EXHIBIT 1.1
Continuum of Healthcare Services

Preventive services → Treatment services ← Long-term care

COMMUNITY ← PERSONAL HEALTHCARE SYSTEM → COMMUNITY

Community resources → Public health system ← Ambulatory care → Acute institutional care ← Long-term institutional care ← Home and community-based care

Source: Aday (2001, Figure 5.1, 118). Copyright © 2001. This material is used by permission of John Wiley & Sons, Inc.
**EXHIBIT 1.2**
Comparison of Health Services Research Objectives and Those of Other Types of Health-Related Research

<table>
<thead>
<tr>
<th>Biomedical Research</th>
<th>Clinical Research</th>
<th>HSR</th>
<th>Public Health Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research on cells, tissues, organs, organ systems, normal development, and disease processes</td>
<td>Patient-level research on prevention and treatment of illness; efficacy of interventions</td>
<td>Effectiveness, efficiency, and equity of personal and community-based health services and delivery systems</td>
<td>Community and environmental influences on health and illness; efficacy of population-based interventions</td>
</tr>
</tbody>
</table>
## EXHIBIT 1.3
Definitions of Effectiveness, Efficiency, and Equity Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Clinical</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness</td>
<td><em>Clinical effectiveness:</em> Improving the health of individual patients through the delivery of healthcare services</td>
<td><em>Population effectiveness:</em> Improving the health of populations through medical or nonmedical services</td>
</tr>
</tbody>
</table>
| Efficiency | *Production efficiency:* Combining inputs to produce services at the lowest cost | *Production efficiency:* Combining inputs to produce services at the lowest cost  
*Allocative efficiency:* Combining health services and other health-related investments to produce maximum health given available resources |
| Equity     | *Procedural equity:* Maximizing the fairness in the distribution of services across individuals  
*Substantive equity:* Minimizing the disparities in the distribution of health across individuals | *Procedural equity:* Maximizing the fairness in the distribution of services across groups  
*Substantive equity:* Minimizing the disparities in the distribution of health across groups |
<table>
<thead>
<tr>
<th>Type of Inquiry</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disciplinary research</td>
<td>To explain biological or social phenomena</td>
</tr>
<tr>
<td>Health services research</td>
<td>To describe and assess the performance of the healthcare system</td>
</tr>
<tr>
<td>Health program evaluation</td>
<td>To evaluate the effect of health policies and programs</td>
</tr>
<tr>
<td>Health policy analysis</td>
<td>To analyze and compare alternative (1) problem definitions and (2) health policy solutions</td>
</tr>
</tbody>
</table>

- **Disciplinary research**
  - Structure: $X$ → $Y$

- **Health services research**
  - Process: $X$ → $Y$

- **Health program evaluation**
  - Outcome $X$: $x_0$ → $y_0$
  - Outcome $X$: $x_1$ → $y_1$
  - Outcome $X$: $x_2$ → $y_2$
  - Outcome $X$: $x_3$ → $y_3$

- **Health policy analysis**
  - Problem analysis $X$ → $y_1$ vs. $y_2$ vs. $y_3$
  - Solution analysis $X$ → $y_1$ vs. $y_2$ vs. $y_3$
EXHIBIT 1.5
Framework for Integrating Health Services Research and Policy Analysis
### EXHIBIT 2.1
Framework for Effectiveness Research

<table>
<thead>
<tr>
<th>Outcomes Measures</th>
<th>Community</th>
<th>System</th>
<th>Institution</th>
<th>Patient</th>
</tr>
</thead>
</table>
| Mortality                  |• Mortality
  — Population death rates |• Mortality
  — Case fatality rates |• Mortality
  — Individual deaths |
| Morbidity                  |• Morbidity
  — Population morbidity rates |• Morbidity
  — Complication rates |• Morbidity
  — Adverse events |
| Health status              |• Health status
  — Disability rates |• Health status
  — Disability rates |• Health status
  — Disability limitation |
| Disease incidence and prevalence rates |• Disease incidence and prevalence rates |• Disease incidence and prevalence rates |• Disease incidence and prevalence rates |
| Perceived health status    |• Perceived health status |• Perceived health status |• Perceived health status |

<table>
<thead>
<tr>
<th>Risk Adjustment</th>
<th>Community</th>
<th>System</th>
<th>Institution</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic characteristics</td>
<td>• Demographic characteristics</td>
<td>• Demographic characteristics</td>
<td>• Demographic characteristics</td>
<td>• Patient profiles</td>
</tr>
<tr>
<td>Comorbidity rates</td>
<td>• Comorbidity rates</td>
<td>• Comorbidity rates</td>
<td>• Comorbidity rates</td>
<td></td>
</tr>
<tr>
<td>Risk adjustment systems</td>
<td>• Risk adjustment systems</td>
<td>• Risk adjustment systems</td>
<td>• Risk adjustment systems</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study Designs</th>
<th>Community</th>
<th>System</th>
<th>Institution</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observational—epidemiological</td>
<td>• Observational—epidemiological</td>
<td>• Observational—interorganizational</td>
<td>• Observational—intraorganizational</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Sources</th>
<th>Community</th>
<th>System</th>
<th>Institution</th>
<th>Patient</th>
</tr>
</thead>
</table>
| Records
  — Population health information system |• Records
  — Medical records
  — Discharge data
  — Claims data |• Records
  — Medical records
  — Discharge data
  — Claims data |• Records
  — Medical records
  — Discharge data
  — Claims data |
| Vital statistics            |• Surveys |• Surveys |• Surveys |
| Disease surveillance        |• Surveys |• Surveys |• Surveys |

<table>
<thead>
<tr>
<th>Example</th>
<th>Community</th>
<th>System</th>
<th>Institution</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese-American community screening (Tu et al. 2003)</td>
<td>• Chinese-American community screening (Tu et al. 2003)</td>
<td>• European national screening program (De Koning 2000)</td>
<td>• Public hospital clinic screening program (Thompson et al. 2002)</td>
<td>• Patient screening in response to intervention (Ell et al. 2002)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical Effectiveness Research Questions by Level of Analysis</th>
<th>Community</th>
<th>System</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the contribution of medical care to the health of the population?</td>
<td>What is the impact of system-level variables (e.g., provider specialty mix, organizational form, payment mechanism) on the processes and outcomes of medical care?</td>
<td>What is the impact of the quality of care on the outcomes of medical care?</td>
<td></td>
</tr>
</tbody>
</table>

*Health-related quality of life

**Randomized controlled trial
EXHIBIT 2.2
Conceptual Model of Health Determinants from the Clinical Perspective

- **STRUCTURE**
  - Clinical/Patient Factors
    - Age and gender
    - Comorbidity
    - Etiology
    - Prior status
    - Genetic predisposition
  - System Institution Factors
    - Insurance coverage
    - Access to medical care

- **PROCESS**
  - Intervention
    - Mammography screening

- **OUTCOME**
  - Effectiveness Evaluation
    - Measuring
    - Monitoring
    - Benchmarking
    - Improving
  - Outcomes
    - Early detection of breast cancer *(intermediate)*
    - Improved life expectancy *(final)*

Source: Adapted from Donabedian (2003, 46-47) and Kane (1997, Figure 1-1, 13).
EXHIBIT 2.3
Conceptual Model of Health Determinants from the Population Perspective

Health outcomes and distribution in a population (dependent variables)

Patterns of health determinants over the life course (independent variables)

Policies and interventions at the individual and social levels

Source: Kindig and Stoddart (2003, Figure 1, 382). Used with permission of the American Public Health Association.