Industry Insights - A Focus on Healthcare IT, Advanced Clinical Applications, & Imaging Modalities

Tibor Duliskovich, M.D.
Patient Care and Clinical Informatics, Philips Healthcare
May 11th, 2010
Introduction of the speaker

- Dr. Tibor Duliskovich
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- Personal website: www.duliskovich.com
Agenda
Stanford School of Medicine Career Center – Industry Insights Seminar

- Breadth of medical devices industry from perspective of one of the largest medical companies in the world - Philips and from a perspective of close to 150 physicians working for the company.
- Medical device realization process and how medical knowledge is crucial in delivering safe and efficient devices to your colleagues in clinical settings.
- Other areas of potential physician involvement.
- Balancing passion for medicine and drive to help patients with corporate interests, managing potential ethical conflicts and commercial pressures.
- What can you do to become a desired resource for a company?

DISCLAIMER: The views and opinions expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of his employer or of the little green men that have been following him yesterday. The presentation contains forward-looking statements that are based on limited publicly available information and current expectations and certain assumptions of presenter, and are, therefore, subject to certain risks and uncertainties. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary from those described in the presentation. The author does not intend or assume any obligation to update or revise these forward-looking statements in light of developments which differ from those anticipated.
Corporate Overview of Philips Healthcare

- Big, but feels like small (20+ acquisitions of medical devices companies), HIT, modalities, home care, various care cycles.
- Philips Healthcare Informatics is the 8th largest healthcare vendor and generate over $600M in revenue annually.
- 50,000 personnel in Philips Healthcare
- 150 or so physicians working in various roles (research, clinical trials, product management, marketing, regulatory, intellectual property management)
- Founded in 1891, headquartered in Amsterdam, the Netherlands

**IntelliSphere**

A family of smart IT solutions with the unique ability to provide rich, actionable information for clinical decision making, whenever and wherever it is required.
# Meet physicians from Philips

| **Benedikt Latz (Germany)** | Medical specialty: Anesthesiology; Intensivist  
| Clinical Liaison in Clinical Affairs and Research and Development | „Being the interface between engineering and clinical world constantly brings new challenges.”  
| Philips Medical Systems |  

| **Ilya N. Gipp (Russia)** | Medical specialty: Radiology  
| Field Marketing Manager MCR EMEA & RBUS | „To be able to convince healthcare specialists speaking from own medical background and combining it with leading edge knowledge from one of industry leaders.”  
| Magnetic Resonance Imaging |  

| **Jonathan Sapir (Israel)** | Medical specialty: Radiology  
| Director, Cardiac and Image Processing Lab | „I turned my hobby into a profession and my profession into a hobby – this way I enjoy both.”  
| Philips Healthcare, Global Research, CT |
# Meet physicians from Philips

<table>
<thead>
<tr>
<th><strong>Urs Schneider (Germany)</strong>&lt;br&gt;Chief Medical Officer &amp; Medical Director, DACH&lt;br&gt;Philips Healthcare</th>
<th><strong>Medical specialty</strong>: Internal medicine, cardiology, emergency medicine, orthopedic surgery.&lt;br&gt;„Being able to learn the whole life is a privilege.”</th>
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<tr>
<td><strong>Kors van Wyngaarden (The Netherlands)</strong>&lt;br&gt;Global Director, Online Strategy&lt;br&gt;Philips International BV</td>
<td><strong>Medical specialty</strong>: Nuclear Medicine&lt;br&gt;„Without the guidance of physicians, healthcare companies would perhaps lose focus on developing solutions that were truly relevant.”</td>
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<tr>
<td><strong>David White (USA)</strong>&lt;br&gt;Chief Medical Officer&lt;br&gt;Home Healthcare Solutions</td>
<td><strong>Medical specialty</strong>: Internal Medicine, Pulmonary Medicine, Sleep Medicine.&lt;br&gt;„My position at Philips provides an excellent balance of clinical activities, research, and business.”</td>
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</table>
Product Creation Process

- Process Zero
- Strategy Deployment
- Product Realization Process
- New Product Introduction
Process Zero

