Redefining Health Care: Lessons for China

Professor Michael E. Porter
Harvard Business School
www.isc.hbs.edu

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Challenges Facing Chinese Health Care

- High *out-of-pocket* patient spending
- Vast *technological and expertise disparities* between urban and rural hospitals
- *Inefficient* care delivery
- Lack of data or transparency on patient *outcomes* or *costs*
Solving the Health Care Problem

• The core issue in health care is the **value of health care delivered**

\[
\text{Value} = \frac{\text{Health outcomes that matter to patients}}{\text{Costs of delivering the outcomes}}
\]

• Delivering high and improving value is the **fundamental purpose** of health care

• Value is the only goal that can **unite the interests** of all system participants

• Improving value is the **only real solution** versus further cost shifting, restricting services, or dramatically reducing the compensation of health care professionals
Creating The Right Kind of Competition

• Patient *choice* and *competition* for patients are powerful forces to encourage continuous improvement in value and restructuring of care

• However, today’s competition in health care *is not aligned with value*

| Financial success of system participants | ≠ | Patient success |

• Creating positive-sum competition on *value for patients* is fundamental to health care reform in every country
Principles of Value-Based Health Care Delivery

Value = \frac{\text{Health outcomes that matter to patients}}{\text{Costs of delivering the outcomes}}

• Value is measured for the care of a patient’s medical condition over the full cycle of care
  – Outcomes are the full set of health results for a patient’s condition over the care cycle
  – Costs are the total costs of care for a patient’s condition over the care cycle
Creating a Value-Based Health Care Delivery System

The Strategic Agenda

1. Organize Care into Integrated Practice Units (IPUs) around Patient Medical Conditions
   - For primary and preventive care, organize to serve distinct patient segments

2. Measure Outcomes and Costs for Every Patient

3. Move to Bundled Payments for Care Cycles

4. Integrate Care Delivery Systems

5. Expand Geographic Reach and Serve a Major Population

6. Build an Enabling Information Technology Platform
1. Organize Care Around Patient Medical Conditions

Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Service

1. Organize Care Around Patient Medical Conditions
Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Service

- Imaging Centers
- Outpatient Physical Therapists
- Outpatient Neurologists
- Primary Care Physicians
- Inpatient Treatment and Detox Units
- Outpatient Psychologists

New Model:
Organize into Integrated Practice Units (IPUs)

- Affiliated Imaging Unit
- Primary Care Physicians
- West German Headache Center Neurologists Psychologists Physical Therapists “Day Hospital”
- Affiliated “Network” Neurologists
- Essen Univ. Hospital Inpatient Unit

What is a Medical Condition?

• A medical condition is an interrelated set of patient medical circumstances best addressed in an integrated way
  – Defined from the patient’s perspective
  – Involving multiple specialties and services
  – Including common co-occurring conditions and complications

Examples: diabetes, breast cancer, knee osteoarthritis

• In primary / preventive care, the unit of value creation is defined patient segments with similar preventive, diagnostic, and primary treatment needs (e.g. healthy adults, frail elderly)

• The medical condition / patient segment is the proper unit of value creation and value measurement in health care delivery

