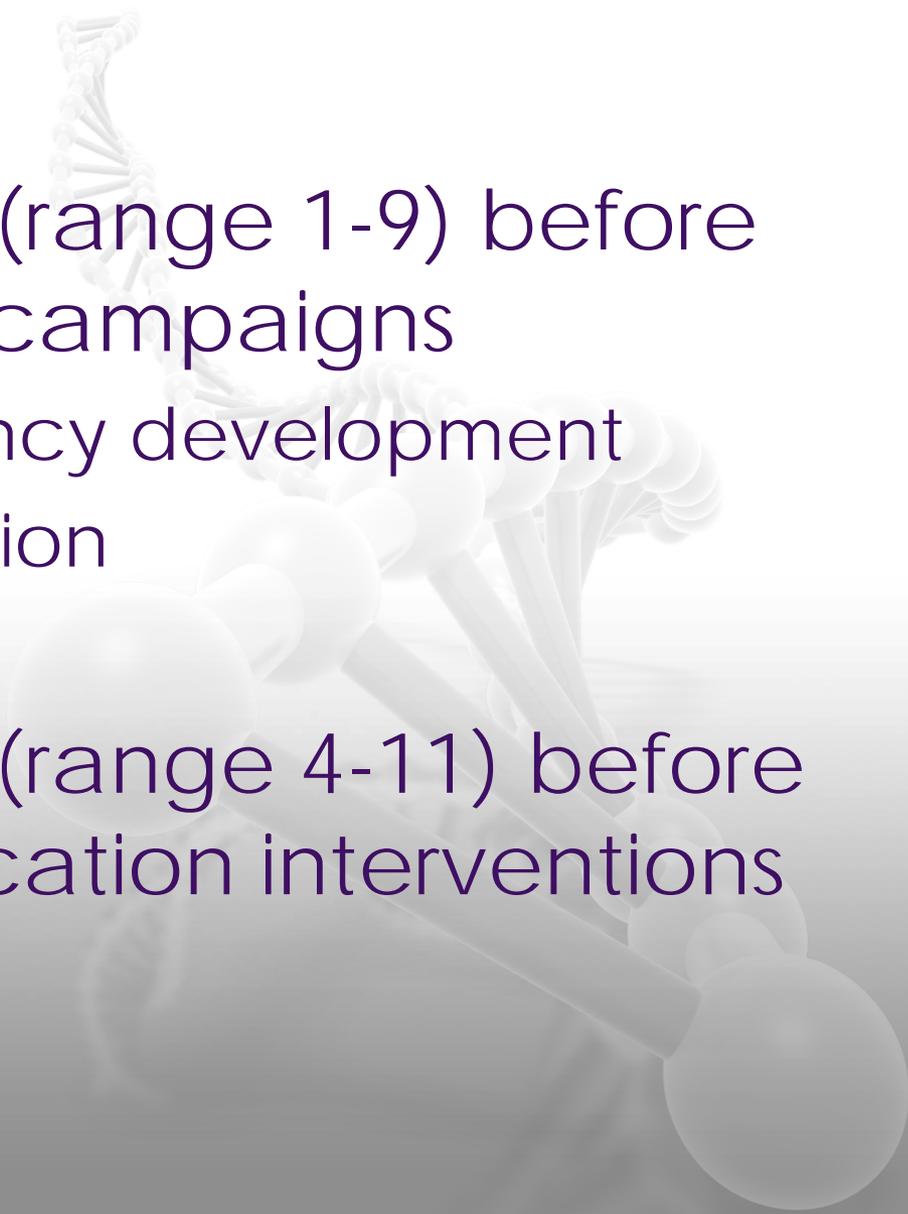


*=Head Nurse/Supervisor/Director/Assistant Director/Consultant/Case Manager

MINC Enrollment Outcomes

- One institution withdrew from the study citing competing demands and inability to adhere to an institution wide initiative
 - Data not included in pre/post analysis
- 2nd institution had a participation gap of four months due to staffing challenges resulting in the inability to meet the study demands during this period
 - Data was included in the analysis

MINC Outcomes



- Mean of 4 months (range 1-9) before start of awareness campaigns
 - Personal competency development
 - Institutional Persuasion
 - Planning
- Mean of 7 months (range 4-11) before dyads started education interventions

Implementation Strategies

- Steering Committees
 - Interprofessional
- Awareness campaigns
- Continuing Education
 - Mandatory
- Single Concept Learning
 - Gene Splash
- Poster Days
- DNA Day
- Research



What are the Chances of Type 1 Diabetes?