Exploring

Technology Scouting and Selection

Feasibility

Clinical Opportunities

Creative Idea Generation

Know-how generation

Conception

Comparative Effectiveness

Insights Validation

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Strategy Deployment

- Alignment with Business Strategy
- Road-mapping
- Resource Planning
- Enhancements via Mergers and Acquisitions
- Opportunity Creation
- Project Portfolio
- Requesting CPT Codes, Affecting Policies, working with payers

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Product Realization Process

- Product Proposal
- Verification
- Transfer to Manufacturing
- Product Life-cycle Management
- Design, Prototyping
- Validation
- Regulatory Approvals
- Intellectual Property, Trademarks

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New Product Introduction

- Marketing Activities
- Documentation
- Knowledgebase transfer within Company, etc.
- Professional Organization Engagement
- Training
Medical Devices Industry Specifics

- Highly regulated, mainly to ensure safety and effectiveness of the devices.
- Lengthy development cycle, years before you see results of your work out in the field.
- Very expensive to introduce a novelty, disruptive technology to market.
- Needs clinical proof points to be successful, marketing alone is not enough.
- Different realities in different countries, can’t expect to be relevant globally.
- Short-term political horizon in conflict with long-term disease life cycle.
- Increasing cost of research but decreasing budgets.
Traditional versus Agile Development Technologies

Traditional techniques (e.g. waterfall)
- Heavy planning overhead
- Long development and testing cycle (month, years)
- Clear understanding of end product
- Thorough documentation of requirements in inception phase
- More predictable, but higher risk of delivering not what market needs (evolving needs?)
- Easier to ensure compliance with regulatory

Agile techniques (e.g. SCRUM)
- Frequent short (3-4 weeks) iterations
- No long term planning, general idea of what the end product will look like
- Adjust plans on the go, requirements and solutions evolve
- Break down into small deliverables
- Rapid prototyping to create building blocks that can be plugged into commercial products
- Constant re-evaluation of priorities to optimize the return on investment and ensure alignment with customer needs and company goals
Where can physicians apply?

**Corporate Business Objectives**

- Provide **clinical evidence** necessary for regulatory approvals.
- Advise in **intellectual property** (patent) applications. IP landscaping and new IP generation; find work-around solutions to competitor IP.
- Influence the PRP process regarding the **clinical appropriateness of planned R&D** activities, realizing significant savings to company.
- **Revise procedures** to promote product safety and efficacy.
- Ensure **medical privacy, compliance** and security (HIPAA in dealing with PHI).
- Work with **reimbursement policy** decision makers on national level to include your companies services; coordinate payment information with **pricing** team.
- Provide expertise to grow business and market share by **identifying complimentary partnerships and evaluating merger and acquisition targets**. Create business proposition for device-partner joint market approach.
Where can physicians apply?

*Corporate Business Objectives*

- **Reduce legal and regulatory exposure** by providing clinical support into regulatory investigations and legal issues.
- **Educate market** about your company’s products and services.
- **Support sales** activities via demos or training of end users.
- Create new revenue via implementing **Education-as-a-Business** by re-purposing clinical content from academic activities funded by company. Offer virtual classes.
- Help screening candidates for **pro-active hiring in clinical areas**
- Help **improve the work environment for employees** by applying ergonomic workplace designs and providing health advise.
- Contribute to **emergency response plans** to pandemics, bioterrorism, ionizing radiation events, natural disasters, **be the clinical expert in the management response team**.
Where can physicians apply?

**Corporate Clinical Strategy**

- **Be the clinical consciousness** of company and the **Voice of Patient and Physician** to management team.
- Select and support **clinical decision support** research that aligns with the strategic direction of the company and makes the business offering more robust. Provide **clinical proof points** for marketing.
- Build medical advice networks to develop medical and health care relationships with various experts to help company to refine its strategic direction and differentiate its products, services and solutions.
- Maintain a publication portfolio and **monitor professional literature for competitive products** and services.
- Publish scientific research, outcomes and comparative effectiveness studies to help differentiate the company as a thought leader in the health care industry or one of its segments and to educate the scientific/clinical community.
- **Integrate feedback from tradeshows and scientific conferences** into strategic planning.
- Represent company in **professional organizations** and standardization bodies.
- Coordinate **luminary/KOL strategy** of company.
Where can physicians apply?