# The Care Delivery Value Chain
## Acute Knee-Osteoarthritis Requiring Replacement

<table>
<thead>
<tr>
<th>INFORMING AND ENGAGING</th>
<th>DIAGNOSING</th>
<th>PREPARING</th>
<th>INTERVENING</th>
<th>recovering/rehabbing</th>
<th>monitoring/managing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CARE DELIVERY</strong></td>
<td><strong>MONITOR</strong></td>
<td><strong>PREVENT</strong></td>
<td><strong>INTERVENING</strong></td>
<td><strong>MONITOR</strong></td>
<td><strong>MANAGE</strong></td>
</tr>
<tr>
<td><strong>Monitor</strong></td>
<td>Conduct PCP exam</td>
<td>Prescribe anti-inflammatory medicines</td>
<td>Administer anesthesia (general, epidural, or regional)</td>
<td>Consult regularly with patient</td>
<td></td>
</tr>
<tr>
<td><strong>Prevent</strong></td>
<td>Refer to specialists, if necessary</td>
<td>Recommend exercise regimen</td>
<td>Perform cardiology, pulmonary evaluations</td>
<td>Prescribe prophylactic antibiotics when needed</td>
<td></td>
</tr>
<tr>
<td><strong>Intervening</strong></td>
<td>Set weight loss targets</td>
<td>Conduct pre-op physical exam</td>
<td>Insert device</td>
<td>Set long-term exercise plan</td>
<td></td>
</tr>
<tr>
<td><strong>Recovering/rehabbing</strong></td>
<td></td>
<td></td>
<td>Cement joint</td>
<td>Revise joint, if necessary</td>
<td></td>
</tr>
<tr>
<td><strong>Monitoring/managing</strong></td>
<td></td>
<td></td>
<td>Joint-specific symptoms and function</td>
<td>Primary care office</td>
<td></td>
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<tr>
<td><strong>Other Provider Entities</strong></td>
<td></td>
<td></td>
<td>Overall health</td>
<td>Health club</td>
<td></td>
</tr>
<tr>
<td><strong>Orthopedic Specialist</strong></td>
<td></td>
<td></td>
<td>Inpatient length of stay</td>
<td>Infections</td>
<td></td>
</tr>
</tbody>
</table>

**INFORMING AND ENGAGING**
- Importance of exercise, weight reduction, proper nutrition
- Prognosis (short- and long-term outcomes)
- Drawbacks and benefits of surgery
- Setting expectations for recovery
- Importance of rehab
- Post-surgery risk factors
- Importance of rehab adherence
- Longitudinal care plan
- Importance of exercise, maintaining healthy weight

**MEASURING**
- Joint-specific symptoms and function (e.g., WOMAC scale)
- Overall health (e.g., SF-12 scale)
- Loss of cartilage
- Change in subchondral bone
- Joint-specific symptoms and function
- Overall health
- Baseline health status
- Fitness for surgery (e.g., ASA score)
- Blood loss
- Operative time
- Complications
- Infections
- Joint-specific symptoms and function
- Inpatient length of stay
- Ability to return to normal activities
- Joint-specific symptoms and function
- Weight gain or loss
- Missed work
- Overall health

**ACCESSING**
- PCP office
- Health club
- Physical therapy clinic
- Specialty office
- Imaging facility
- Pre-op evaluation center
- Operating room
- Recovery room
- Orthopedic floor at hospital or specialty surgery center
- Nursing facility
- Rehab facility
- PT clinic
- Home
- Primary care office
- Health club

**MONITORING/PREVENTING**
- Imaging
  - Perform and evaluate MRI and x-ray
  - Assess cartilage loss
  - Assess bone alterations
- Overall Prep
  - Conduct home assessment
  - Monitor weight loss
- Surgical Prep
  - Perform cardiology, pulmonary evaluations
  - Run blood labs
  - Conduct pre-op physical exam
- Anesthesia
  - Administer anesthesia (general, epidural, or regional)
- Surgical Procedure
  - Determine approach (e.g., minimally invasive)
  - Insert device
  - Cement joint
- Pain Management
  - Prescribe preemptive multimodal pain meds
- Surgical
  - Immediate return to OR for manipulation, if necessary
- Medical
  - Monitor coagulation
- Living
  - Provide daily living support (showering, dressing)
  - Track risk indicators (fever, swelling, other)
- Physical Therapy
  - Daily or twice daily PT sessions

**CLINICAL EVALUATION**
- Review history and imaging
- Perform physical exam
- Recommend treatment plan (surgery or other options)

