

An aerial photograph of a mountain range with a winding road. The mountains are covered in dense evergreen forests, and the road is a light-colored ribbon that curves through the valleys. The sky is a pale, hazy blue, suggesting a clear day. The overall tone of the image is natural and scenic.

# DIABETES TRANSLATION RESEARCH:

## THE NEXT 25 YEARS

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# OVERVIEW

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1. What has worked well?  
Key accomplishments and lessons learned.
2. What do we need to change?  
New approaches.
3. What are special translation opportunities?

***“In theory, there is no difference  
between theory and practice. In  
practice, there is.”***

**Yogi Berra**

# WHAT HAS WORKED WELL?

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## 1. Patient-centered, empowerment approaches

- Conceptual and philosophical shift
- Incorporated into most diabetes self-management programs

## 2. Guidelines and systems change interventions

- Nurse care management
- Proactive, planned population-based care
- “It is not the patient’s fault; not the provider’s fault; but the system”

Aubert RE, et al. (1998) *Ann Int Med* 129:605-612.

Sadur CN. (1999) *Diabetes Care* 22:2011-2017.

Glasgow RE, Hiss R, et al. (2001) *Diabetes Care* 24:124-130

### 3. Practical behavioral and office-based interventions

Litzelman DK, et al. (1993) *Ann Int Med* 119:36-41  
Kaplan SH, et al. (1989) *Medical Care* 27:5110-5127  
Anderson BJ, et al. (1989) *Diabetes Care* 12:179-183

#### 4. Robust, replicable interventions (Cox, Gonder-Fredericks, et al, Blood Glucose Awareness Training Program)

- Systematic replications across populations
- Patient-focused, problem-solving interventions (Grey, et al)
- “Replication is the essence of science--not a dirty word”

Cox D, et al. (1995) *Diabetes Care* 18:523-528

Grey M, et al. (2000) *J Pediatr* 137:107-113

## 5. Programs to Reduce Health Disparities

- Retinal screening
- Nutrition and physical activity (DPP)
- Community health center partnerships to improve chronic illness care
- NDEP

