Determining the “Real” Costs of Transplant: The Health Services Research Perspective

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Real Costs

- Overall actual expense involved in creating a good or service for sale to consumers … typically includes value of all tangible resources such as raw materials and labor that are used in the production process

What Are “Real” Costs of HCT?

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“Real” Costs: HSR Perspective

Challenges

Accomplishments

Opportunities

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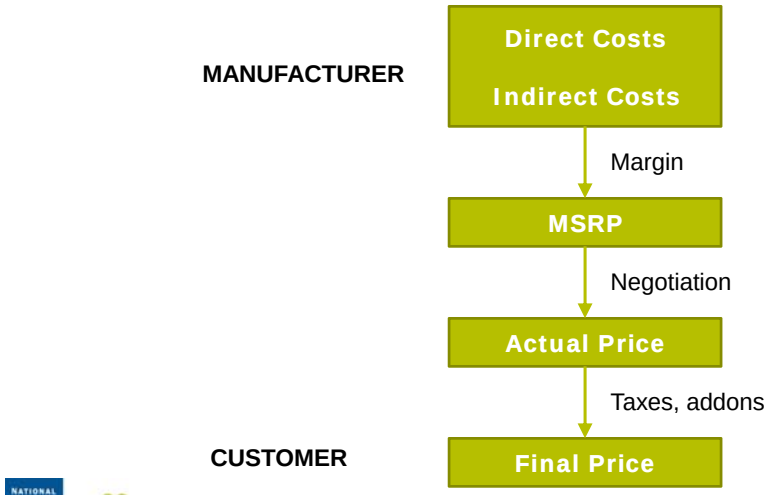
Challenges

Healthcare Costs: The Maserati Example

Types of Costs
(From Data Perspective)



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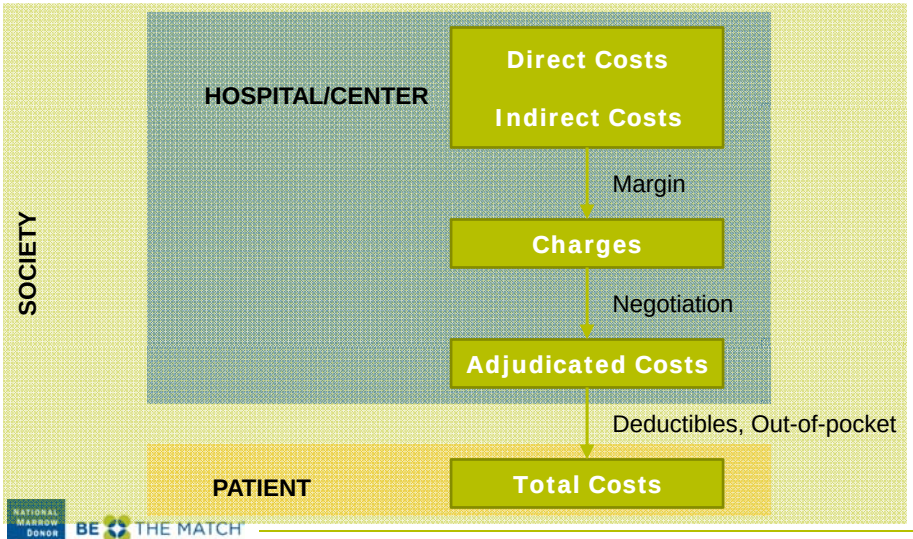
Types of Costs
(From Data Perspective)



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Sources of Cost Data for **Transplant**

Source	Collection	Reliability	Expense
Patient	+ to +++	+ to ++	+ to +++
Hospital	+ to ++	+++	++
Claims	+++	+++	+ to +++

Poor/inexpensive (+) … to … Good/expensive (+++)

Most Cost Data Are Not Collected For Research

ICD 9 Codes For Myeloid Leukemia

- 205.0X – Acute (including APL)
- 205.1X – Chronic
- 205.2X – Subacute
- 205.3X – Myeloid sarcoma
- 205.8X – Other myeloid leukemia
- 205.9X – Unspecified myeloid leukemia

