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# Market Studies of United States

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A report on a study of the market for  
clinical laboratory and diagnostic products  
in the Mid-Atlantic States



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A REPORT ON A STUDY OF THE MARKET FOR  
CLINICAL LABORATORY AND DIAGNOSTIC PRODUCTS  
IN THE MID-ATLANTIC STATES OF THE UNITED STATES

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## INTRODUCTION

This report summarizes the results of a market study carried out by Wind Associates Inc. for the Department of Industry, Trade and Commerce.

The study explores the market for three categories of health care products:

- (i) consumable and disposable hospital products,
- (ii) clinical laboratory and diagnostic products and,
- (iii) non-invasive cardiac diagnostic products.

This report concerns the clinical laboratory and diagnostic products group. The other two product groups are covered in separate reports.

The study was carried out in 1981 in conjunction with the Canadian Consulate in Philadelphia and assesses the market potential for the above product categories of the Mid-Atlantic states of the U.S. This region of the United States has been selected for study as a potential market for Canadian exports of health care products.

A BRIEF NOTE ON REGULATORY REQUIREMENTS

The study of the Mid-Atlantic market for health care products does not include any reference to the regulatory requirements which must be met by exports to the U.S. This was done to focus the study on the commercial aspect of the market. A summary of these regulatory requirements may be found in a background paper entitled:

Summary of Regulatory Requirements for  
Medical Devices in Canada and the United States

Prepared By: Sector Analysis Division  
Chemicals Branch  
Department of Industry, Trade and Commerce  
Ottawa, Canada

These papers are available from the Department of Industry, Trade and Commerce.

OBJECTIVES

The primary objective of this report is to assess the Mid-Atlantic market potential for clinical laboratory and diagnostic products.

Two secondary objectives are to provide:

- (a) initial guidelines for the long-term export development to the U.S. of the Canadian health care products industry, and
- (b) initial guidelines for the design of marketing entry strategies.

APPROACH

A five-phase approach was utilized:

- (a) A telephone survey to assess the needs and export experience of selected Canadian manufacturers.
- (b) Analysis of available secondary data to assess the market potential for the three product categories and their current market structure.
- (c) A survey among key decision makers with respect to the acquisition of new equipment and supplies. This survey was based on in-depth personal interviews with purchasing agents and physicians in hospitals and labs.
- (d) A survey among distributors to assess their mode of operation and the conditions under which they will carry and promote Canadian products.
- (e) Integration of the above.

GENERAL FINDINGS

1. The U.S. market for hospital and lab products and supplies is large and growing. There are 7,200 hospitals and more than 14,000 hospital and commercial clinical laboratories.
2. The U.S. market for the three product categories - disposable and consumable hospital products, cardiac equipment and clinical lab and diagnostic products -- is large and growing. Total 1978 sales of these three product categories is 19.4 billion dollars -- \$16.5 billion in consumable/disposables; \$2.25 billion in lab products and \$650 million in cardiac equipment and supplies. All three markets have enjoyed real growth. Yet, there is a large variance across products and product categories. There is a strong movement toward the use of disposable products and increased emphasis on diagnostic and preventive medicine.
3. The Mid-Atlantic states -- Eastern Pennsylvania, Virginia, Maryland, Washington D.C., Delaware and Southern New Jersey, are a large and attractive market for hospital and lab products and supplies. It has a large population base (29.6 million individuals) and a large hospital base (699 hospitals with 199,920 beds). (Appendix B shows a detailed breakdown of hospital statistics for this region). In addition, most of the major laboratories (SK&F, Med Path, Denam and others) are concentrated in an area within 100 miles of Philadelphia, with easy access to most of the Northeast and Southeastern U.S. This market also has a large number of distributors who would consider carrying Canadian products. Furthermore, this market can be viewed as a good test market for the entire U.S. It is large and varied enough to include all forms of medical care, and an entry strategy which is successful here can be implemented nationally. This market is also a sophisticated one and success here can be used as a strong "selling" point in other parts of the country.
4. Hospital and lab purchase decisions involve a number of participants. For medical equipment more than \$100,000, HSA approval is also required (see Appendix A for a brief discussion of HSA).
5. In all three product categories, distributors play an important role and should be considered as one of the ways of entering the U.S. market.
6. Canadian manufacturers overall have a good image in this market, but they have to compete effectively against U.S. and other manufacturers; i.e., being Canadian does not offer any competitive advantage. It is also important for the Canadian manufacturers to overcome certain perceived obstacles to entry into the U.S. market (for a summary of these concerns, see Appendix C).

7. The trend among local distributors is one of constriction rather than expansion. Distributors are trying to reduce the number of brands per product category, and express reluctance to add new products. This is primarily due to the desire to simplify inventory and to focus their marketing activities on a reduced number of brands. Their reluctance to add new products does have some important exceptions. They are willing to adopt a new product if: (a) it is innovative, (b) they can get an exclusive distribution agreement, and or (c) hospitals specifically request it.
8. The distributors interviewed showed no specific resistance to adding foreign products, either Canadian (with whom they've had little experience) or Japanese (with whom they have had mostly favourable experience). Predictably, distributors specified that these foreign products must show some specific, significant advantage in profitability or quality. Although there was no specific resistance to adding Canadian or Japanese products, their adoption was conditional on the same factors that distributors said were necessary for adoption of any new product: (a) innovativeness and (b) exclusivity. Because of a highly competitive distribution environment, there is a preoccupation with exclusivity as a competitive weapon.
9. The market for all products is quite heterogeneous.
10. Major opportunities for a new manufacturer entering the market, as perceived by the key buyers are by:
  - having better products with competitive prices
  - improve delivery
  - provide new information
  - improve relationship among all participants in the system.

### OVERALL STRATEGIC GUIDELINES

1. The first question facing any Canadian manufacturer is obviously "should we enter the U.S. market"? The size and growth of the U.S. market makes it a most attractive market. Yet, the market is very competitive and the buyers sophisticated. Success would require, therefore, a unique positioning (or real cost advantages). If such a positioning can be provided by Canadian manufacturers the opportunities of operating in the U.S. are high. The risk of failure can be reduced if the entry into the U.S. market is based on a good understanding of the market and its needs and follows an adaptive experimentation approach; i.e., design at least two major entry strategies (either for the same or different products) and experiment with them.
2. The first and most critical question facing each Canadian manufacturer is "what is the differential advantage his/her product offers the buying organization"? The two major positioning options are:
  - a. unique product performance -- typically associated with an innovative product, or for established products on those cases in which the superior performance of the Canadian product can be demonstrated to the key hospital and lab decision makers.
  - b. price -- offer a product similar to the one offered by competitors but at significant cost savings.

If a given product does not have a unique positioning and does not offer a cost advantage, there is little reason to expect successful entry into the U.S. market.

On the other hand, an ideal situation is the one in which a manufacturer can offer an improved/innovative product at a price which offers U.S. buyers significant cost savings.

3. Related to the positioning decision is the question of "what is the competitive advantage of the Canadian manufacturer"? If it is in production, quality and or cost, it would have different implications than if it were in R&D. In the first case, it might even be beneficial to consider the purchase (licence) of new innovative products in the U.S. and elsewhere and manufacturing them in Canada. If on the other hand the advantage of a Canadian firm is in the R&D area, it should specialize in this aspect and consider the production aspect as a separate one (which can either be developed or farmed outside to another firm).
4. The second critical decision, is the decision whether to sell directly to the hospitals and labs or through distributors. Both options should be considered.

Selling through distributors. There are major advantages for selling through distributors -- they have an access to the market, local presence and are typically lower cost method of distribution than employing one's own sales-force. Yet, getting a distributor to carry and promote the products of Canadian manufacturers is not an easy task. The basic task facing the Canadian manufacturer is to develop a strategy to sell the distributor and motivate him/her to promote the Canadian products. Assuring reliable supplies, offering exclusive rights for a given territory and competitive financial terms are all necessary conditions for getting acceptance by distributors. Furthermore, the more unique the product positioning the easier it is to get their acceptance. It is important to note, however, that employing a distributor still requires continuous service of his needs (after sales service, information, reliable delivery, etc.).

Selling direct. This option is viable for some of the larger customers (hospitals and labs). It is typically more expensive than operating through distributors. Yet, it offers greater opportunity to "push" the product more effectively. The cost of such an option especially when considering a single region such as the Mid-Atlantic states, can be quite reasonable since a single salesperson can cover the area quite effectively and a compensation scheme based primarily on commission can help control the cost.

Mixed pattern. Given the advantages (and disadvantages) of the two major approaches to distribution, it is strongly suggested that the Canadian manufacturer consider experimenting with both methods. Furthermore, the proposed mixed pattern can include both using the two methods of distribution as competing approaches (testing to establish which is more effective) as well as co-operative approach primarily in the form of a joint venture between Canadian manufacturers and U.S. distributors.

5. The U.S. market for hospital and lab products is highly competitive. Any new entry into this market has first of all to create awareness for its products and services. Even if one has a unique and innovative product, efforts should be directed toward creating awareness of the product and preference for it among the relevant decision makers in hospitals and labs. The need to heavily promote new products (assuming they do have a unique positioning) is especially critical given that most buyers are very satisfied with their current products and suppliers and, hence, perceive little need for change and adding a new supplier.

It is desirable, therefore, to experiment with different levels of promotional efforts. In planning the necessary promotion campaign, one should take advantage of the word of mouth communication among physicians in a given area and concentrate in one area rather than spread the efforts in a number of areas. It is strongly suggested that unless a national distributor can be obtained to carry and promote the given products, a regional entry strategy be employed.