SCENARIO:

A couple has four children. One of the children has developed Type 1 diabetes. There is no family history of diabetes in either parent. What are the chances the other children will be diagnosed with Type 1 diabetes?

If you or a family member have Type 1 diabetes, do you wonder if other family members will get it too. What the evidence shows is that many questions remain, however:

- Although Type 1 is an autoimmune disorder, it also considered a multifactorial genetic disorder
- Type 1: "self destruction" of the pancreas to make insulin, which one cannot prevent, NO CURE
- For the average American, the chance of developing Type 1 diabetes is 1 in 100 (1%)!
- Whites have a higher risk than any other race

FACES OF TYPE 1 DIABETES



Chief Justice Sonia Sotomayor Nick Jonas Mary Tyler Moore

CLINICAL IMPLICATIONS

Know the Odds of Type 1 Diabetes:

You can live long and healthy with this most common chronic illness in American children, accounting for 13,000 new cases each year.

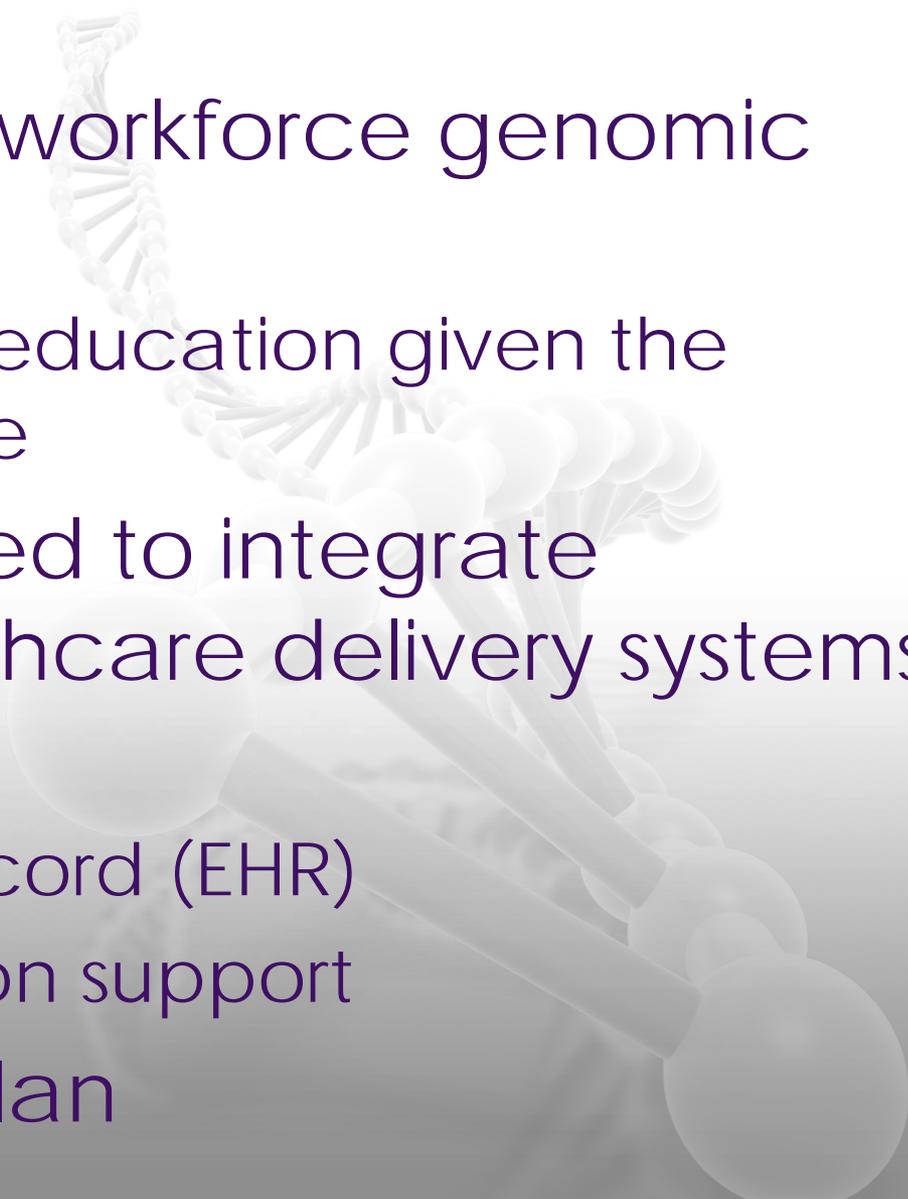
- Person with Type 1 most likely inherited a predisposition to the disease, and something environmentally triggered the disease
- If one child in a family has Type 1, their siblings have about 10% risk of developing Type 1 by age 50
- If an immediate relative has type 1, a person's risk is of developing Type 1 is 10-20 times higher than the general public's risk of 1%
- The risk for a child of a parent with Type 1 is lower if it is the mother (1-4%) rather than the father (10%)