*Product efficacy*

Raise the bar for **efficacy** of product, in other words raise the full potential of the product under best circumstances.

- Provide **input into development** decision making by Clinical Evidence-based Medicine (compares outcomes only – what is best for patient?)
- Coordinate **clinical trials**.
- Contribute to **grant applications** and executing the research.
- Build a **knowledge database** to manage and access the medical and health care knowledge being accumulated by the company and employees.
- Evidence for **post-market surveillance** of clinical safety and efficacy.
Where can physicians apply?

*Product effectiveness*

Improve performance of products under “real life” conditions – the so-called *effectiveness* – to improve patient outcomes.

- Help improve **safety of devices**, **foolproof human-machine interfaces** (clinical risk map of product, build safety safeguards into procedures, introduce clinical logic into operating algorithms, provide relevant clinical information, automate quality assurance on site).
- **Educate employees** on real-life clinical workflows and use cases.
- Improve **usability**, harmonize user interfaces of integrated products.
- Be part of **health risk assessments of defects** that present safety concerns.
Where can physicians apply?

Product efficiency

Find ways to increase **efficiency** of products to achieve the greatest health improvement at the lowest cost to the society.

- Comparative Effectiveness Research (compares outcomes in light of costs and patients demographics – **what is best for society?**)
- **Data-mining of clinical datasets** acquired in trials for a different purpose.
- **Cross-evaluate different products** of company and find ways to group their capabilities to improve efficiency.
- Provide **value-add for product portfolio** by ‘association’ with relevant clinical content and use cases.
- Incorporate **clinical decision support** into products. Provide tools that support the diagnosis, also quantitatively.
### Clinical vs. Academic vs. Corporate World

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<th></th>
<th>Definition</th>
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<th>Startup</th>
<th>Corporate</th>
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<tbody>
<tr>
<td><strong>Business Travel</strong></td>
<td>The amount of out-of-town business travel required by the job. Consider impact on family.</td>
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<td><strong>Camaraderie</strong></td>
<td>Whether working for the organization provides opportunities to socialize with other employees.</td>
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<td><strong>Collegial Work Environment</strong></td>
<td>Whether the work environment is team-oriented and facilitates collaboration.</td>
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<td><strong>Compensation</strong></td>
<td>The competitiveness of the job’s financial compensation package.</td>
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<td><strong>Coworker Quality</strong></td>
<td>The quality of the coworkers in the organization.</td>
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<tr>
<td><strong>Development Opportunities</strong></td>
<td>The developmental/educational opportunities provided by the job. Tuition reimbursement. Self-education built into daily schedule. Environment enforcing narrow focus or allowing experimentation.</td>
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<tr>
<td><strong>Empowerment</strong></td>
<td>The level of involvement employees have in decisions that affect their job and career.</td>
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<tr>
<td><strong>Ethics/Integrity</strong></td>
<td>The organization’s commitment to ethics and integrity.</td>
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<tr>
<td>Future Career Opportunities</td>
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<tr>
<td>Health Benefits</td>
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<tr>
<td>Impact on patient outcomes</td>
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<tr>
<td>Innovation</td>
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<td>Job Security</td>
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<tr>
<td>Jobs-Interest Alignment</td>
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<td>Location</td>
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<td>Manager Quality</td>
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<tr>
<td>Market Position</td>
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<td>The competitive position the organization holds in its market/discipline.</td>
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<td>Meritocracy</td>
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<td>Whether or not employees are rewarded and promoted based on their achievements.</td>
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<tr>
<td>Org. Prestige</td>
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<tr>
<td>The reputation of organization’s product or service.</td>
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<td>Organizational Growth</td>
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<tr>
<td>The growth rate of the organization’s business. Consider M&amp;A too, may be a distraction or impact job security.</td>
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<tr>
<td>Organizational Stability</td>
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<tr>
<td>The level of stability of the organization/institution and the job, correlates with the size.</td>
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<tr>
<td>People Management</td>
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<tr>
<td>The organization's reputation for managing people. Goes in hand with employee turnover and company morale.</td>
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<tr>
<td>People Turnaround Rate</td>
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<tr>
<td>The ratio of the number of employees a company must replace in a given time period to the average number of total employees.</td>
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<tr>
<td>Recognition</td>
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<tr>
<td>The amount of recognition provided to employees by the organization. Performance based incentives.</td>
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<td>Respect</td>
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<tr>
<td>The degree of respect that the organization/institution shows for its employees.</td>
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<tr>
<td>Retirement Benefits</td>
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<tr>
<td>The comprehensiveness of the organization’s retirement benefits.</td>
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<td>Risk Taking</td>
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<tr>
<td>The amount of risk that the organization encourages employees to take. When employees are encouraged to take intelligent risks, when talented people aren’t afraid to fail, the org excels. Do you ask for permission or ask for forgiveness?</td>
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<td>Satisfaction</td>
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<tr>
<td>Level of satisfaction employees can reach by finishing a typical day-to-day task or activity.</td>
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<td>Vacation</td>
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<tr>
<td>The amount of holiday/vacation time that employees earn annually.</td>
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<tr>
<td>Work environment</td>
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<tr>
<td>Whether the work environment is formal or informal, cubicles vs offices, noise, bio-hazard, surveillance, tools to perform your duties, etc.</td>
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<tr>
<td>Work-Life Balance</td>
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<td>The extent to which the job allows you to balance your work and your other interests. Flexible work hours, part time, personal days, telecommute, etc.</td>
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Fundamental Principles of a Physician Behavior