6. In considering the development of a promotional campaign, the Canadian manufacturers should consider all available promotional tools ranging from the conventional magazine advertising, direct mail, trade shows and sales calls to the newer telephone promotions and other innovative promotional methods.
7. If a co-operative effort among a number of Canadian manufacturers can be co-ordinated, another mode of entry into the U.S. should be considered -- establishing a marketing and trading company. Such a company would combine the Japanese trading company concept with modern marketing strategy concepts and approaches and would be designed to compete with local distributors and manufacturers.
8. Short-term export strategy should involve at the minimum a four-stage approach:
  - (a) Evaluation of current products to identify those with a potential competitive advantage in the U.S. market (either in terms of cost or unique positioning).
  - (b) Test the market acceptability for these products. This can be done either informally by promoting the product to a number of distributors and hospitals and lab personnel and getting their reaction to it or in a more formal way by conducting a concept/product testing approach.
  - (c) Decide on a distribution option and design an associated marketing strategy for testing in the Mid-Atlantic states.
  - (d) Implement the test market program, monitor results and modify the program accordingly.
9. The long-range export development strategy differs from the short-term strategy (point #8) with respect to the first phase. Instead of limiting the export activities to the firm's current products, the long-term strategy should consider as viable option the development of new products to meet the specific needs of customers (hospitals and labs) which are not met by U.S. and other competitors.

For this strategy, more effort should be placed on R&D activities and possible extension of current supply capabilities. This would require more testing of early concepts in the U.S. market. A Canadian marketing and trading company, if established, could serve as an important vehicle to facilitate the development and subsequent marketing of the new products.

## SPECIFIC FINDINGS

### 1. Market Composition, Size and Growth

An analysis of available secondary data was performed in order to assess the market potential for clinical laboratory and diagnostic products in the United States. Special attention was given to diagnostic products in the categories of clinical chemistry, microbiology/bacteriology, radio immunoassay (in vitro), and hematology.

The data sources pointed to a dramatic increase in U.S. sales of all laboratory products. In 1976, total sales volume for all laboratory products was \$1.35 billion and in 1978, \$2.25 billion. This 68% sales increase was attributed to increased laboratory testing due to physician fear of malpractice, and increasing sophistication of laboratory instrumentation.

The sales volume was distributed among diagnostic products, instruments, apparatus/equipment, lab supplies and computer products. The largest category was diagnostic products which in 1976 accounted for \$553 million. This volume rose to \$955 million in 1978, and projected volume for 1984 is more than \$2 billion.

### 2. The Competitive Environment

Available secondary data on the U.S. market for clinical lab supplies shows that each specific product category functions in a distinctive competitive environment. For clinical chemistry products, the top two market leaders (Du Pont and Technicon) own between 30-60% of market share, depending on the specific product (i.e., whether it is enzyme chemistries, regular chemistries, etc.). For microbiology/bacteriology products, the market leaders vary depending on specific product markets, but in each case, the top two market leaders own between 50-80% of market share. Most hematology products are dominated by Coulter with 65% of share. A slightly lower degree of market concentration exists in in vitro radioimmunoassay products, where the top two market leaders in each specific product market own an average of 40% of share. Information about the competitive environment in the Mid-Atlantic market for clinical laboratory products suggest that more than 25 suppliers are used and the most frequently used ones are:

For: Clinical Chemistry Products

Beckman (42%); Scientific Products (35%) and Fisher (32%)

For: Radioimmunoassay Supplies

Abbott Lab (42%); Beckman (29%) and Corning (26%)

For: Hematology Supplies

Scientific Supplies (43%); Fisher (38%) and Coulter (35%)

### 3. Market Segments

The hospital market for laboratory products was segmented first on the basis of the major benefits sought in laboratory supplies and diagnostic kits and second, on the basis of the hospital personnel's attitude toward Canadian manufacturers.

Three benefit segments were identified.

The Image/Cost Segment (40%). This segment consists of hospital personnel whose major criteria for evaluating the purchase of laboratory supplies are the effect of the purchase on the hospital's prestige and improved productivity and cost savings. Hospitals in this category tend to be medium-sized and have a greater tendency to show increases in occupancy rate, relative to hospitals in the other two segments. Although all hospitals in this segment reported being in the black in 1977, they are more pessimistic about their hospitals' financial future.

The Quality of Care Segment (30%). The major purchase criterion for this segment is the effect of the purchase on improved quality of medical care. Hospitals in this segment are small but have a greater tendency to show recent trends in bed increases than other segments. Respondents in this segment tend to have a status quo outlook regarding the future of their hospitals' financial condition relative to the image/cost segment (pessimistic) or the cost segment (optimistic).

The Cost Segment (30%). This segment's major purchase criterion is the effect of the purchase on productivity and cost savings. Hospitals in this segment are much larger than those in the other segments. Respondents in this segment tend to have either an optimistic or status quo outlook regarding their hospitals' future financial status.

Further analysis of the hospitals attitude toward Canadian manufacturers suggested that about half of the hospitals were "positive" toward Canadian manufacturers while the other half had a less favourable "marginal" attitude toward them. Those more favourable to Canadian manufacturers were more concerned with quality of medical care and slightly less with the structure of operating cost vs. initial investment.

### 4. Buying Process

The buying process industry involves a number of participants. The most active ones by stage of the buying decision process are:

<u>Stage</u>	<u>Most Active Participants</u>
Request Supplies	Department Supervisor
Set Specifications	Dept. Supr., Bacteriology Supervisor, Chief of Lab
Seek Information	Dept. Supr., Bact. Supr.
Set Criteria for Evaluation	President/V.P., Bact. Supr., Standards Cttee
Evaluate Suppliers	Purchasing Department
Set Budget	Administrative Committee
Negotiate with Supplier	Purchasing Department
Make Purchase Decision	Bact. Supr.
Postpurchase Evaluation	Dept. Supr., Comptroller, Chief of Lab

Some characteristics of the buying process vary somewhat among the Image/Cost, Quality, and Cost segments. The Cost segment hospitals have a greater tendency to use a resource allocation committee to decide on new purchases of laboratory equipment. These resource allocation committees have been in existence longer than comparable committees in the other segments. In terms of anticipated purchases of capital equipment, respondents in the Cost segment have a greater expectation that their hospitals will increase or maintain their level of purchases of capital equipment in the future.

##### 5. Purchase Pattern

The predominant purchase pattern of laboratory diagnostic supplies is one in which purchases are split between distributors and manufacturers. Those who use this pattern purchase about 60% of their supplies from distributors and 40% from manufacturers. Major suppliers for all laboratory diagnostic supplies are Fisher, Scientific Products, and Beckman.

Ninety percent of the respondents indicated that their hospital had increased the amount spent on laboratory diagnostic supplies in the past two years, with an average dollar increase of 18%. Two-thirds of the respondents expect this amount to increase by next year, with an average expected increase of 8%.

Purchase patterns differ by type of product. For example, while 20-25% of chemistry lab supplies, micro/bact supplies, and hematology supplies are purchased primarily direct from the manufacturer, fully 68% of vitro radioimmunoassay supplies are purchased primarily from the manufacturer. In addition, the percentage of respondents expecting increases in next year's dollar purchase volume varies by product category: chemistry supplies (69%), micro/bact supplies (77%), RIA supplies (90%), and hematology supplies (79%).

There are some slight differences in purchase patterns among the three benefit segments. The Quality segment shows less of a tendency to restrict their purchases to either manufacturers or distributors, favouring instead a combined approach. Major suppliers are used differently, with the Quality segment making a much higher percent of purchases from Beckman. The Quality segment also shows a slightly lesser tendency to have increased laboratory supply purchasing in the last two years and a lesser tendency to expect an increase in purchasing within the next year.

#### 6. Criteria Used in Purchase Decisions

In the aggregate, four criteria were most important in the buying decision process:

Enhancement of quality of care	30%
Cost savings	27%
Enhancement of hospital's image	14%
Structure of operating cost (low) vs. initial investment (high)	13%

Manufacturer country of origin (U.S., Canada or Japan) was of little importance.

#### 7. Problems and Opportunities

When asked what factors could simplify and improve their purchase operations, respondents suggested the following: (1) decrease red tape/paperwork, (2) improve relations between sales vendors and staff, (3) improve inventory/accounting system, and (4) more product information from seller.

Broken down by benefit segments, the Image/Cost segment showed most interest in improved inventory, the Quality segment in delivery and price protection, and the Cost segment in improved relations between sales vendors and staff.

Respondents were also asked what advice they would give to new manufacturers for increasing their chance of selling, and the advice was consistent across segments. In summary, the advice was: (1) have a new and better product with competitive prices, (2) have an informative sales approach, and (3) develop a good relationship among vendors, staff, and purchasers. The majority (90%) of the respondents said their advice would not differ if the firm was Canadian.

Private labs preference was on: cost (60%); guaranteed delivery (40%) and a better standardized kit size which corresponds to usage patterns (40%).

8. Attitudes of Hospital and Lab Personnel

- Eighty percent of all respondents indicated that they were satisfied with their current suppliers. This degree of satisfaction was highest (92%) among the Cost segment and lowest (67%) among the Quality segment.
- Two-thirds of the respondents have a strong preference for known distributors.
- Fifty-five percent of the respondents prefer local firms. This tendency is highest among the Image/Cost segment (69%) and lowest (42%) among the Quality segment.
- Respondents in the Image/Cost segment have a higher degree of preference for dealing with U.S. firms (44%) than do either the Quality (25%) or Cost (25%) segments. Only a small percentage of the respondents felt that foreign manufacturers' quality is as good as the U.S. -- 22% for European quality, 17% for Canadian and 10% for Japanese. Private labs do prefer home Canadian firms.
- Only 12% of the respondents indicated that they would buy from the lowest price supplier. Yet, 72% of the respondents expect the hospital to be more cost conscious in the near future. In contrast, only 40% of the private labs expect such a trend.

GENERAL MARKET DATA

The objectives of this section is to present information from secondary sources on the U.S. market for clinical laboratory diagnostic products. Specifically, information was sought and is presented on:

- market composition (in terms of product categories)
- market size
- market growth
- major competitors
- other market factors

This section of the report is based on standard industry information, recognized sources, and interviews.

### Overview

In the United States, clinical laboratory procedures are performed in approximately 14,000 laboratories. Of these, roughly 75% are located within hospitals and the remaining 25% are commercial.