Poster used with permission - created by MNC team at South Shore Hospital, South Weymouth, Massachusetts

Sources: www.t1clinico.com www.diabetes.org



Leadership Considerations

- Limited healthcare workforce genomic knowledgebase
 - Novel strategies for education given the current fiscal climate
 - Infrastructure needed to integrate genomics into healthcare delivery systems
 - Policies
 - Electronic health record (EHR)
 - Point of care decision support
 - Business/financial plan
- 

Policy Implications



- MINC Existing Policies
 - Genomic Advanced Directives
- MINC Participant Policy Initiatives
 - Genetic education, counseling and informed consent for genetic tests
 - Pathways for referrals to genetic services
 - Documentation of family history
 - Genomic Nursing Competency

MINC Outcomes: Attitudes

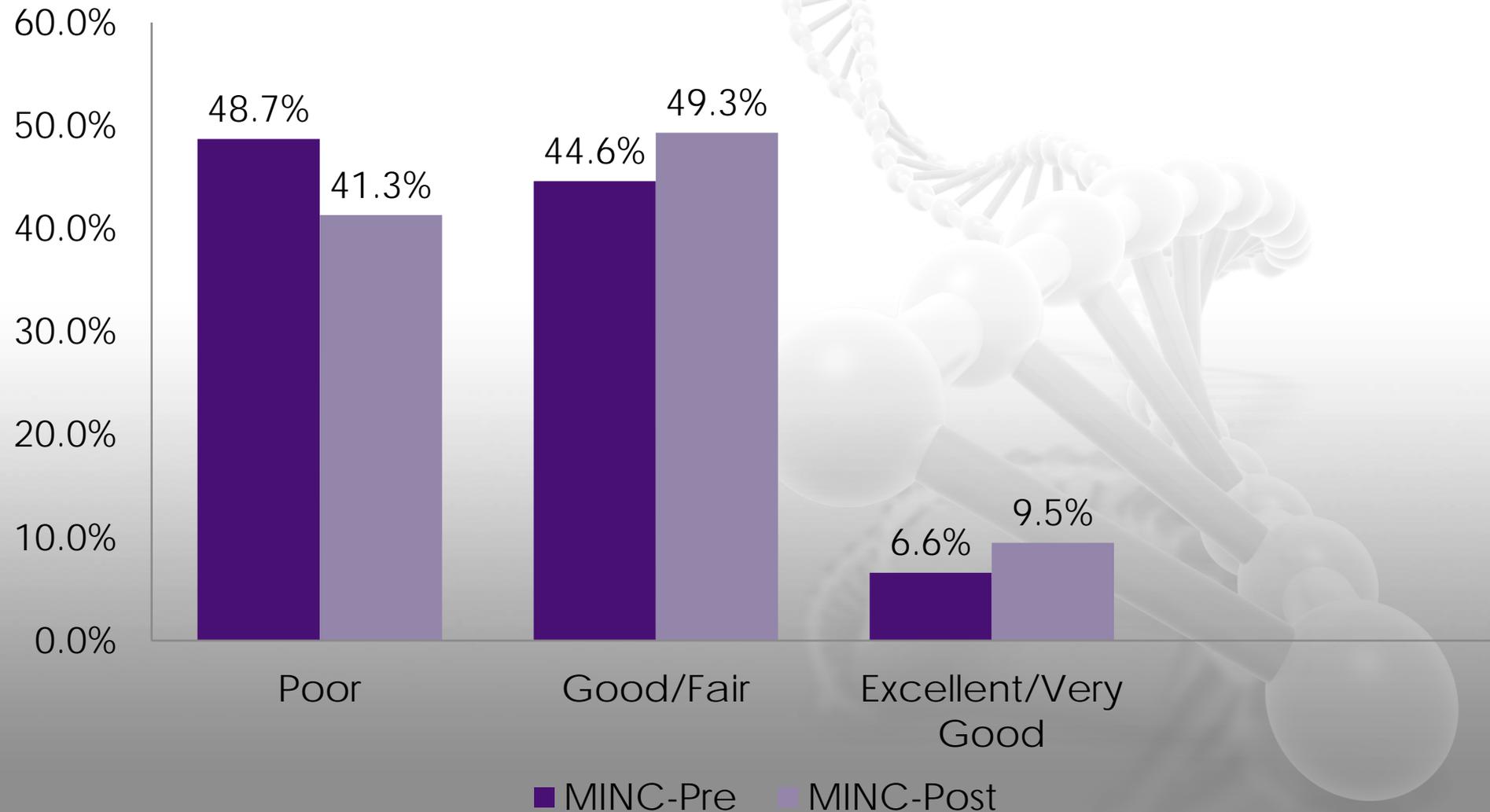
	Intervention		Control		P-value
	MINC Pre	MINC Post	MINC Pre	MINC Post	
Reported it was SOMEWHAT OR VERY IMPORTANT for nurses to become more educated about genetics of common disease	89% (6309/6707)	89% (6487/7280)	86% (349/404)	88% (264/301)	ND
AGREE or STRONGLY AGREED that there is a role for nurses in counseling patients about genetic risks	58% (3315/5687)	62% (3892/6280)	64% (175/274)	58% (136/236)	0.339
Believe senior staff see genetics as an IMPORTANT part of the survey respondent's role	25% (1342/5314)	36% (2023/5688)	21% (49/234)	19% (40/208)	<0.001