Project Direct

Brown SA, et al. (1999) *The Diabetes Educator* 25:226-236

Chin, et al. Abstract 2001. ADA annual meeting

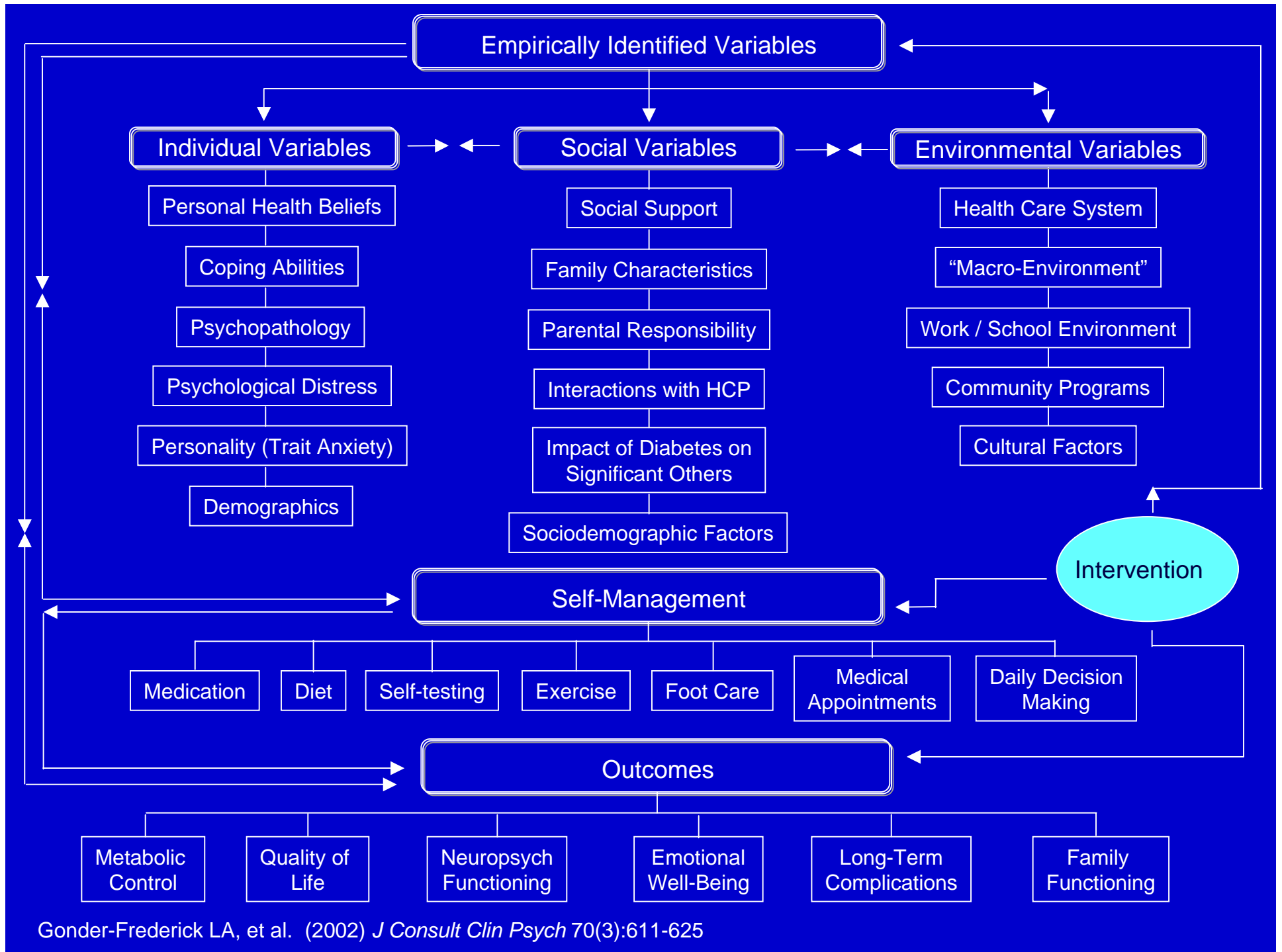
## 6. Measurement Contributions

- Important processes and outcomes
- Problem areas in diabetes
- QALY instruments
- Social support measures

Anderson RM, et al. (2000) *Diabetes Care* 23:739-743

Polonsky WH, et al. (1995) *Diabetes Care* 18:754-760

Fisher E, et al. (1997) *Int J Behav Med* 4:131-144



# WHAT NEEDS TO CHANGE?

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1. More focus on creating and documenting broadly applicable interventions (Reach)

- Diverse populations
- Comorbid conditions
- “If you build it, they won’t necessarily come”

## 2. Outcomes need to be more sophisticated and comprehensive (Effectiveness)

- “Diabetes is not just hemoglobin A<sub>1c</sub>”
- Economic outcomes
- Bottom line = QALYs

Kaplan RM, et al. (2002) *J Consult Clin Psychol* 70(3):482-493

Gold MR, et al. (1996) *Cost-effectiveness in health and medicine*; New York: Oxford Univ. Press

### 3. More attention to Settings and Agents (Adoption)

- Primary care
- Community-based supplements
- Who can effectively deliver the program?

Norris S, et al. (2002) *Am J Prev Med*, 22:39-66

Rogers E. *Diffusion of Innovations* (4th Ed) Free Press, 1995

#### 4. More attention to Implementation issues

- Who can successfully implement?
- Can lower intensity intervention be implemented by non-professionals?
- Consistency of intervention as mediating variable
- “Type III” error

## 5. More attention to Individual and Setting Level Maintenance

- Social environmental factors influencing maintenance
- Long-term follow-up studies of participants and settings
- Better understanding of effects of policies and interaction of policies and behavioral Tx

Wadden TA, et al. (2002) *J Consult Clin Psychol* 70(3):510-525

Wing RR, et al. (2001) *Diabetes Care* 24:117-123

# OTHER NEEDED CHANGES

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- ❖ Identify characteristics of successful partnerships
- ❖ Study of mediators in context of multi-level interventions
- ❖ Creative use of experimental designs in addition to RCTs