In the last few years, there has been a dramatic increase in the sales volume of products used in clinical laboratory testing. In 1976, the total U.S. sales volume for all laboratory products was \$1.34 billion. In 1978, this figure increased to \$2.25 billion, an increase of 68% over 1976. Market analysts believe that the market for these products will continue to expand significantly.

Most of the increase in the sales volume of clinical laboratory products is due to the recent growth in the number of laboratory procedures performed. This, in turn, is due primarily to two factors. The first factor is the tendency for physicians to order an increased number of diagnostic procedures per patient because of a growing fear of malpractice suits. This phenomenon is referred to as "defensive medicine" and is expected to continue until the current structure of malpractice insurance is changed.

The second factor leading to the rapid increase in laboratory procedures is the increasing sophistication of clinical laboratory instrumentation. If a lab has a sophisticated piece of equipment, it will tend to use the equipment whenever possible, resulting in an increased volume of procedures.

### Market Composition

The composition of the market for the major laboratory products sold in the United States is shown in Figure 1. Of the total of \$1.35 billion of laboratory products sold in 1976, \$553 million (41%) was generated from sales of diagnostic products, with the remainder coming from instruments, apparatus, supplies, and computer products. Diagnostic products sales were in turn distributed among ten laboratory sections, with the largest amount going to the clinical chemistry lab.

More recent estimates of the size of the clinical laboratory and diagnostic products market are in the vicinity of \$2.25 billion for 1981.

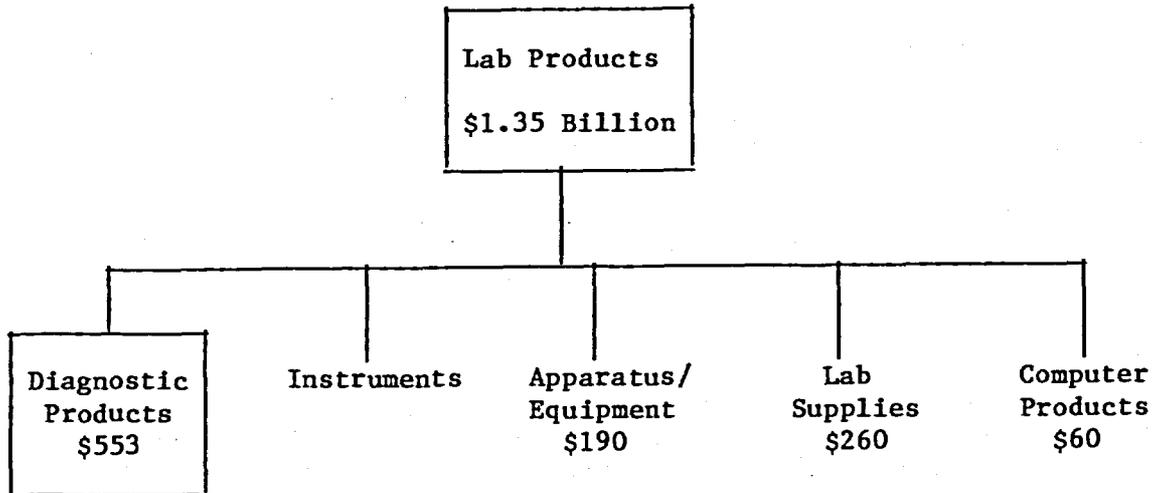
The data represented here are, however, for 1976 since the 1981 data does not include the desired product category breakdown.

### Diagnostic Products

The remainder of this report is devoted to diagnostic products only. Figure 2 shows the growth (actual and projected) of laboratory diagnostic product sales in the United States. Between 1976 and 1978, sales volume showed a 73% increase from \$553 million to \$955 million. The figures for the years from 1980 to 1986 are projections, and show that the astronomical growth in this product category is expected to continue.

Figure 1

Market Composition by Product Category for Laboratory Products  
1976 Sales (in millions of U.S. dollars)

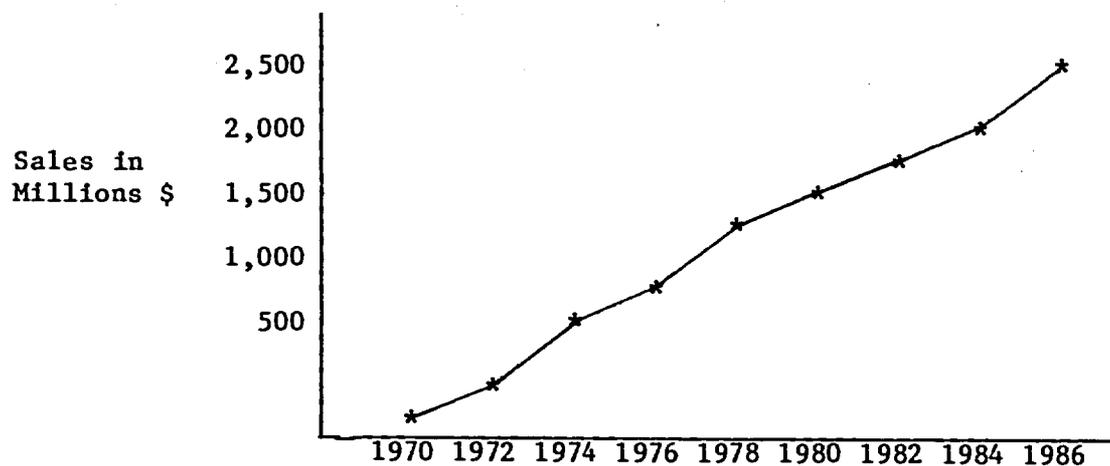


Diagnostic Products by Lab Section:

Clinical Chemistry	\$190
Radioassay	110
Microbiology/Bact.	73
Blood Banking	38
Hematology	30
Coagulation	22
Serology	19
Immunology	17
Histology/Cytology	11
Toxicology	3
Miscellaneous	39
- Rapid urine	26
- Pregnancy	11
- Fecal	1
- Other	2
	<u>\$553</u>

Figure 2

Laboratory Diagnostic Products  
Sales Growth in U.S.



Data Points

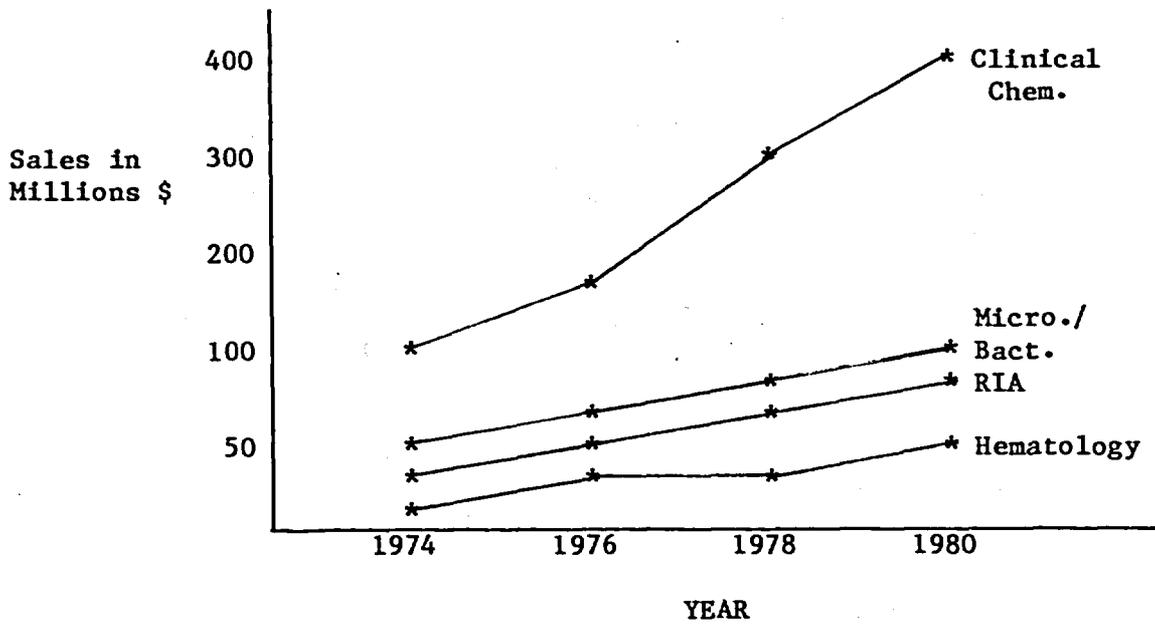
Year	Sales (\$Millions)
1970	150
1972	250
1974	370
1976	553
1978	955
1980	1350
1982	1680
1984	2080
1986	2300

Selected Diagnostic Supplies

Figure 3 shows sales volume and growth for four categories of selected diagnostic supplies: hematology, microbiology/bacteriology, radioimmunoassay (in vitro), and clinical chemistry. Sales figures for 1974, 1976, and 1978 are actual; while those for 1980 are projected. As indicated by the figure, sales volume and growth are highest for diagnostic supplies used in the clinical chemistry, with 1980 estimated sales in this category of \$400 million.

Figure 3

Sales Growth of Selected Diagnostic Supplies



Data Points

Hematology		Micro./Bact.		RIA		Clinical Chem.	
<u>Year</u>	<u>Sales</u>	<u>Year</u>	<u>Sales</u>	<u>Year</u>	<u>Sales</u>	<u>Year</u>	<u>Sales</u>
1974	26	1974	46	1974	45	1974	115
1976	30	1976	73	1976	68	1976	190
1978	53	1978	138	1978	125	1978	305
1980	65	1980	220	1980	195	1980	400

Detailed Analysis of Laboratory Diagnostic Products:  
Four Selected Categories

Clinical Chemistry

Diagnostic products used in clinical chemistry procedures accounted for a sales volume of \$190 million in 1976. Included in this figure are the product categories of regular chemistries, enzyme chemistries, quality control, electrolyte tests, and standards and buffers. The 1976 U.S. sales volume in millions of dollars for each of these product categories was as follows:

	<u>1976 Sales</u>	<u>% of Market</u>
Enzyme chemistries	\$ 51.3	27.0
Regular chemistries	70.0	36.8
Electrolyte tests	6.9	3.6
Quality control	40.2	21.2
Standards and buffers	6.8	3.6
Miscellaneous	14.8	7.8
	<u>\$190.0</u>	

Each of these major product categories operates in a unique competitive market. The 1976 market shares of the major competitors in each of these categories is shown in Figure 4. Although the market for each product category has a different competitive structure, there is a great deal of overlap among product categories. For example, Du Pont and Technicon were simultaneously leading in the enzyme chemistries, regular chemistries, and electrolyte tests categories.