MINC Outcomes: Confidence

	Intervention		Control		P-value
	MINC Pre	MINC Post	MINC Pre	MINC Post	
More or very confident in accessing reliable and current information about genetics and common diseases	18% (999/5711)	20% (1252/6287)	17% (46/273)	16% (38/240)	0.087
More or very confident deciding which patients would benefit from a referral for genetic counseling and possible testing for susceptibility to common diseases	13% (745/5708)	16% (987/6293)	12% (34/276)	14% (33/239)	0.635
More or very confident in facilitating referrals for genetic services for common diseases	9% (671/5642)	15% (390/6230)	12% (33/277)	11% (26/239)	0.346

MINC Outcomes: Genomic Knowledge

Rate their understanding of the genetics of common diseases



MINC Outcomes: Genomic Knowledge

Objective Measure of Knowledge and Competency

➤ Total Knowledge Score

- 12 knowledge/competency questions Correct or incorrect

	MINC Pre	MINC Post	P-Value
WEAK			
BHS	8.004	8.068	0.666
CMH	8.241	8.151	0.506
STRONG			
DUH	7.897	8.377	<0.001
THP	7.876	8.543	<0.001
	MINC Pre	MINC Post	P-Value
Controls	7.986	8.065	0.628
Intervention	8.085	8.265	<0.001