**OVERALL PREP**
- Conduct home assessment
- Monitor weight loss

**SURGICAL PREP**
- Perform cardiology, pulmonary evaluations
- Run blood labs
- Conduct pre-op physical exam

**ANESTHESIA**
- Administer anesthesia (general, epidural, or regional)

**Surgical Procedure**
- Determine approach (e.g., minimally invasive)
- Insert device
- Cement joint

**PAIN MANAGEMENT**
- Prescribe preemptive multimodal pain meds

**MEDICAL**
- Monitor coagulation

**LIVING**
- Provide daily living support (showering, dressing)
- Track risk indicators (fever, swelling, other)

**PHYSICAL THERAPY**
- Daily or twice daily PT sessions

**ORTHOPEDIC SPECIALIST**
- PCP office
- Health club
- Physical therapy clinic

**INFORMING AND ENGAGING**
- Importance of exercise, weight reduction, proper nutrition
- Prognosis (short- and long-term outcomes)
- Drawbacks and benefits of surgery
- Setting expectations for recovery
- Importance of rehab
- Post-surgery risk factors
- Importance of rehab adherence
- Longitudinal care plan
- Importance of exercise, maintaining healthy weight
Integrating Across the Care Cycle
An Orthopedic Surgeon Teaches A Course to Physical Therapists About Treatment Post-Surgery
Attributes of an Integrated Practice Unit (IPU)

1. Organized around a **medical condition** or set of **closely related conditions** (or around defined patient segments for primary care)
2. Care is delivered by a **dedicated, multidisciplinary team** who devote a significant portion of their time to the medical condition
3. Providers see themselves as part of a **common organizational unit**
4. The team takes responsibility for the **full cycle of care** for the condition
   - Encompassing **outpatient, inpatient, and rehabilitative** care, as well as **supporting services** (such as nutrition, social work, and behavioral health)
5. **Patient education, engagement, and follow-up are integrated** into care
6. The unit has a **single administrative and scheduling structure**
7. To a large extent, **care is co-located in dedicated facilities**
8. A **physician team captain** or a **clinical care manager** (or both) oversees each patient’s care process
9. The **team measures** outcomes, costs, and processes for each patient using a **common measurement platform**
10. The providers on the team meet **formally and informally** on a regular basis to discuss patients, processes, and results
11. **Joint accountability** is accepted for outcomes and costs
Volume and experience will have an even greater impact on value in an IPU structure than in the current system.
# Role of Volume in Value Creation

## Fragmentation of Hospital Services in Sweden

<table>
<thead>
<tr>
<th>DRG</th>
<th>Number of admitting providers</th>
<th>Average percent of total national admissions</th>
<th>Average admissions/ provider/ year</th>
<th>Average admissions/ provider/ week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee Procedure</td>
<td>68</td>
<td>1.5%</td>
<td>55</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes age &gt; 35</td>
<td>80</td>
<td>1.3%</td>
<td>96</td>
<td>2</td>
</tr>
<tr>
<td>Kidney failure</td>
<td>80</td>
<td>1.3%</td>
<td>97</td>
<td>2</td>
</tr>
<tr>
<td>Multiple sclerosis and cerebellar ataxia</td>
<td>78</td>
<td>1.3%</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>Inflammatory bowel disease</td>
<td>73</td>
<td>1.4%</td>
<td>66</td>
<td>1</td>
</tr>
<tr>
<td>Implantation of cardiac pacemaker</td>
<td>51</td>
<td>2.0%</td>
<td>124</td>
<td>2</td>
</tr>
<tr>
<td>Splenectomy age &gt; 17</td>
<td>37</td>
<td>2.6%</td>
<td>3</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Cleft lip &amp; palate repair</td>
<td>7</td>
<td>14.2%</td>
<td>83</td>
<td>2</td>
</tr>
<tr>
<td>Heart transplant</td>
<td>6</td>
<td>16.6%</td>
<td>12</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

2. Measure Outcomes and Costs for Every Patient
The Measurement Landscape

- Patient Initial Conditions
- Processes
- Indicators
- (Health) Outcomes

E.g. Staff certification, facilities standards

Protocols/Guidelines

E.g. PSA, Gleason score, surgical margin

Patient Experience/Engagement
The Outcome Measures Hierarchy

Tier 1

Health Status
Achieved or Retained

Survival

Tier 2

Process of Recovery

Degree of health/recovery

Time to recovery and return to normal activities

Tier 3

Sustainability of Health

Sustainability of health/recovery and nature of recurrences

Long-term consequences of therapy (e.g., care-induced illnesses)