All Databases Are Not Equal

	Hospital Billing Data	AHRQ Nation-wide Inpatient Sample	Private Claims Databases	Medicare
Data type	In/outpatient	Inpatient	In/outpatient	In/outpatient
Cost data	Various	Charges	Adjudicated claims	Charges
Cost categories (eg, pharmacy)	Available	No	Maybe	Available
Patient costs (eg, deductible)	No	No	Maybe	Available
Generalizable	No	Yes	??	Yes
Outcomes	Yes	Limited	Maybe	Yes

Other Challenges

- Data on costs of long term care not available
- Data on complications (e.g., GVHD) difficult to obtain
- Intangible costs hard to measure (eg, lost productivity)

Costs of HCT
Using Hospital Billing Data

- Single center study (N=294), allogeneic HCT
- Costs from day -30 to +100 (excluding MD costs)
- Median costs by conditioning
  - Myeloablative = $137,112
  - Non-myeloablative = $84,824
- Median costs by graft source
  - Umbilical cord blood = $137,564
  - Sibling donor = $83,583
- Cost predictors
  - HCT type, complications and length of hospital stay

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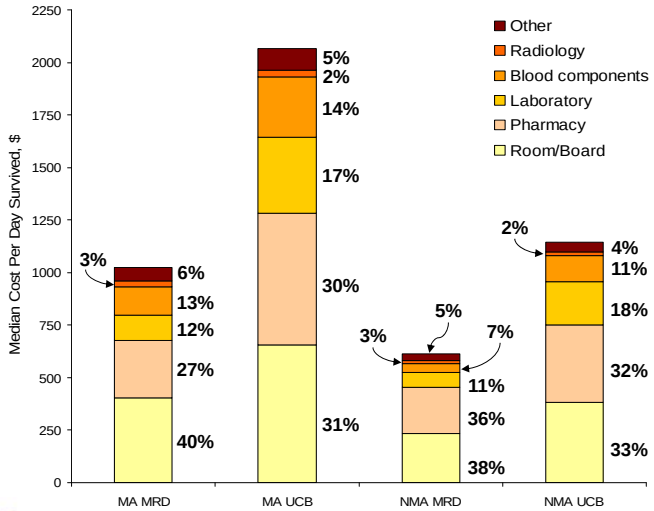
NS Majhail et al, Biol Blood Marrow Transplant, 2009

Cost Categories
Using Hospital Billing Data



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Costs Of HCT

Using Claims Data (Private Claims Data)

- Analysis of private claims database (MarketScan, now called Truven Health Analytics) – pilot feasibility analysis
- Evaluated inpatient and outpatient costs through day 100
- Patients identified using ICD 9 procedure codes
- N=3,365 hospitalizations, 2007-2009

NS Majhail et al, Bone Marrow Transplant, 2013

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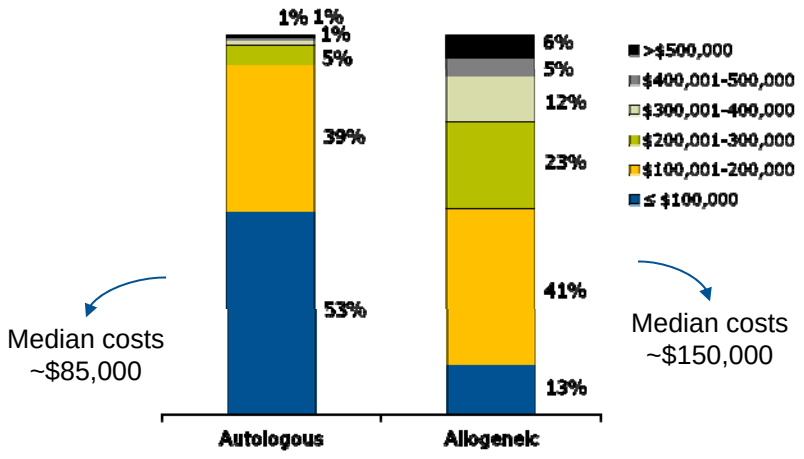
Costs Of HCT