***“The significant problems  
we face cannot be solved by  
the same level of thinking  
that created them.”***

***A. Einstein***

# RECOMMENDED PURPOSE OF FUTURE RESEARCH

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To determine the characteristics of interventions that can:

- Reach large numbers of people, especially those who can most benefit
- Be widely adopted by different settings
- Be consistently implemented by staff members with moderate levels of training and expertise
- Produce replicable and long-lasting effects (and minimal negative impacts) at reasonable cost

# RECOMMENDATIONS FOR RESEARCHERS

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1. Study programs that reach large and representative portions of the population. Document reach to underserved populations.
2. Produce interventions that have training materials and can be implemented by a variety of agents. Report on implementation and outcomes across a range of interventionists.
3. Report on methods of recruiting settings, including exclusion rates, participation rates, and representativeness.

# RECOMMENDATIONS FOR FUNDING AGENCIES

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1. Support studies that investigate interventions in multiple (representative) settings, and report on mediator and moderator effects.
2. Fund innovative investigations of ways to enhance program reach, adoption, implementation, and maintenance.

# RECOMMENDATIONS FOR FUNDING AGENCIES (cont.)

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3. Require standardized reporting on exclusions, participation rates, and representativeness of both participants and settings.
4. Require and fund a maintenance / sustainability phase in research projects.

# RECOMMENDATIONS FOR REVIEWERS

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1. Use editorial guidelines (ala CONSORT criteria) that include external validity
2. Relax usual criteria for reports on long-term maintenance at individual and especially setting levels
3. Include potential for translation as a standard review criteria (like innovativeness)

# RECOMMENDED POLICY CHANGES

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(“Put our policies and money where our mouth is.”)

- ❖ Include behavioral counseling indices in performance measures
- ❖ Incent individuals and systems for doing the right thing

# KEY AREAS FOR FUTURE TRANSLATION FOCUS

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1. Comprehensive evaluations of interventions that address social context
  - Learn from physical activity area
  - Use QALYs as common outcomes
  - Include economic outcomes
  - “Things are not always what they appear”

[www.alpex.ws](http://www.alpex.ws)

Kaplan SH, et al. (1989) *Medical Care* 27:5110-5127

Glasgow RE, et al. (1993) *Health Education Quarterly* 20:391-408

## 2. Interface of genetic and behavioral issues

- Gene-environment interactions
- Shared decision making and choice
- Application of risk perception science

### 3. Prevention

- Lessons learned from CHD community research
- Where people live, work, and play
- Multi-level interventions and analyses
- Policy research