Figure 4

The Major Competitors in Each of the Major Product Categories  
of Clinical Chemistry Products

<u>Enzyme chemistries</u>	<u>1976 Sales</u>	<u>% of Market</u>
Technicon	\$ 8.2	16.0
Du Pont	7.3	14.2
Instrumentation Lab.	3.7	7.2
Worthington	3.4	6.6
Abbott	3.3	6.4
Coulter	2.9	5.7
SmithKline	2.3	4.5
General Diagnostics	1.8	3.5
Dade	1.7	3.3
BMC	1.6	3.1
Dow	1.5	2.9
Calbiochem	1.2	2.3
Roche	1.2	2.3
All others	11.2	22.0
	<u>\$51.3</u>	<u>100.0</u>
<u>Regular chemistries</u>	<u>1976 Sales</u>	<u>% of Market</u>
Du Pont	\$14.9	21.3
Technicon	12.4	17.7
Dow	6.0	8.6
Instrumentation Lab	5.3	7.6
Abbott	3.9	5.6
American Motor	3.7	5.3
Hycel	3.6	5.1
BMC	2.6	3.7
Beckman	2.5	3.6
Dade	1.4	2.0
Calbiochem	1.2	1.7
Harleco	1.2	1.7
Hyland	1.0	1.4
SmithKline	1.0	1.4
All others	9.3	13.3
	<u>\$70.0</u>	<u>100.0</u>
<u>Electrolyte tests</u>	<u>1976 Sales</u>	<u>% of Market</u>
Du Pont	\$ 2.0	29.0
Technicon	1.7	24.6
Oxford	1.2	17.4
Harleco	0.6	8.7
Beckman	0.4	5.8
All others	1.0	14.5
	<u>\$ 6.9</u>	<u>100.0</u>

Figure 4  
(Cont'd.)

<u>Quality Control</u>	<u>1976 Sales</u>	<u>% of Market</u>
General Diagnostics	\$10.1	25.1
Technicon	7.5	18.7
Dade	6.8	16.9
Hyland	5.8	14.4
Ortho	3.3	8.2
Lederle	2.3	5.7
Du Pont	0.8	2.0
All others	3.6	9.0
	<u>\$51.3</u>	<u>100.0</u>

<u>Standards and buffers</u>	<u>1976 Sales</u>	<u>% of Market</u>
Instrumentation Lab	\$ 2.5	36.8
Corning	1.6	23.5
London Company	0.8	11.8
All others	1.9	27.9
	<u>\$ 6.8</u>	<u>100.0</u>

Microbiology/Bacteriology

Diagnostic products used in microbiology and bacteriology procedures generated a 1976 sales volume of \$73 million. These products include various types of culture media, diagnostic tests, and controls. The 1976 U.S. sales volume in millions of dollars for each specific product category was as follows:

	<u>1976 Sales</u>	<u>% of Market</u>
Prepared plated and tubed culture media	\$35.0	48.0
Dehydrated culture media	4.0	5.5
Blood culture bottles	8.7	11.9
Bacteriology diagnostic tests	12.7	17.4
Antimicrobial susceptibility testings disks	5.0	6.9
Diagnostic skin tests	2.3	3.1
Bacteriology controls	.5	3.1
Miscellaneous	<u>4.8</u>	6.6
	\$73.0	

The major competitors in this product category are shown in Figure 5. Bioquest, Difco, and Pfizer own major shares in several of the subcategories.

Figure 5

The Major Competitors for Each of the Major Product Categories  
of Microbiology/Bacteriology Products

<u>Prepared media</u>	<u>1976 Sales</u>	<u>% of Market</u>
BioQuest	\$14.0	40.0
Gibco Diagnostic	5.0	14.3
Scott	5.0	14.3
B-D	2.0	5.7
California Lab	2.0	5.7
Pfizer	1.4	4.0
Professional lab	0.9	2.6
Difco	0.7	2.0
All others	4.0	11.4
	\$35.0	100.0
<u>Dehydrated media</u>	<u>1976 Sales</u>	<u>% of Market</u>
Difco	\$ 1.8	45.0
BioQuest	1.7	42.5
Pfizer	0.4	10.0
All others	0.1	2.5
	\$ 4.0	100.0
<u>Blood culture bottles</u>	<u>1976 Sales</u>	<u>% of Market</u>
BioQuest	\$ 2.5	28.7
Difco	1.8	20.6
Pfizer	1.2	13.8
Johnston Labs	1.0	11.5
Lederle	0.6	6.9
Scott	0.6	6.9
Gibco Diagnostics	0.4	4.6
Roche	0.3	3.5
All others	0.3	3.5
	\$ 8.7	100.0
<u>Bacteriology diagnostic tests</u>	<u>1976 Sales</u>	<u>% of Market</u>
Analytab Products	\$ 7.0	55.1
Roche	2.5	19.7
Diagnostic Research	2.0	15.8
Pfizer	0.3	2.3
BioQuest	0.2	1.6
General Diagnostics	0.2	1.6
Wampole	0.2	1.6
All others	\$12.7	100.0

Figure 5  
(Cont'd.)

<u>Antimicrobial testing</u>	<u>1976 Sales</u>	<u>% of Market</u>
Pfizer	\$ 2.2	44.0
BioQuest	2.0	40.0
Difco	0.7	14.0
All others	<u>0.1</u>	<u>2.0</u>
	\$35.0	100.0

<u>Diagnostic skin tests</u>	<u>1976 Sales</u>	<u>% of Market</u>
Parke Davis	\$ 1.0	43.5
Lederle	0.8	34.8
All others	<u>0.5</u>	<u>21.7</u>
	\$ 2.3	100.0

<u>Selected bacterial controls</u>	<u>1976 Sales</u>	<u>% of Market</u>
Difco	\$ 0.2	40.0
Roche	0.2	40.0
All others	<u>0.1</u>	<u>20.0</u>
	\$ 0.5	100.0

In Vitro Radioimmunoassay

The total sales volume of in vitro radioimmunoassay kits (RIA) was \$68 million in 1976. Predictions for this market are subject to a great deal of controversy. The proponents of RIA believe that in the next few years, 20% of all lab tests will use RIA. The opponents of RIA believe that the procedure is doomed because of its use of isotopic materials. Despite this controversy, the projected growth rate for sales of RIA kits is 25%.

Figure 6 shows the various product categories accounting for the 1976 sales volume in the RIA in vitro test kit market, and Figure 7 shows the major competitors in the market in 1976. At that time, Abbott was the clear frontrunner in market share.

Figure 6

Product Categories in the In Vitro RIA Market

	<u>% of Market</u>
T-4 CPB tests	27.2
T-3 uptake	16.2
T-4 RIA tests	9.3
Thyroid stimulating hormone tests	3.7
T-3 RIA	1.9
Digoxin test kits	11.8
Hepatitis associated antigen	9.0
Carcinoembryonic antigen assay	4.4
Vitamin B <sub>12</sub> tests	2.9
Folate tests	2.3
Cortisol tests	1.8
Gastrin tests	1.6
Insulin tests	1.3
Digitoxin tests	1.0
Miscellaneous	5.6

Figure 7

Major Competitors in the In Vitro RIA Market

	<u>1976 Sales</u>	<u>% of Market</u>
Abbott	\$16.8	24.7
Nuclear Medical Labs	10.4	15.3
Malinckrodt	7.0	10.3
Clinical Assays	5.4	7.9
Bio-Rad	3.8	5.6
Roche	3.7	5.4
Squibb	2.4	3.4
Beckman	2.3	3.4
Ames	1.8	2.7
Schwarz/Mann	1.7	2.5
Pharmacia	1.4	2.1
Corning	1.1	1.6
Kallestad	1.0	1.5
All others	7.6	11.2
	<u>\$68.0</u>	<u>100.0</u>

Hematology

Diagnostic products used in hematology procedures accounted for a sales volume of \$30 million in 1976.

Hematology products include reagents, controls, standards, and sickle cell tests. In 1976, each of these product categories accounted for the following percentage of the total \$30 million sales volume:

	<u>% of 1976 Market</u>
Reagents	56.7
Controls	36.7
Standards	3.3
Sickle Cell Tests	3.3

Figure 8 shows the major competitors in each of the major product categories of hematology diagnostics. Coulter is the market leader in three of the four product categories, and Dade is a distant second.

Figure 8

The Major Competitors in Each of the Product Categories  
of Hematology Diagnostics

<u>Reagents</u>	<u>% of 1976 Market</u>
Coulter	64.7
Dade	5.9
Fisher	5.9
Harleco	5.9
Baker	4.7
Hyland	4.7
Dow	2.4
Technicon	1.8
Hycel	1.1
All others	2.9

<u>Controls</u>	<u>% of 1976 Market</u>
Coulter	45.5
Dade	24.5
Pfizer	10.9
Baker	5.5
Technicon	4.6
Diagnostic Technology	3.6
Hycel	1.8
Hyland	0.9
All others	2.7

<u>Standards</u>	<u>% of 1976 Market</u>
Coulter	70.0
Hycel	20.0
All others	10.0

<u>Sickle Cell test kits</u>	<u>% of 1976 Market</u>
Ortho	70.0
Hyland	10.0
Dade	10.0
All others	10.0

SPECIFIC MARKET DATA

This section summarizes the results of a survey of 40 hospitals and five national labs selected in Eastern Pennsylvania, Virginia, Maryland, Washington, D.C., Delaware, and South Jersey. The hospitals included about an equal number of small (less than 400 beds) and large hospitals.