- **Principle of Primacy of Patients' Welfare**
  This principle is based on a dedication to serving the interest of the patient. Altruism contributes to the trust that is central to the physician-patient relationship.

- **Principle of Patients' Autonomy**
  Physicians must have respect for patients' autonomy. Physicians must be honest with their patients and empower them to make informed decisions about the course of their treatment.

- **Principle of Social Justice**
  The medical profession must promote justice in the healthcare system, including the fair distribution of finite healthcare resources.
Physician Values and Corporate Pressures

- You are responsible for setting up a clinical trial – how you select the participants and how you analyze the results will directly impact the conclusions – will you exclude unfavorable data points to boost results and promote your company’s product?
- You are in R&D and responsible for releasing the product to manufacturing, but discover an inherent safety issue – will you release anyway and mitigate later or will you scrap and start from scratch?
- You are part of sale-support team and are asked by physician if your company’s product is better than competitor's and you happen to know that competitor is much better in that particular case – would you tell honestly the physician that he would be better off with the other product?
- Marketing asks for clinical proof points to put a spin on a new product launch, but there are none at the point, will you „make up” claims?
Physician Values and Corporate Pressures

• You are in a safety committee and a defect presenting a patient safety is discussed, someone says that documentation is clear about this off-label use so there is no legal risk to company, but you know that in real-life it will not prevent the unanticipated use of the product and it can harm patients – will you push for an expensive recall?

• Your company just sold a million dollars worth of equipment, but you know those devices require stable electric supply, fast networks, air-conditioning – none available at target geography – will you voice your concern?

• To reduce inventory your company pushes an expensive outdated product to a developing country, but you know that the same money could buy more units of newer, easier to operate devices – will you block the sale and promote the right product?

• You accidentally learned about a corrupt deal – will you report it?

• You are part of an industry/academic team developing new standard, your company is ahead of everybody else and wants you to push the proprietary protocol to become industry standard, however you realize that an academic proposition is addressing clinical workflow better – would you downplay the advantages to save cost for your company and to help market penetration?
How can you become even more relevant?

- Academic experience is of less value “out in the wild” – engage as consultant or researcher with industry projects.
- Learn how to provide the clinical feedback to technical, marketing and business people (learn their language and practice the communication, they expect different formats of messaging).
- If you have a very narrow specialization that will increase your value to a niche industry player, but reduce your options. If you want dedicate yourself to one area – go as deep as you possibly can. But if unsure – try to diversify and get multi-ology cross-functional experience.
- Publish not only in scientific journals with high Impact Factor, but in various industry-sponsored media targeted at general public or industry sectors. Increase your visibility to employers.
- Extend your professional network into corporate world.
- Learn to market and position yourself, consider first few job interviews a learning experience.
- Have a great idea? Start your own company.
- How to get on HR radar screen? [http://www.philips.com/about/careers](http://www.philips.com/about/careers)