Using Claims Data



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Costs Of HCT
Using Claims Data (Using AHRQ NIS)

- Analysis of Nationwide Inpatient Sample to evaluate regional variation in costs
- Only provides inpatient costs for first hospitalization
- Patients identified using ICD 9 procedure codes
- N=9,470 discharges, 2008-2010
- Mean costs
  - Autologous HCT: $71,000 to 91,000
  - Allogeneic HCT: $72,000 to 109,000

V Thao, Unpublished Data

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Patient Costs of HCT

- Pilot study of feasibility of capturing out-of-pocket costs over first 100 days and information on financial impact of HCT through 2 years
- Enrolled 30 patients at 3 sites

NS Majhail et al, Bone Marrow Transplant, 2013

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Literature on Costs of HCT (US Studies)

Reference	Data Source	Population Characteristics	Costs
Lee et al. [22]	Single institution, 1994-1997 Time horizon: hospital admission for conditioning until discharge	n = 236 (auto, allo: MRD, URD) Inpatient only; adult patients	Median costs: Auto: $55,500 Allo: $105,300
Saito et al. [20]	Single institution, 2000-2003 Time horizon: graft infusion through 1 year post-HCT	n = 275 (allo: MA, RIC) Inpatient and outpatient; adult patients	Median costs: Allo-MA: $128,253 Allo-RIC: $80,499
Saito et al. [21]	Single institution, 2000-2004 Time horizon: admission to 1 year post-HCT	n = 315 (allo: MRD, MUD) Inpatient only; adult patients	Median total cost over first year: $128,800
Majhail et al. [19]	Single institution, 2004-2006 Time horizon: from 30 days before until 100 days after HCT	n = 294 (MA: MRD, UCB; RIC: MRD, UCB) Inpatient and outpatient; adult patients	Median costs: MA: $137,112 RIC: $84,824 UCB: $137,564 MRD: $83,583
Majhail et al. [28]	Single institution, 2004-2006 Time horizon: from 30 days before until 100 days after HCT	n = 146 (allo: MRD, MUD, UCB) Inpatient and outpatient; pediatric patients	Mean cost per day survived: MRD: $3,446 MUD: $4,050 UCB: $4,522
Jones et al. [23]	Secondary database analysis (HCUP NIS), 2000-2001 Time horizon: admission to discharge for single HCT hospitalization	n = 8,891 (auto) Inpatient only; adult patients	Mean costs: $51,312

J Preussler et al, Biol Bone Marrow Transplant, 2012

Opportunities

Ideal Cost Data – The Utopian Vision

- Prospectively collected
- Data from diagnosis to post-transplant (extended time period)
- Includes patient and hospital costs
- Easily linkable to other databases
- Readily available in variety of platforms
- Includes outcomes and quality of life data
- Free!!

Areas For Research

- Cost identification studies
  - Costs of various transplant modalities
  - Cost predictors/drivers
  - Variation in costs of transplant
- Evaluate “value” with costs – cost-effectiveness studies
  - Transplant versus other therapies (cost-effectiveness of transplant vs. chemotherapy for AML CR1 in older patients)
  - Between transplant modalities (UCB vs. haploidentical HCT as part of BMT CTN 1101 study)
- Identify and mitigate patient costs

Innovative Methods To Leverage Existing Data

Bloomberg

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UnitedHealth Joins Mayo Clinic in Pact to Improve Care

By Michelle Fay Cortez - Jan 15, 2013

UnitedHealth Group Inc. (UNH), the largest U.S. provider of medical coverage, will join the Mayo Clinic in a research alliance designed to merge insurance records and medical data to find more efficient ways to deliver care.

The venture will focus on fundamental issues that may help standardize care in a way that will lower costs, said Veronique Roger, head of the clinic's Center for the Science of Health Delivery. This could include things such as analyzing the steps needed for successful hip replacement surgery or ways to get patients to consistently take their medicines, she said.

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Questions?

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