The contact person in each hospital was the director of purchasing/materials management who was selected as a respondent only if he/she indicated involvement in the purchase of lab equipment. The respondents in the labs were the lab directors or person in charge of purchasing equipment and supplies.

Benefit Segments and Buying Process

Some characteristics of the buying process vary somewhat among the Image/Cost, Quality and Cost segments. The Cost segment hospitals have a greater tendency to use a resource allocation committee to decide on new purchases of laboratory equipment. These resource allocation committees have been in existence longer than comparable committees in the other segments. In terms of anticipated purchases of capital equipment, respondents in the Cost segment have a greater expectation that their hospitals will increase or maintain their level of purchases of capital equipment in the future.

The Buying Process by Benefit Segments

	<u>Image/Cost</u>	<u>Quality</u>	<u>Cost</u>
- % who have a resource allocation committee for deciding on what new equipment to buy	62.5%	54.5%	83.3%
- Average number of years this committee has been operating	8.4	2.2	13.5
% 1-3 years	--	100.0%	--
% 4-7 years	57.1%	--	25.0%
% 8-10 years	28.6	--	25.0
% 11 years +	14.3	--	50.0
- % who rotate the membership on this committee	50.0%	50.0%	28.6%
- % who rotate the chairperson	12.5%	--	16.7%
- Frequency of meetings			
-- Infrequently as the need arises	37.5%	25.0%	42.9%
-- Quarterly	25.0	25.0	14.3
-- Monthly	25.0	50.0	42.9
-- More than once a month	12.5	--	--
- Average # of proposals approved by this committee in last year	22.0	2.0	9.0
- Average # of proposals rejected by this committee in last year	6.7	3.0	11.0
- Average % of hospital acquisitions reviewed by this committee last year	99.0%	97.0%	99.0%
- Expected change in amount of capital equipment bought			
% who think it will increase	27.3%	28.6%	37.5%
% who think it will decrease	63.6	42.9	25.0
% who think it will remain the same	9.1	28.6	37.5

The Buying Process by Attitude Segments

	<u>Marginal</u>	<u>Positive</u>
- % who have a resource allocation committee for deciding on what new equipment to buy	58.8%	68.8%
- Average number of years this committee has been operating	10.2	6.6
% 1-3 years	16.7%	42.9%
% 4-7 years	33.3	28.6
% 8-10 years	16.7	14.3
% 11 years +	33.3	14.3
- % who rotate the membership on this committee	33.3%	50.0%
- % who rotate the chairperson	—	12.5%
- Frequency of meetings		
-- Infrequently as the need arises	50.0%	14.3%
-- Quarterly	12.5	28.6
-- Monthly	37.5	42.9
-- More than once a month	—	14.3
- Average # of proposals approved by this committee in last year	6.0	12.0
- Average # of proposals rejected	11.0	1.0
- Average % of hospital acquisitions reviewed by this committee last year	99.0%	97.0%
- Expected change in amount of capital equipment bought		
% who think it will increase	16.7%	36.4%
% who think it will decrease	50.0	45.5
% who think it will remain the same	33.3	18.2

### PURCHASE PATTERN OF PRODUCTS/EQUIPMENT

The purchase pattern of laboratory diagnostic supplies is presented for the total sample and then for the following types of supplies:

1. Chemistry Lab Supplies
  - (a) Overall
  - (b) Individual chemical diagnostic reagents
  - (c) Chemical diagnostic kits
2. Microbiology-Bacteriology Lab Supplies and Diagnostic Kits
3. In Vitro Radioimmunoassay Lab Supplies and Diagnostic Kits
4. Hematology Lab Supplies and Diagnostic Kits

The predominant purchase pattern of laboratory diagnostic supplies is one in which purchases are split between distributors and manufacturers. Those who use this pattern purchase about 60% of their supplies from distributors and 40% from manufacturers. Major suppliers for all laboratory domestic supplies are Fisher, Scientific Products and Beckman.

Ninety (90) percent of the respondents indicated that their hospital had increased the amount spent on laboratory diagnostic supplies in the past two years, with an average dollar increase of 18%. Two-thirds of the respondents expect this amount to increase by next year, with an average expected increase of 8%.

#### Purchase Pattern in Hospital Vs. Private Labs

In terms of the overall category of laboratory diagnostic supplies, most hospital and private labs buy from both distributors and manufacturers, with about 60% of purchases from distributors and 40% from manufacturers. The major suppliers mentioned by hospital labs were Fisher, Scientific Products and Beckman. While major suppliers to private labs were Fisher, Brotherston and Scientific products. One hundred percent of respondents from private labs indicated that they expected their organization to increase the amount spent on lab diagnostic supplies in the next year while only two-thirds of respondents from hospital labs expected an increase.

#### Purchase Pattern by Type of Product

Purchase patterns differ by type of product, and these differences are reflected in the following tables. For example, while 20-25% of chemistry lab supplies, micro/bact supplies, and hematology supplies are purchased primarily direct from the manufacturer, fully 68% of

vitro radioimmunoassay supplies are purchased primarily from the manufacturer. In addition, the percentage of respondents expecting increases in next year's dollar purchase volume varies by product category: chemistry supplies (69%), micro/bact supplies (77%), RIA supplies (90%), and hematology supplies (79%).

#### Purchase Pattern by Benefit Segments

There are some slight differences in purchase patterns among the three benefit segments. The Quality segment shows less of a tendency to restrict their purchases to either manufacturers or distributors, favouring instead a combined approach. Major suppliers are used differently, with the Quality segment making a much higher percent of purchases from Beckman. The Quality segment also shows a slightly lesser tendency to have increased laboratory supply purchasing in the last two years and a lesser tendency to expect an increase in purchasing within the next year.

#### Purchasing Pattern by Attitude Segment

Purchase patterns do not vary significantly between the Marginal and Positive segment to purchase relatively more from distributors and less from manufacturers than the Marginal segment.

Purchase Pattern: Total Sample

Primary Method of Buying Laboratory Diagnostic Supplies

	<u>Hospital Labs</u>	<u>Private Labs</u>
Direct from manufacturer	5.0%	0%
From single distributor	5.0%	0%
From a number of distributors	27.5%	40.0%
Direct from mfr. and dist.	60.0%	60.0%
A hospital purchasing group	5.0%	—

Among those who buy from both manufacturers and distributors:

% of all lab. diagnostic supplies purchased from a mfr.: 39.8%  
 % of all lab. diagnostic supplies purchased from a dist.: 57.0%

Major Suppliers of Lab Diagnostic Supplies (all)

Fisher	48.7%	100.0%
Sci. Prod.	41.0%	40.0%
Beckman	30.8%	0%
Dolby Sci.	17.9%	0%
Amer. Sci. Labs.	12.8%	0%
Du Pont N.E. Nuclear	12.8%	0%
Technicon	10.3%	20.0%
General Sci.	10.3%	0%
BMC	10.3%	0%
Abbott Lab	5.1%	0%
Nobel	5.1%	0%
Curity Kendal	5.1%	0%
General Med.	5.1%	0%
Curtin-Mathason	2.6%	0%
Coulter Chem.	2.6%	0%
Syva	2.6%	20.0%
General Diag.	2.6%	20.0%
Pierce	2.6%	0%
S.M.S.	2.6%	0%
Ortho	2.6%	20.0%
Hewlett Packard	2.6%	0%
SKF	2.6%	0%
Instrument. Lab	2.6%	0%
Whitaker General	2.6%	0%
Brotherston		
Clinical Assays		60.0%
Worthington		20.0%
Other	10.3%	20.0%

Amount Spent Per Year:

Average:               \$529,000  
Range:                 (\$25,000-\$40,000)

Change (over last 2 years) in Amount Spent on Lab.  
Diagnostic Supplies (all)

% which increased the amount: 89.7                avg. % of increase: 17.9  
% which decreased the amount:

Expected Change (in next year) of Amount Spent on Lab.  
Diagnostic Supplies (all)

% which expect amount to increase: 67.5%; avg. expected  
increase: 13.8%  
% which expect amount to decrease: 7.5%; avg. expected  
decrease: 13.3%

Purchase Pattern: Total Sample (cont'd.)

Primary Method of Buying Chemistry Lab Supplies

	<u>All Chemistry Supplies</u>	<u>Indiv. Chem. Diag. Reagents</u>	<u>Chem. Diagnostic Reagent Kits</u>
Direct from manufacturer	25.0%	30.0%	32.5%
From single distributor	7.5%	7.5%	12.5%
From a number of distributors	15.0%	20.0%	17.5%
Direct and from dist.	47.5%	32.5%	30.0%
Hospital purchasing group	2.5%	2.5%	0%

Of those who buy from both manufacturers and distributors:

Avg. % purchased from manufacturer	40.7%	40.5%	45.7%
Avg. % purchased from distributor	54.0%	49.5%	54.3%

Major Suppliers

Fisher	32.5%	35.0%	13.2%
Sci. Prod.	35.0%	30.0%	21.1%
Beckman	42.5%	45.0%	42.1%
Dolby Sci.	12.5%	10.0%	10.5%
Amer. Sci. Labs.	2.5%	5.0%	10.5%
Du Pont N.E. Nuclear	20.0%	12.5%	5.3%
Technicon	20.0%	15.0%	18.4%
General Sci.	5.0%	0%	0%
BMC	7.5%	15.0%	18.4%
Abbott Lab	5.0%	5.0%	10.5%
Nobel	5.0%	7.5%	5.3%
Curity Kendal	5.0%	0%	2.6%
General Med.	0%	0%	0%
Curtin-Mathason	2.5%	0%	0%
Coulter Chem.	0%	0%	2.6%
Syva	2.5%	2.5%	10.5%
General Diag.	2.5%	0%	2.6%
Pierce	2.5%	7.5%	5.3%
S.M.S.	5.0%	7.5%	2.6%
Ortho	2.5%	0%	2.6%
Hewlett Packard	0%	0%	0%
SKF	2.5%	2.5%	2.6%
Instrument. Lab	2.5%	0%	0%
Whitaker General	0%	0%	0%
Corning	2.5%	2.5%	2.6%
Union Carbide	5.0%	5.0%	7.9%
Sarstedt	2.5%	0%	0%
Other	25.0%	32.5%	52.6%

Amount Spent Per Year:

Average:	\$247,000	\$157,000	\$ 76,500
Range:	(\$20-\$1,000,000)	(\$25-\$1,000,000)	(\$4-\$250,000)

Change (over last 2 years) in Amount Spent

% which increased (avg. % increase)	91.9% (18.2%)	83.3% (18.6%)	78.4% (19.7%)
% which decreased (avg. % decrease)	2.7%	5.6% (15.0%)	5.4% (15.0%)

Expected change in next year

Increase (avg. expected inc.)	69.2% (13.7%)	69.2% (112.7%)	70.3% (15.3%)
Decrease (avg. expected dec.)	5.1% (10.0%)	5.1% (7.5%)	2.7% (5.0%)

Purchase Pattern: Total Sample (cont'd.)