## 4. Interactive Technology Applications

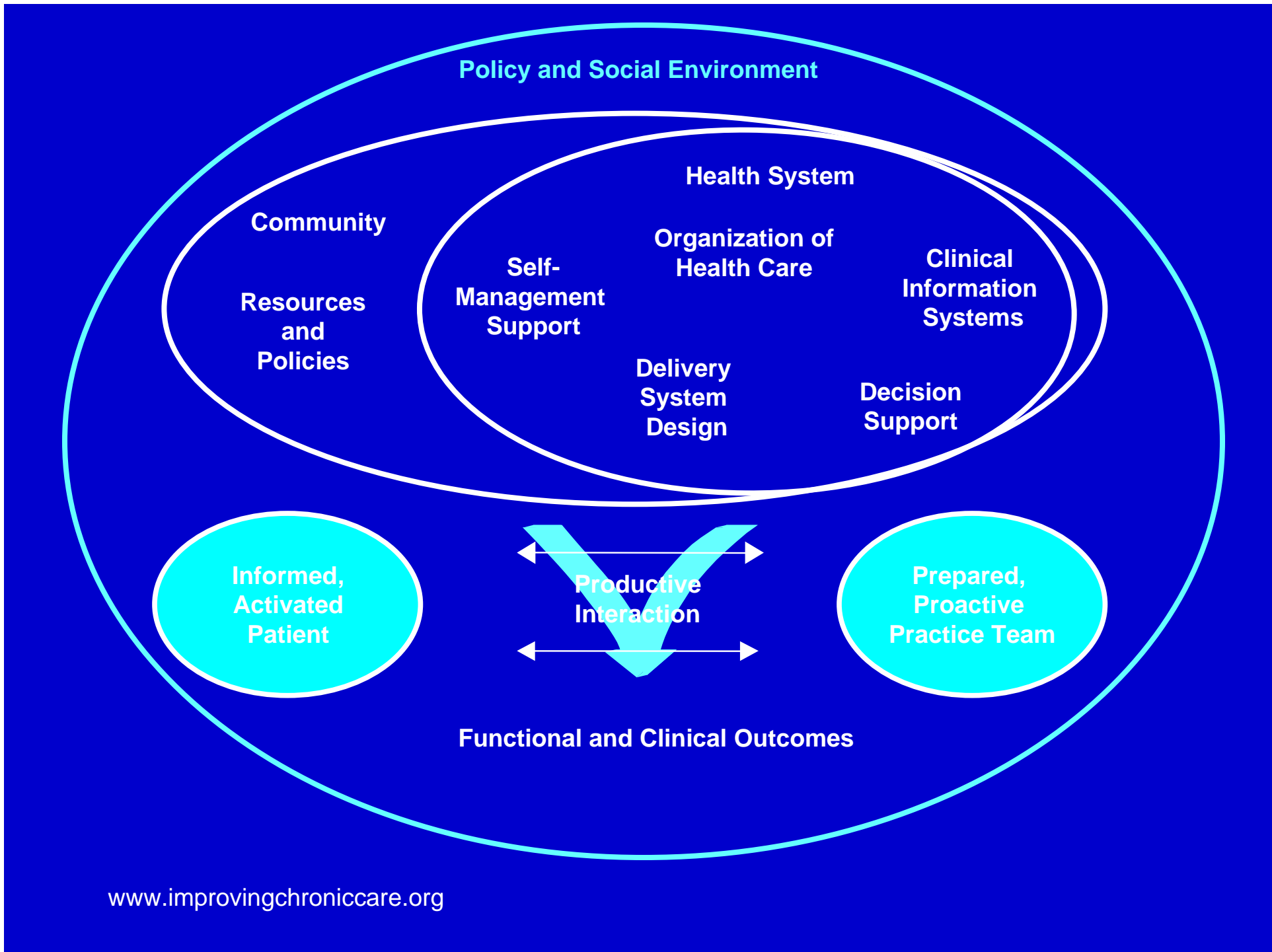
- Integrated systems
- Technology to facilitate and support human interactions
- Reach, Implementation, and Maintenance effects of technology
- Combinations of different technologies

Piette JD, et al. (2000) *Med Care* 38:218-230

Glasgow RE & Bull SS. (2001) *Diabetes Spectrum* 14:99-106

## 5. Health care systems change

- Experimental study of policy factors that impact systems
- Patient-centered, proactive, and population based
- Characteristics of settings that show major improvement