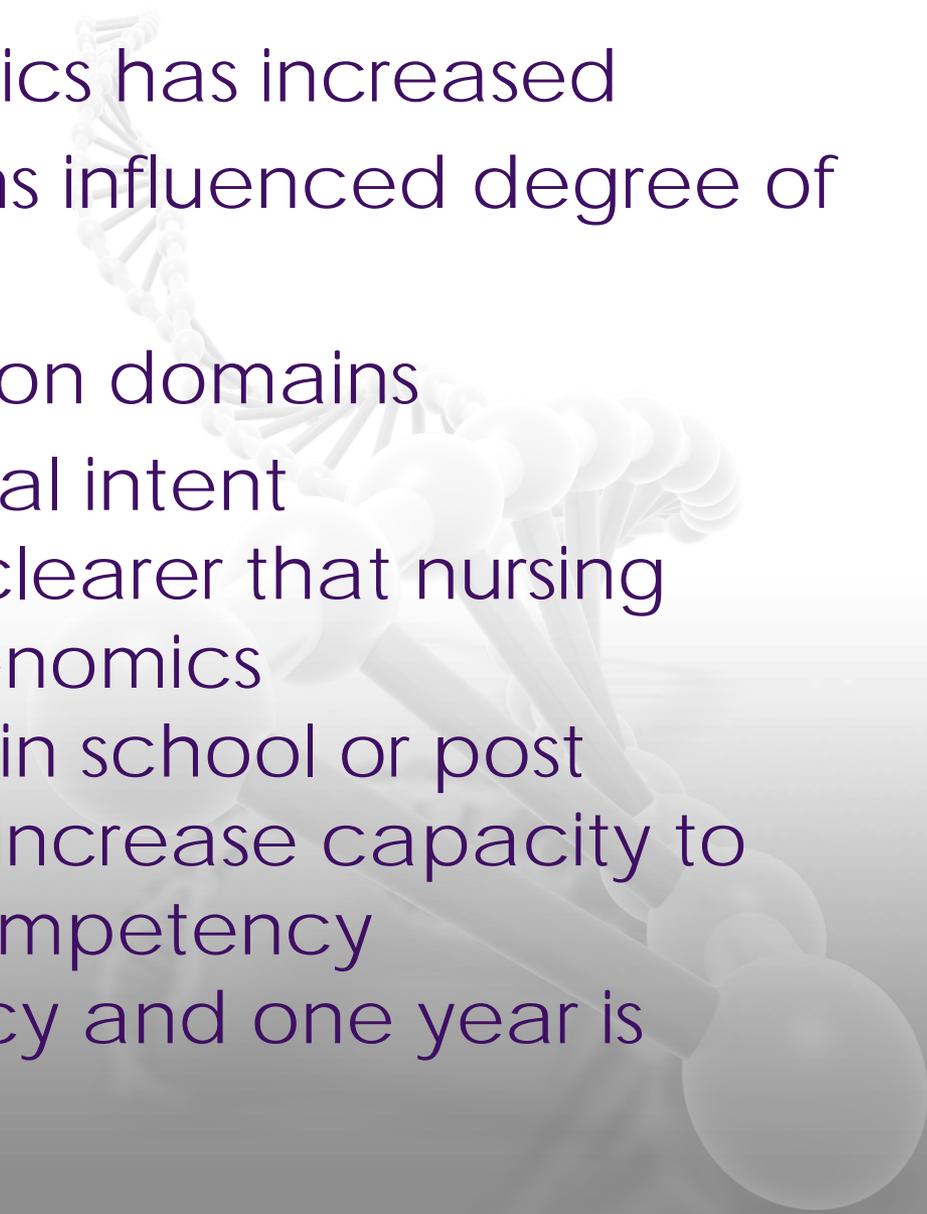
MINC Outcomes: Genetic Education Impact

	Prior Genetics Education		No Prior Genetics Education		P-value
	MINC Pre	MINC Post	MINC Pre	MINC Post	
Reported hearing or reading about the Competencies	24.9%	68.2%	6.4%	31.8%	<0.001
Self described genetic/genomic knowledge and Good/Fair	44.6%	64.6%	29.5%	35.4%	<0.001