Primary Method of Buying Microbiology-Bacteriology Lab Supplies

	<u>All Chemistry Supplies</u>	<u>Indiv. Chem. Diag. Reagents</u>	<u>Chem. Diagnostic Reagent Kits</u>
Direct from manufacturer	25.0%	30.0%	32.5%
From single distributor	7.5%	7.5%	12.5%
From a number of distributors	15.0%	20.0%	17.5%
Direct and from dist.	47.5%	32.5%	30.0%
Hospital purchasing group	2.5%	2.5%	0%

Of those who buy from both manufacturers and distributors:

Avg. % purchased from manufacturer	40.7%	40.5%	45.7%
Avg. % purchased from distributor	54.0%	49.5%	54.3%

Major Suppliers

Fisher	32.5%	35.0%	13.2%
Sci. Prod.	35.0%	30.0%	21.1%
Beckman	42.5%	45.0%	42.1%
Dolby Sci.	12.5%	10.0%	10.5%
Amer. Sci. Labs.	2.5%	5.0%	10.5%
Du Pont N.E. Nuclear	20.0%	12.5%	5.3%
Technicon	20.0%	15.0%	18.4%
General Sci.	5.0%	0%	0%
BMC	7.5%	15.0%	18.4%
Abbott Lab	5.0%	5.0%	10.5%
Nobel	5.0%	7.5%	5.3%
Curity Kendal	5.0%	0%	2.6%
General Med.	0%	0%	0%
Curtin-Mathason	2.5%	0%	0%
Coulter Chem.	0%	0%	2.6%
Syva	2.5%	2.5%	10.5%
General Diag.	2.5%	0%	2.6%
Pierce	2.5%	7.5%	5.3%
S.M.S.	5.0%	7.5%	2.6%
Ortho	2.5%	0%	2.6%
Hewlett Packard	0%	0%	0%
SKF	2.5%	2.5%	2.6%
Instrument. Lab	2.5%	0%	0%
Whitaker General	0%	0%	0%
Corning	2.5%	2.5%	2.6%
Union Carbide	5.0%	5.0%	7.9%
Sarstedt	2.5%	0%	0%
Other	25.0%	32.5%	52.6%

Purchase Pattern: Total Sample (cont'd.)

Primary Method of Buying Microbiology-Bacteriology Lab Supplies

Direct from manufacturer	22.5%
From single distributor	17.5%
From a number of distributors	12.5%
Direct and from dist.	35.0%
Hospital purchasing group	2.5%

Of those who buy from both manufacturers and distributors:

Avg. % purchased from manufacturer	44.7%
Avg. % purchased from distributor	53.5%

Major Suppliers

Fisher	10%
Sci. Prod.	22.5%
Beckman	
Dolby Sci.	22.5%
Amer. Sci. Labs.	
Du Pont N.E. Nuclear Technicon	2.5%
General Sci.	
BMC	
Abbott Lab	5%
Nobel	
Curity Kendal	
General Med.	
Curtin-Mathason	
Coulter Chem.	
Syva	
General Diag.	
Pierce	
S.M.S.	2.5%
Ortho	
Hewlett Packard	
SKF	
Instrument. Lab	
Whitaker General	
Corning	
Union Carbide	
Sarstedt	
All Others	35%

Amount Spent Per Year: Average: \$118,000

Range: (\$5-\$150,000)

Change (over last 2 years) in Amount Spent

% which increased	79.4%
(avg. % increase)	(15.6%)

% which decreased	2.9%
(avg. % decrease)	(5.0%)

Expected change in next year

Increase	77.1%
(avg. expected inc.)	(14.7%)
Decrease	0%

Purchase Pattern: Total Sample (cont'd.)

Primary Method of Buying In Vitro Radioimmunoassay Lab Supplies and Diagnostic Kits

Direct from manufacturer	67.5%
From single distributor	2.5%
From a number of distributors	0%
Direct and from dist.	7.5%
Hospital purchasing group	0%

Of those who buy from both manufacturers and distributors:

Avg. % purchased from manufacturer	50.0%
Avg. % purchased from distributor	50.0%

Major Suppliers

Abbott Lab	41.9%
Beckman	29.0%
Corning	25.8%
Du Pont N.E. Nuclear	19.6%
Syva	6.5%
Nobel	3.2%
Dolby Sci.	3.2%
Bio Rad	12.9%
NML	6.5%
Clinical Assays	22.6%
Other	35.4%

Amount Spent Per Year:

Average:	\$64,500
Range:	(\$8-\$150,000)

Change (over last 2 years) in Amount Spent

% which increased	89.7%
(avg. % increase)	(27.2%)

% which decreased	0%
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Expected change in next year

Increase	89.7%
(avg. expected inc.)	(15.1%)
Decrease	0%

Purchase Pattern: Total Sample (cont'd.)

Primary Method of Buying Hematology Lab Supplies and Diagnostic Kits

Direct from manufacturer	22.5%
From single distributor	20.0%
From a number of distributors	22.5%
Direct from mfr. and dist.	27.5%
Hosp. purchasing group	2.5%

Of those who buy from both manufacturers and distributors:

Avg. % purchased from mfr.:	24.0%
Avg. % purchased from distr.:	69.3%

Major Suppliers

Sci. Prod.	43.2%
Fisher	37.8%
Coulter	35.1%
Dolby	16.2%
JT Baker	13.5%
General Diag	8.1%
S.M.S.	8.1%
Curity Kendal	5.4%
Ortho	10.8%
Other	11.6%

Amount Spent Per Year:

Average:	\$92,750
Range:	(\$6-\$500,000)

Change (over last 2 years) in Amount Spent

% which increased	79.4%
(avg. % increase)	(14.0%)
% which decreased	2.9%
(avg. % decrease)	(—)

Expected change in next year

Increase	79.4%
(avg. expected increase)	(11.4%)
Decrease	2.9%
(avg. expected decrease)	(5.0%)

CRITERIA USED IN PURCHASE DECISIONS

When considered in aggregate, respondents indicated that the following criteria were the three most important in their buying decisions:

	<u>Relative Importance</u>
Enhancement of quality of care	30%
Cost savings	27%
Enhancement of hospital's image	14%

Criteria used in selecting among proposals for new equipment

Percent of Total Surveyed

If product new/improved tested better/is competitive/deal/prices	36.8%
Prefer reusables	21.1
If good service/supply of parts local	15.8
Not at this time/have enough/ours ok/meets our needs	5.3

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Hospital's Relationship with Health Systems Agency

Excellent	14.3%
Very good	51.4
Good	28.6
Fair	2.9
Poor	2.9

Expected Relationship with Health Systems Agency in Next 3 Years

It will improve	20.6%
It will stay the same	76.5
It will get worse	2.9

PROBLEMS AND OPPORTUNITIES

When asked what factors could simplify and improve their purchase operations, respondents from hospital labs suggested the following: (1) decrease red tape/paperwork, (2) improve relations between sales vendors and staff, (3) improve inventory/accounting system, and (4) more product information from seller. Respondents from private labs suggested: (1) delivery/faster service, and (2) one single source that has it all.

Respondents were also asked what advice they would give to new manufacturers for increasing their chance of selling, and the advice was consistent across. In summary, the advice was: (1) have a new and better product with competitive prices, (2) have an informative sales approach, and (3) develop a good relationship among vendors, staff and purchasers. The majority (90%) of the respondents said their advice would not differ if the firm was Canadian.

Two of the five private labs interviewed suggested that new manufacturers could increase their chances of selling by introducing a better standardized kit size. Specifically, they suggested "50 instead of 100 on certain esoteric tests".

Perceived Problems

	<u>Percent of Total Surveyed</u>
<u>Percent who face other major problems that, if solved, would help them improve their purchasing operations</u>	13.2%
Q: <u>"What could simplify and improve your purchase operations?"</u>	
Improve inventory/accounting system	13.2%
Delivery and price protection/consistency	10.5
Red tape/paperwork/too many people/ lack of communication	31.6
More samples/info/photos left for evaluation/replace or rent if equip. down	10.5
Educated sales approach/expertise/ explain product/don't be pushy	13.2
If product new, improved, tested better/ deal/prices/is competitive	10.5

Problems and Opportunities as Perceived by Private Labs

<u>What could simplify and improve your purchase operations?</u>	<u>Percent of Total Surveyed</u>
Delivery/faster service	40%
Quality	20%
Cost	20%
One single source that has it all	40%
Kits that have longer shelf periods	20%
Technical ease for the technicians who do tests	20%
Nothing	20%
<u>Percent who face other major problems that, if solved, would help them improve their purchasing operation</u>	40%
Back orders	20%
Information (both technical and info about product availability)	20%
<u>Private Lab Advice to New Manufacturers on Increasing Their Chances of Selling</u>	
Honesty	20%
Quality	20%
Cost	60%
Delivery/Guaranteed	40%
Knowledgeable representatives Continuing education programs Reliable package inserts	40%
A better standardized kit size (50 instead of 100 on certain esoteric tests) Packaging with realistic amounts	40%
Good shelf life	20%

Q: "Would your advice be different if the firm was not a U.S. firm?" Percent of Total Surveyed

% YES 20%

Q: "In what way?"