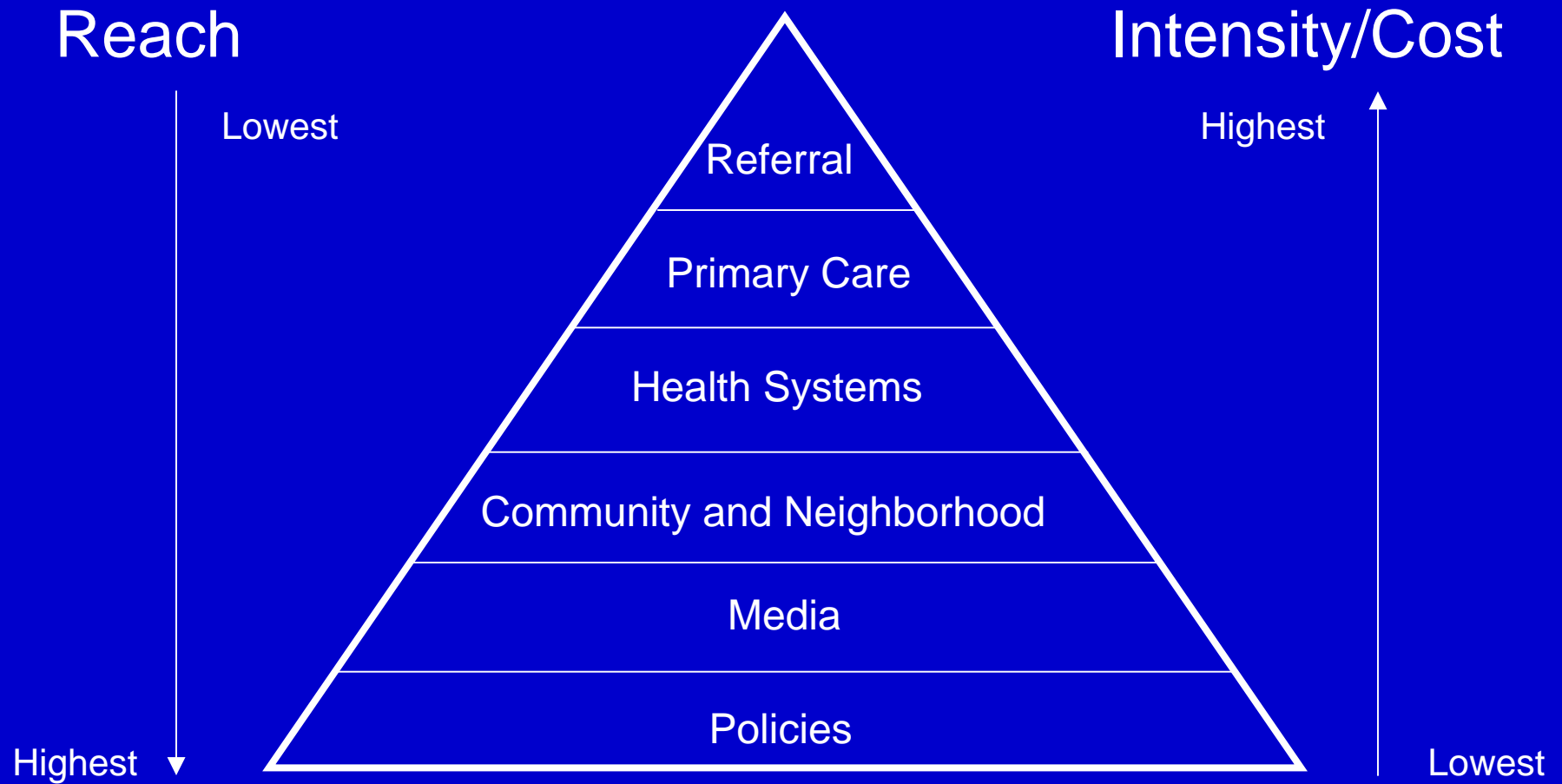


| <u>Factor</u>      | <u>RE-AIM Issue</u> | <u>Overall %<br/>of Population</u> |
|--------------------|---------------------|------------------------------------|
| Settings           | Adoption            | .40                                |
| Agents             | Adoption            | .16                                |
| Patients           | Reach               | .06                                |
| Delivery           | Implementation      | .03                                |
| Behavior<br>Change | Effectiveness       | .01                                |
| Sustainability     | Maintenance         | .004                               |

Fundamental improvement in translation will require fundamental change at level of procedures for:

- Patients
- Providers
- Researchers
- Health Systems
- Policies

# STEPPED CARE MODEL



Abrams D, et al. (1996) *Annals Int Med* 18:290-304

Walden T, Brownell K, Foster G. (2002) *J Consult Clinic Psychol* 70:510-525

***“The best way to  
predict the future  
is to create it”***

***“To every complex question,  
there is a simple answer.....  
and it is wrong”***

***H. L. Mencken***