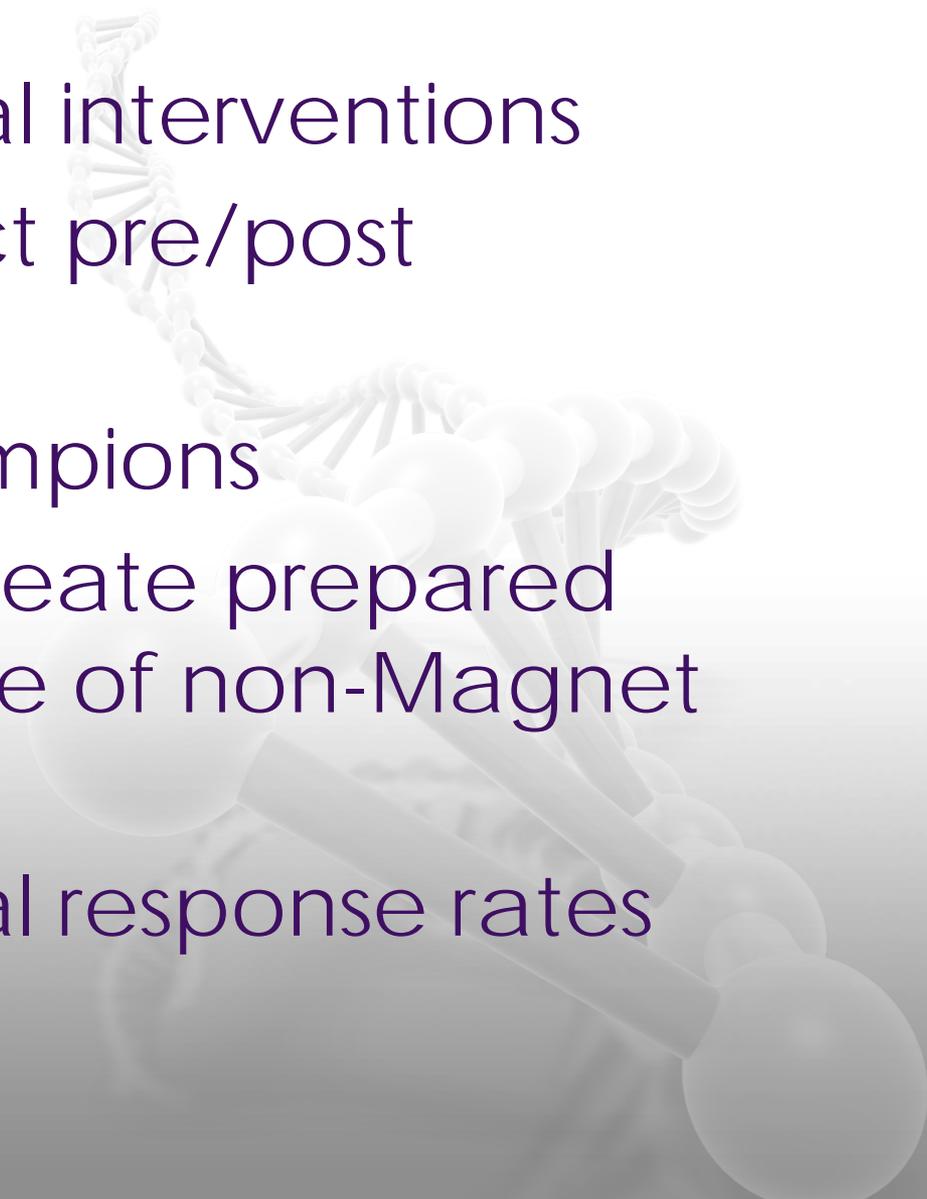
MINC Outcomes: Adoption

	Intervention		Control		P-value
	MINC Pre	MINC Post	MINC Pre	MINC Post	
In the prior three months nurses seeing patients who RARELY OR NEVER assessed a family history	68% (2873/4201)	67% (3439/5159)	75% (171/229)	79% (158/200)	0.004
Took family history: Assessed age at dx	29% (1564/5348)	33% (1989/5959)	27% (68/250)	29% (65/223)	0.176
Took family history: Assessed maternal and paternal lineages	53% (2850/5336)	55% (3243/5940)	48% (119/247)	44% (98/222)	0.009