Source: NEJM Dec 2010

- Achieved clinical status
- Achieved functional status
- Care-related pain/discomfort
- Complications
- Reintervention/readmission
- Long-term clinical status
- Long-term functional status
Measuring Multiple Outcomes
Prostate Cancer Care in Germany

- 5 year disease specific survival
  - Average hospital: 94%
  - Best hospital: 95%

- Severe erectile dysfunction after one year
  - Average hospital: 75.5%
  - Best hospital: 17.4%

- Incontinence after one year
  - Average hospital: 43.3%
  - Best hospital: 9.2%

Source: ICHOM
Adult Kidney Transplant Outcomes
U.S. Centers, 1987-1989

Number of programs: 219
Number of transplants: 19,588
One year graft survival: 79.6%

- 16 greater than predicted survival (7%)
- 20 worse than predicted survival (10%)
Adult Kidney Transplant Outcomes
U.S. Center Results, 2008-2010

Number of programs included: 236
Number of transplants: 38,535
1-year graft survival: 93.55%

- 8 greater than expected graft survival (3.4%)
- 14 worse than expected graft survival (5.9%)
Measuring the Cost of Care Delivery: Principles

• Cost is the **actual expense** of patient care, not the **charge** billed or collected

• Cost should be measured around the **patient**, not just the department or provider organization

• Cost should be aggregated over the **full cycle of care for the patient’s medical condition**

• Cost depends on the **actual use of resources** involved in a patient’s care process (personnel, facilities, supplies)

• “**Overhead**” costs should be associated with the patient facing resources which drive their usage

Mapping Resource Utilization
MD Anderson Cancer Center – New Patient Visit

**Registration and Verification**
- Receptionist, Patient Access Specialist, Interpreter
  - **Check in patient; communicate arrival PFD**
  - **Verify patient information; complete consent forms PFD**
  - **Assess patient workup; review patient history; conduct physical exam MLP**
  - **Initiate plan of care RN/LVN**
  - **Discuss plan of care RN/LVN, MD, mid-level provider, patient service coordinator**

**Intake**
- Nurse, Receptionist
  - **Assessment; assemble paperwork; place patient in room RN**
  - **Laryngoscopy needed? MD, MA, PSC**
  - **Perform laryngoscopy MD, MA, PSC**

**Clinician Visit**
- MD, mid-level provider, medical assistant, patient service coordinator, RN
  - **Initiate patient workup; review patient history; conduct physical exam MLP**
  - **Discuss plan of care RN/LVN**
  - **Review plan of care; introduce team; review schedule for return visit RN**

**Plan of Care Discussion**
- RN/LVN, MD, mid-level provider, patient service coordinator
  - **Clean room; complete paperwork; check email and voicemail for updates or changes to plan of care RN**
  - **Notify patient of changes RN**

**Plan of Care Scheduling**
- Patient Service Coordinator
  - **Schedule tests and consults; communicate schedule to patient PSC**
  - **Scheduled for same day? PSC**
  - **Enter next process**

**Decision Point**
- **Time (minutes)**
  - Patient arrives
  - Interpreter needed? PFD
  - Add language translation time for each process INT, PFD

Diagram notes:
- **2** minutes
- **40** minutes
- **20** minutes
- **45** minutes
- **30** minutes
- **15** minutes
- **5** minutes
- **95%**
- **90%**
- **10%**
- **5-10%**
- **90-95%**
Major Cost Reduction Opportunities in Health Care

- Reduce **process variation** that lowers efficiency and raises inventory without improving outcomes
- Eliminate **low-** or **non-value added** services or tests
  - Sometimes driven by protocols or to justify billing
- Rationalize redundant **administrative** and **scheduling** units
- **Improve utilization** of expensive physicians, staff, clinical space, and facilities by reducing duplication and service fragmentation
- Minimize use of **physician and skilled staff** time for less skilled activities
- Reduce the provision of routine or uncomplicated services in **highly-resourced** facilities
- **Reduce cycle times** across the care cycle
- **Optimize total care cycle cost** versus minimizing cost of individual service
- Increase **cost awareness** in clinical teams
- Many cost reduction opportunities will actually **improve outcomes**
3. Move to Bundled Payments for Care Cycles