"I have dealt with Canadian firms and cost is no object. They were interested primarily in quality."

Advice to New Manufacturers on Increasing Their Chances of Selling

Educated sales approach/expertise/explain product/don't be pushy	37.5
If product new, improved, tested better/deal/prices/is competitive	47.5
If good service/supply of parts local	30.0
Improved relations between sales vendors, staff, credit purchaser	32.5

Q: "Would your advice be different if the firm was not a U.S. firm?"

% YES 10.0%

Q: "In what way would it be different if the firm was not a U.S. firm?"

Have several distributors local	16.7%
Delivery time from vendor/delays/takes too long/delivery charges	50.0
Delivery and price protection/consistency	16.7
If product is equal, then price, delivery, stock, service, reputation	16.7
If good service, supply of parts local	16.7

ATTITUDES OF HOSPITAL PERSONNEL

- Eighty (80) percent of all respondents indicated that they were very happy with their current suppliers. This degree of satisfaction was highest (92%) among the Cost segment and lowest (67%) among the Quality segment.
- Two-thirds of the respondents have a strong preference for known distributors.
- Fifty-five (55) percent of the respondents prefer local firms. This tendency is highest among the Image/Cost segment (69%) and lowest (42%) among the Quality segment.
- Respondents in the Image/Cost segment have a higher degree of preference for dealing with U.S. firms (44%) than do either the Quality (25%) or Cost (25%) segments.
- Respondents from private labs expressed several attitudes which suggested that they tend to be more open to Canadian products than respondents from hospital labs:
  - More private lab than hospital lab respondents expressed the belief that Canadian quality is as good as U.S. (50% vs. 17.5%)
  - Hospital lab respondents showed a greater tendency to prefer "known distributors" and "local firms" than private lab respondents
  - More hospital lab respondents than private lab respondents were satisfied with current suppliers (80% vs. 60%).
- Hospital lab respondents had a greater tendency to believe that their organizations would be "more cost conscious in the near future" than private lab respondents (72.5% vs. 40%).

Attitudinal Statements Most Frequently Selected

	<u>Total</u>
Hospital is most innovative	42.5%
Prefer known distributors	67.5
Prefer local firms	55.0
Prefer U.S. firms	32.5
Japanese quality as good as U.S.	10.0
European quality as good as U.S.	22.5
Prefer group buying	42.5
More cost conscious in near future	72.5
Satisfied with current suppliers	80.0

Attitudinal Statements - Top Two Selections

Percent of  
Total Surveyed

Hospital is most innovative	42.5%
Decision making highly centralized	27.5
Among last to buy new products	7.5
Among first to buy new products	7.5
Administration and physicians at odds	7.5
Canadian quality as good as U.S.	17.5
Experimenting with new suppliers too risky	15.0
Prefer known distributors	67.5
Lowest priced supplier is choice	12.5
Prefer local firms	55.0
Prefer U.S. firms	32.5
Getting funds is difficult	32.5
Hospital in terrible financial shape	--
Politics more important	5.0
Japanese quality as good as U.S.	10.0
European quality as good as U.S.	22.5
Prefer group buying	42.5
More cost conscious in near future	72.5
Priorities not well defined	12.5
Status quo hospital	7.5
Disagreement on future directions	7.5
Close relationships among physicians	35.0
Change and innovation stifled	5.0
Certification of needs a major obstacle	20.0
Canadian firms not reliable as U.S.	--
Japanese firms not reliable as U.S.	2.5
Satisfied with current suppliers	80.0

<u>Attitudinal Statements - Top Two Selections of Private Labs vs. Hospital Labs</u>	<u>Percent of Total Surveyed in each Group</u>	
	<u>Private Labs</u>	<u>Hospital Labs</u>
Hospital is most innovative	50%	42.5%
Decision making highly centralized	25%	27.5
Among last to buy new products	0%	7.5
Among first to buy new products	0%	7.5
Administration and physicians at odds	0%	7.5
Canadian quality as good as U.S.	50%	17.5
Experimenting with new suppliers too risky	0%	15.0
Prefer known distributors	40%	67.5
Lowest priced supplier is choice	0%	12.5
Prefer local firms	40%	55.0
Prefer U.S. firms	40%	32.5
Getting funds is difficult	20%	32.5
Hospital in terrible financial shape	NA	--
Politics more important	NA	5.0
Japanese quality as good as U.S.	0%	10.0
European quality as good as U.S.	0%	22.5
Prefer group buying	0%	42.5
More cost conscious in near future	40%	72.5
Priorities not well defined	0%	12.5
Status quo hospital	0%	7.5
Disagreement on future directions	0%	7.5
Close relationships among physicians	NA	35.0
Change and innovation stifled	0%	5.0
Certification of needs a major obstacle	0%	20.0
Canadian firms not reliable as U.S.	0%	--
Japanese firms not reliable as U.S.	0%	2.5
Satisfied with current suppliers	60%	80.0

## DISTRIBUTORS

### Purpose

The major purpose of this section is to provide information that will assist Canadian manufacturers of hospital and medical supplies in marketing their products through existing U.S. distributors. Three specific types of information are presented:

1. the structure of the distribution market, including purchase issues, selling issues, and distributors' attitudes;
2. the decision-making process that distributors use when considering whether or not to accept new products; and
3. a description of distributors' attitudes toward and experience with foreign products.

### Approach

In order to gather information about the distributors' activities in the hospital/medical supply field, in-depth personal interviews were conducted with eight distributors. Because of the lack of existing systematic knowledge about distributor activities in this field, each interview was structured to cover a very broad range of topic areas. As a result, the average length of each interview was one and a half hours.

The distributors showed a strong reluctance to be interviewed. The eight completed interviews were the result of an initial screening process in which 140 distributors were screened. One hundred didn't fit the requirements of the study because they were totally retail. Of the 40 who met the requirements, 8 agreed to be interviewed. This reluctance may be attributable to an existing crisis in the field of hospital/medical supplies. Distributors are currently awaiting the outcome of a law suit against American Hospital Supply, a major national distributor. The litigation was brought against American Hospital Supply by a group of independent distributors, charging AHS with monopolistic policies. Distributors feel that the outcome of this litigation will have a far-reaching impact on the future distribution of medical supplies, and many are reluctant to discuss their business practices until the suit is settled. Only one national distributor consented to participate in this study.

This section provides some initial background information about the U.S. distribution of hospital/medical products. Due to the limited number of respondents, results cannot be generalized too widely.

## Results

### A. Structure of the Distributors' Market

- Major Product Lines
  - All of the respondents indicated that two or three leading products accounted for half or more of their total sales volume. Typical groupings of leading products were: sutures/syringes/gloves, and IV catheters/sutures. The national distributor, American Hospital Supply (AHS), indicated that trays (25%) and gowns (25%) together accounted for half of their sales volume.
- 1980 Sales Volume and Accounts
  - 1980 sales volume ranged from \$800,000 for the smallest distributor to \$33 million for the largest.
  - Account structures for the distributors fell into three patterns. The national supplies (AHS) sells only to hospitals. The local distributors specializing in catheters, sutures, and syringes sell about 75% to hospitals, 15% to nursing homes, and 10% to doctors.
  - Significantly, only two respondents reported any business with buying groups, and this business accounted for less than 5% of sales volume in both cases.
  - The distributors reported that they employ differing numbers of salespeople, ranging from one for the smallest distributor to 22 for the largest.
- Self-manufacturing and Self-branding
  - Only the national distributors (AHS) reported that they engaged in manufacture of the products that they distribute. They estimated that fully 80% of their product distribution was manufactured by themselves.
  - On the other hand, almost all distributors are now involved in putting their own brand names on products from outside manufacturers. The local distributors engage in a small degree of self-branding (from 5-20% of sales), but the practice is growing.
- Competitive Structure of Distribution Market
  - Almost all of the respondents, including the national distributor, perceived their major competitors to be other local distributors. This suggests the hypothesis that the

nationals may not be competing head to head in all product/geographic areas. The only respondent who believed his major competitor to be a national distributor was a local distributor of disposable diapers and oxygen who believed that the AHS was his major competition.

- Most respondents perceived their second major source of competition to be national distributors. Interestingly, AHS, the only national, ranked manufacturers' reps as their second major source of competition (after locals) and other nationals as their third.
- All of the distributors believe that they are operating within very competitive markets. When they were asked what competitive edge they would like to develop if they had more resources, almost all who answered gave responses related to the manufacturing end. The most frequently mentioned were: (1) more control of the manufacturing process, (2) product exclusivity with a manufacturer, and (3) more technical knowledge from the manufacturer.

- National vs. Local Distributors

- As indicated in the introduction, there is currently a legal conflict between national distributors and the locals who perceive them as engaging in monopolistic practices. Manifestations of the conflict appeared in differing responses to attitude questions. The respondent from the national distributors (AHS) strongly agreed that by 1990 almost all distribution will be through nationals; the locals strongly disagreed with this scenario. AHS also agreed that the most important function that a distributor provides for a manufacturer is collection. Again, most of the locals strongly disagreed.

- Distributors' Perceptions of Major Problems

- In the opinion of the respondents, the major problems facing distributors today revolve around financing and delivery. Financial problems are expressed in terms of difficulty in borrowing money to buy inventory. One distributor stated that the industry range for accounts receivable was 60-90 days, with an industry wide average of 48 days. On the other hand, respondents reported that the majority of payments to manufacturers were made on a 10 day, 2% discount basis. (The financially strongest distributor, AHS, reported paying manufactures on an immediate payment, 5% discount basis for 60% of its business.)