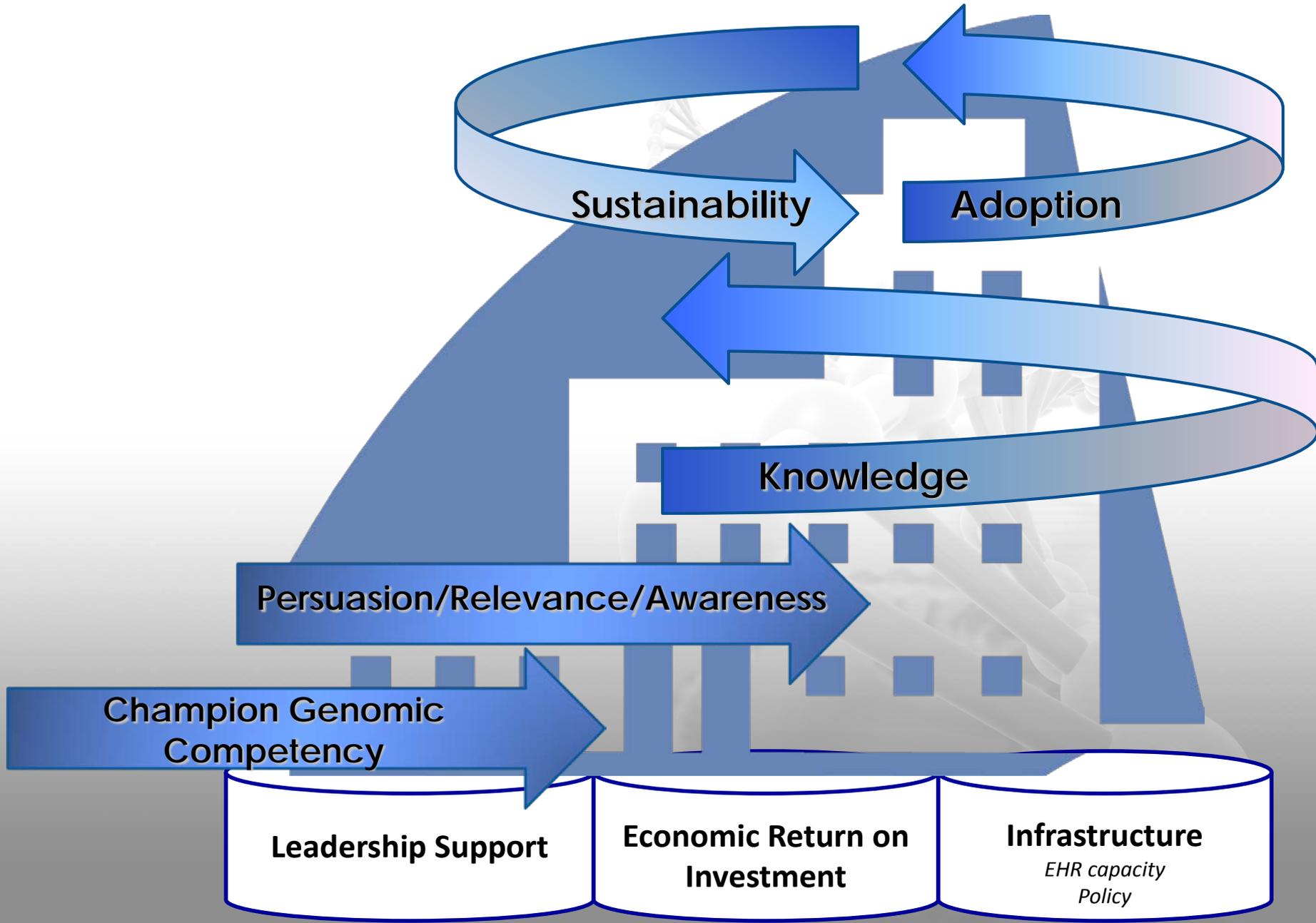
MINC Outcomes

- Awareness of genomics has increased
 - Scope of interventions influenced degree of knowledge gain
 - No change in adoption domains
 - Increased educational intent
 - Nursing workforce is clearer that nursing leadership values genomics
 - Genomic education in school or post licensure appears to increase capacity to achieve genomic competency
 - Complex competency and one year is insufficient
- 

Limitations

- Varying institutional interventions
 - No individual direct pre/post assessment
 - Self selected Champions
 - Largely baccalaureate prepared nurses not reflective of non-Magnet hospitals
 - Varying institutional response rates
- 

MINC Model



MINC Leadership Team

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Avera McKennan Behavioral Health Hospital
Baptist Hospital of Miami
Baptist Hospitals of Southeast Texas, Beaumont Hospital
Beaumont Health System
Central DuPage Hospital
Children's National Medical Center
Duke University Hospital
Fox Chase Cancer Center
Hunterdon Healthcare System
Jersey City Medical Center
Martha Jefferson
Michael E. DeBakey VA Medical Center
Northwestern Memorial Hospital
OSF Saint Anthony Medical Center
Providence St. Vincent Medical Center
Saint Joseph's Hospital
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MINC Participants



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