**Bundled Price**

- A single price covering the **full care cycle for an acute medical condition**
- Time-based reimbursement for overall care of a **chronic condition**
- Time-based reimbursement for **primary/preventive care** for a **defined patient segment**
Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

- **Components** of OrthoChoice bundle

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Pre-op evaluation</td>
<td>All physician and staff fees and costs</td>
</tr>
<tr>
<td>Lab tests</td>
<td>1 follow-up visit within 3 months</td>
</tr>
<tr>
<td>All Radiology</td>
<td>Responsible for complications and any additional surgery to the joint within 2 years</td>
</tr>
<tr>
<td>Surgery &amp; related admissions</td>
<td>If post-op deep infection requiring antibiotics occurs, guarantee extends to 5 years</td>
</tr>
<tr>
<td>Prosthesis</td>
<td></td>
</tr>
<tr>
<td>Drugs</td>
<td></td>
</tr>
<tr>
<td>Inpatient rehab, up to 6 days</td>
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</tbody>
</table>

- Initially applied to all **relatively healthy patients** (i.e. ASA scores of 1 or 2)
- The same **referral process** from PCPs is utilized as the traditional system
- **Mandatory reporting** by providers to the joint registry plus supplementary reporting
- Bundle applies to **all** qualifying patients. Provider participation is **voluntary**, but all providers opted in

- The Stockholm bundled price for a knee or hip replacement is about **US $8,000**
4. Integrate Care Delivery Systems
Children’s Hospital of Philadelphia Care Network
Four Levels of Provider System Integration

1. **Define the overall scope of services** where the provider organization can achieve high value

2. **Concentrate volume by condition** in fewer locations

3. Choose the **right location for each service** based on medical condition, acuity level, resource intensity, cost level and need for convenience

   E.g., shift routine surgeries out of tertiary hospitals to smaller, more specialized facilities

4. Integrate care **across appropriate locations** through IPUs
5. Expand Geographic Reach
The Cleveland Clinic Affiliate Programs

- Central DuPage Hospital, IL
  Cardiac Surgery

- Chester County Hospital, PA
  Cardiac Surgery

- St. Vincent Indianapolis, IN
  Kidney Transplant

- Charleston, WV
  Kidney Transplant

- Pikeville Medical Center, KY
  Cardiac Surgery

- Cape Fear Valley Medical Center, NC
  Cardiac Surgery

- McLeod Heart & Vascular Institute, SC
  Cardiac Surgery

- Cleveland Clinic Florida Weston, FL
  Cardiac Surgery

- Rochester General Hospital, NY
  Cardiac Surgery
6. Build an Enabling Integrated IT Platform

Utilize information technology to enable restructuring of care delivery and measuring results, rather than treating it as a solution itself

- Combine all types of data (e.g. notes, images) for each patient
- Common data definitions
- Data encompasses the full care cycle, including care by referring entities
- Allow access and communication among all involved parties, including with patients
- Templates for medical conditions to enhance the user interface
- “Structured” data vs. free text
- Architecture that allows easy extraction of outcome measures, process measures, and activity-based cost measures for each patient and medical condition
- Interoperability standards enabling communication among different provider (and payor) organizations
A Mutually Reinforcing Strategic Agenda

1. Organize into Integrated Practice Units (IPUs)
2. Measure Outcomes and Cost For Every Patient
3. Move to Bundled Payments for Care Cycles
4. Integrate Care Delivery Systems
5. Expand Geographic Reach
6. Build an Integrated Information Technology Platform
Why We Have Been Stuck
The Legacy System

1. Organized around specialties and departments, with private-practice physicians

2. Measures process compliance and charges

3. Fee-for-service payments based on volume of services delivered

4. Each hospital or practice offers a full line of services

5. Providers limited to serving their immediate geographic area

6. Siloed IT systems for functions, services, and departments
Appendix
Moving to a High-Value Health Care System

1. Make patient value the central goal of all reforms

2. Move towards reorganizing care into Integrated Practice Units around patient medical conditions
   - Certification standards should require multidisciplinary teams, integrated scheduling, and coordinated case management
   - Primary and preventive care should be tailored to serving distinct patient segments