- In addition to financial issues, distributors named delivery issues as a major source of problems. Distributors complained that they frequently had to wait an excessive amount of time for shipments from manufacturers, and that the manufacturers have a "bad attitude" about this problem. One distributor complained that sometimes deliveries were so delayed that the expiration date on the merchandise had passed. Most distributors said that the manufacturer pays freight charges on minimum dollar volume shipments. Three distributors expressed the belief that manufacturers should pay freight charges under all circumstances.

B. Process and Criteria for Adopting New Products

- Current Brand Practices

- The majority of distributors reported that they typically carry about three brands within each of the major product lines. Most (5 of the 8) said that they would prefer to reduce the number of brands, two preferred maintaining the same level, and only one preferred to add brands. Those who preferred to reduce the number of brands reasoned that they would like to be able to reduce the complexity of their inventories and that they would like to be able to focus and intensify their marketing efforts by limiting the number of brands. The national distributor (AHS) preferred to maintain its current number of brands.

- Practices and Attitudes About Adding/Deleting Manufacturers

- Most distributors reported that they had added from 10 to 20 manufacturers within the last two years and that they had dropped from 0 to 20. AHS reported adding five manufacturers within the past six months and only dropping one manufacturer within the past two years.
- Most distributors said that they were eager to add new manufacturers, but specified restrictions. Specifically, they indicated an interest in adding a new manufacturer if an innovative product was involved, or if the buyer (hospital) requested the manufacturer. AHS said they were willing to add new manufacturers in order to provide more variety for customers.

- Process for Adding New Products

- Among the local distributors, decisions about adding new products are made at a high level, usually involving the owner or president, in conjunction perhaps with a salesperson.

- The criteria for adoption of new products vary among distributors. One distributor indicated that he subjects the proposed new product to a pragmatic test. He distributes product literature among his accounts, and if interest is shown, he stocks the product.
- In general, the most frequently mentioned criteria for product adoption are anticipated demand, profit margin, and availability.
- The national distributor (AHS) makes new product adoption decisions at Chicago headquarters with a team composed of a product manager and a marketing manager. The AHS respondent didn't specify their decision criteria.

### C. Foreign Manufacturers

#### Current Relationships

- All local distributors indicated that some percentage of their products was made by foreign manufacturers, with the percentage ranging from 5-30%. Countries most frequently mentioned were Japan, Germany, and Pakistan. Products most frequently mentioned were stethoscopes and blood pressure kits (Japan) and scissors (Pakistan). Overall, distributors reported that their experiences with foreign manufacturers had been favourable.
- None of the local distributors were dealing with Canadian products and indicated that they had not been approached by any Canadian firms. On the other hand, five of the seven local distributors are currently selling Japanese products, mostly stethoscopes and blood pressure kits. In most of these firms, Japanese products account for only 2-5% of total sales, but one distributor reports 30-40% of sales are Japanese products.

#### Experience with and Interest in Foreign Products

- Although all of the local distributors reported favourable experiences with their foreign products, two said they were not interested in distributing more foreign products. Obstacles mentioned were long delivery times and "U.S. economy." Respondents indicating interest in more foreign products stated that their interest was conditional on a variety of factors:

1. if exclusivity could be obtained;
2. if the product was not available in the U.S.; and
3. if foreign prices were cheaper than U.S. prices.

- Local distributors reported having little or no experience with Canadian products, but all but one indicated an interest in distributing Canadian products if price, quality, and profitability criteria were met.
- All but one distributor reported having favourable experience with distribution of Japanese products. Most saw as an advantage the fact that Japanese products could be ordered from the firm's U.S. distributor, instead of having to deal directly with Japanese manufacturers. As with Canadian products, all but one of the local distributors indicated an interest in distributing more Japanese products if price, quality, and profitability criteria were met.

#### Images of Foreign Products

- Most distributors felt there was no difference between the image of U.S. products and foreign products. One felt that U.S. products had a better image for quality while another felt that U.S. products were getting a bad image for quality.
- Respondents did not perceive any differences between images of Canadian and U.S. products. In terms of the image of Japanese products, three respondents felt that Japan had developed a strong image for high quality, two felt the Japanese image connoted low quality, and two saw no difference from the U.S. image.

#### Responses from the National Distributor (AHS)

- The AHS respondent indicated some confusion about AHS's relations with foreign manufacturers. He reported that AHS distributes OB pads manufactured by a firm located in Canada, but owned by AHS. He indicated that AHS is not interested in adding foreign manufacturers (excluding Canadian ones) because they "support the American economy" and "own their own distributorships in England, France, Japan, and Canada." It is likely that this respondent is not well-informed as to AHS's relationships with foreign manufacturers, since he does not work at corporate headquarters in Chicago, where such information is more likely to be discussed.

#### Degree of Interest in Adding Canadian Manufacturers

- When asked how interested they would be in adding Canadian manufacturers "if their products were competitive with those of U.S. firms," six of the eight respondents said they probably would, and two said they probably would not. Of these two, one was the AHS respondent (see above) and the other had a generalized resistance to product duplication (e.g. he indicated he would handle a Canadian product if it were very innovative).

### Conclusions

1. The U.S. distributor environment for medical products is currently one of conservatism. Due to the U.S. economy and to the unresolved legal conflict between national distributors and local distributors, the distributors are showing a very low level of risk-taking behaviour.
2. The trend among local distributors is one of constriction rather than expansion. These distributors are trying to reduce the number of brands per product category, and express reluctance to add new products.
3. The locals say they are reducing the number of brands per product because they are trying to simplify inventory and to focus their marketing activities on a reduced number of brands. Their reluctance to add new products does have some important exceptions. They are willing to adopt a new product if: (1) it is innovative, (2) they can get an exclusive distribution agreement, and/or (3) hospitals specifically request it.
4. The distributors interviewed showed no specific resistance to adding foreign products, either Canadian (with whom they've had little experience) or Japanese (with whom they have had mostly favourable experience). Predictably, distributors specified that these foreign products must show some specific, significant advantage in profitability or quality. Although there was no specific resistance to adding Canadian or Japanese products, their adoption was conditional on the same factors that distributors said were necessary of adoption of any new product: (1) innovativeness and (2) exclusivity. Because of a highly competitive distribution environment, there is a preoccupation with exclusivity as a competitive weapon.
5. The missing piece of information concerns the future of the national distributors. Only one national distributor, American Hospital Supply, was willing to participate. The outcome of the unresolved legal dispute between local distributors and American Hospital Supply will have a profound influence on the future of the distribution market. While the case is awaiting resolution, most planning and risk-taking by distributors is at a very low level.

APPENDIX A

Health Systems Agency

A Health Systems Agency (HSA) is a private, nonprofit corporation designated under Federal and State law for health planning and resources development. There are more than 200 HSAs in the United States, each serving several counties within a state. For example, the HSA of Southeastern Pennsylvania serves five counties consisting of 3.8 million people.

HSAs are funded by federal, state and local government monies. Under provisions of the National Health Planning and Resources Development Act of 1974 (Public Law 93-641), each HSA's responsibilities include:

1. Evaluation of proposals for new services for expanded health facilities, equipment, and services requiring a capital expenditure of \$100,000 or more.
2. Review of the appropriateness of all institutional health services in the area.
3. Annual recommendations to the state of projects and priorities for the modernization, construction and conversion of medical facilities.

The HSAs have been a source of controversy because they have opposed hospital development and acquisition projects which the hospitals have strongly desired (e.g., CAT scanners). The Reagan Administration is expected to eliminate Federal funding for all HSAs, and many are expected to close by the end of 1981.

APPENDIX B

Utilization, Personnel and Finances in States

Source: Hospital Statistics, American Hospital Association, 1980.

	<u># of hospitals</u>	<u># of beds</u>	<u>Occupancy(%)</u>	<u>Surgical Operations</u>	<u>Full-Time Equivalent Physicians &amp; Dentists</u>
Delaware	15	4,220	83.9	55,597	204
Washington, D.C.	17	8,563	85.1	104,303	894
Maryland	84	25,174	81.8	366,493	1,556
New Jersey	135	43,743	82.3	561,317	1,970
Pennsylvania	314	86,360	79.3	1,155,280	3,368
Virginia	134	31,859	77.5	439,259	962
	699	199,920		2,682,249	8,954

Data is from 1979 questionnaire. Physicians and Dentists are those employed by hospitals.

\*\*\*\*\*

Comparable Figures from 5 Years Before (1974 Questionnaire)

	<u># of hospitals</u>	<u># of beds</u>	<u>Occupancy(%)</u>	<u>Surgical Operations</u>	<u>Full-Time Equivalent Physicians &amp; Dentists</u>
Delaware	14	4,710	87.0	53,478	138
Washington, D.C.	20	11,512	82.1	136,184	1,373
Maryland	81	29,666	82.0	298,982	1,695
New Jersey	145	49,908	80.3	518,238	1,726
Pennsylvania	321	101,614	80.0	1,055,867	3,636
Virginia	128	35,724	84.3	383,985	1,068
	709	233,134		2,446,734	9,636

APPENDIX C

Canadian Manufacturers' Perceptions of Obstacles to Exporting  
to the United States

Canadian manufacturers perceived the following as obstacles to entry in to the U.S.: lack of financial resources, too much red tape in U.S. and Canada, lack of management capabilities, lack of capability to offer after-sales service, U.S. tariffs and duties, distribution problems, and lack of unique products.

Manufacturers' perceptions differed as a function of their experience with exporting to the U.S. Experienced exporters (those whose exports to the U.S. account for more than 30% of total sales) perceive the major obstacles to be mostly external (red tape, tariffs, duties). Less experienced exporters (exports to U.S. accounting for less than 30% of sales) perceived obstacles to be mostly internal (lack of financial resources, lack of after-sales service capability, high manufacturing costs, lack of management capability. Nonexporters to the U.S. perceive the major obstacles as being too much red tape in the U.S., lack of contacts with U.S. distributors, higher manufacturing costs in Canada, and lack of contacts with U.S. clients.

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