3. Eliminate the separation between inpatient, outpatient, and rehabilitation care
   - Integrate care across the care cycle, with more care shifting to the outpatient setting
   - Reduce cost-shifting between care settings by eliminating the different models of reimbursement for inpatient and outpatient care
   - Harness the power of IT to enable integrated care delivery
Moving to a High-Value Health Care System

4. Mandate a path to measurement and reporting of outcomes for every patient condition
   - Create a national body to oversee the development of outcome measures
   - Mandate publication of risk-adjusted outcomes
   - Until outcome data is widely available, expand minimum volume standards

5. Introduce new cost-accounting standards to measure costs at the level of patients and their medical conditions
   - Establish a national body to develop common costing standards that provide accurate cost data across providers and allows costs to be measured around the patient
   - Pilot patient-level costing across care settings to inform bundled payment design
Moving to a High-Value Health Care System

6. Shift reimbursement to **bundled payments** for the full care cycle
   - Introduce a universal **reimbursement catalog** based on accurate patient-level costing

7. Encourage consolidation of **providers** and provider **service lines**
   - Expand **minimum volume standards** to support excellent outcomes and efficient capacity utilization

8. Develop a strategic plan by medical condition and primary care **segment** to foster care integration, introduce outcome measures, pilot patient-level costing, and shift to bundled payments

9. Engage **clinicians** in the value agenda and accept joint responsibility for its success
### Creating a Value-Based Health Care Delivery System

#### Implications for Payors

<table>
<thead>
<tr>
<th>1. Integrated Practice Units (IPUs)</th>
<th>• Encourage and reward integrated practice unit models by providers</th>
</tr>
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<tbody>
<tr>
<td>2. Measure Cost and Outcomes</td>
<td>• Encourage or mandate provider outcome reporting through registries by medical condition</td>
</tr>
<tr>
<td></td>
<td>• Create standards for meaningful provider cost measurement and reporting</td>
</tr>
<tr>
<td>3. Move to Bundled Prices</td>
<td>• Design new bundled reimbursement structures for care cycles instead of fees for discrete services</td>
</tr>
<tr>
<td></td>
<td>• Share information with providers to enable improved outcomes and cost measurement</td>
</tr>
<tr>
<td>4. Integrate Across Separate Facilities</td>
<td>• Assist in coordinating patient care across the care cycle and across medical conditions</td>
</tr>
<tr>
<td></td>
<td>• Direct care to appropriate facilities within provider systems</td>
</tr>
<tr>
<td>5. Expand Excellence Across Geography</td>
<td>• Provide advice to patients (and referring physicians) in selecting excellent providers</td>
</tr>
<tr>
<td></td>
<td>• Create relationships to increase the volume of care delivered by or affiliated with centers of excellence</td>
</tr>
<tr>
<td>6. Enabling IT Platform</td>
<td>• Assemble, analyze, manage members’ total medical records</td>
</tr>
<tr>
<td></td>
<td>• Require introduction of compatible medical records systems</td>
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</table>
Creating a Value-Based Health Care Delivery System

Implications for Government

1. Integrated Practice Units (IPUs)
   - Reduce regulatory obstacles to care integration across the care cycle

2. Measure Cost and Outcomes
   - Create a national framework of medical condition outcome registries and a path to universal measurement
   - Tie reimbursement to outcome reporting
   - Set accounting standards for meaningful cost reporting

3. Move to Bundled Prices
   - Create a bundled pricing framework and rollout schedule

4. Integrate Across Separate Facilities
   - Introduce minimum volume standards by medical condition

5. Expand Excellence Across Geography
   - Encourage rural providers and providers who fall below minimum volume standards to affiliate with qualifying centers of excellence for more complex care

6. Enabling IT Platform
   - Set standards for common data definitions, interoperability, and the ability to easily extract outcome, process, and costing measures for qualifying HIT systems