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SYNTEX LABORATORIES (A)

April 1982 found Robert Nelson, vice president of sales for Syntex Laboratories, considering the results of a sales force size and allocation study. Those results presented Nelson with a dilemma. He had previously submitted a business plan increasing the number of sales representatives from 433 to 473. By now, the corporate budget cycle of which that plan was a part was well under way. The study, however, indicated that sales and contribution to profit for fiscal 1985[1] at the 473 level would be much less than could be obtained with an optimal sales force size of over 700. Although Nelson was unsure how fast Syntex Labs could hire and train sales reps, the study clearly showed that a sales force growth rate of only 40 reps per year would severely limit both present and future profitability.

The study results had been presented by Laurence Lewis, manager of promotion research, and Syntex Labs' liaison to the consultants that had done the analysis. Following Lewis' initial presentation, Nelson arranged a second presentation for Stephen Knight, senior vice president of marketing for Human Pharmaceuticals. They had agreed that the results were so dramatic that, if they had confidence in the results, they should attempt to interrupt the corporate planning cycle and request more sales reps.

Company Background

Syntex Corporation began in 1940 when Russell Marker, a steroid chemist, derived a cheap and abundant source of steroid hormones from the black, lumpy root of a vine growing wild in the jungles of the Mexican state of Veracruz. Syntex's first products were oral contraceptives and topical steroid preparations prescribed by gynecologists and dermatologists respectively. By 1982 Syntex Corporation had become an international life sciences company that developed, manufactured, and marketed a wide range of health and personal care products. Fiscal 1981 consolidated sales were $710.9 million with $98.6 million net income. Since 1971, Syntex had recorded a 23% compound annual growth rate.

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[1] Syntex fiscal year ended on July 1.

This case was prepared by Associate Professor Darral G. Clarke as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

Syntex Laboratories

Syntex Laboratories, the U.S. human pharmaceutical sales subsidiary was the largest Syntex subsidiary. During fiscal 1981, Syntex Laboratories' sales increased 35%, to $215,451,000, and grew as a percentage of total pharmaceutical sales to 46%, continuing a recent upward trend. Operating profit in 1981 was 27% of net sales. Syntex Laboratories developed, manufactured, and marketed anti-inflammatories used to treat several forms of arthritis; analgesics used to treat pain; oral contraceptives; respiratory products; and topical products prescribed by dermatologists for skin diseases. Syntex emphasized pharmaceutical research in support of these existing product lines, and in several important new therapeutic areas, including immunology, viral diseases, and cardiovascular medicine.

Syntex Labs' Product Line

Syntex Labs' product line consisted of seven major products. Naprosyn was by far the largest and most successful, while Norinyl and the topical steroids represented Syntex's early development as a drug manufacturer. Exhibit 1 presents retail drug purchases and market shares for Syntex products.

Naprosyn

Naprosyn[2] was the third largest selling drug in the nonsteroidal anti-flammatory (NSAI) therapeutic class[3] in the country, behind Clinoril and Motrin. NSAIs were used in the treatment of arthritis.

Major selling points for Naprosyn were its dosage flexibility (250, 375, 500 mg tablets), twice daily regimen (less frequent than for competing products), and low incidence of side effects within a wide dosage range. The NSAI market in fiscal 1980 was $478 million. Exhibit 2 has details of NSAI market trends.

The extremely competitive arthritis drug market would soon become even more competitive as other pharmaceutical firms entered the huge and fast-growing market for alternatives to aspirin in treating arthritis. According to one expert, Naprosyn would "weather the storm [of increased competition] better than any existing agent, although its share will be lower in 1985 than today."

Anaprox

Anaprox was launched in the United States early in fiscal 1981. It was initially marketed for analgesic use and for the treatment of

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[2]All Syntex Labs product names were registered trademarks.

[3]Drugs used for similar purposes were combined for reporting purposes into groups called therapeutic classes.

menstrual pain. Nearly twice as many prescriptions were written for analgesics as for anti-arthritics in the U.S., making this an important, but highly competitive, market. Exhibit 2 presents details on analgesic market trends.

At the end of fiscal 1981, the U.S. Food and Drug Administration approved Anaprox for the treatment of mild to moderate, acute or chronic, musculoskeletal and soft-tissue inflammation.

Topical Steroids

Lidex and Synalar were Syntex's topical steroid creams for treating skin inflammations. Fiscal 1981 sales of dermatological products, Syntex's second largest product category, were only slightly ahead of sales in 1980. United States patents on two of the active ingredients in Lidex and Synalar expired during 1981, but other Lidex ingredients continued to be protected under formulation patents. Syntex anticipated some continued growth from these two important products and new dermatological products were under development.

During fiscal 1980, Syntex was the only established company to increase total prescription volume in topical steroids, while two new entrants grew from smaller shares. Market shares of new prescriptions and total prescriptions are in Exhibit 3. Syntex had a very strong following among dermatologists--21% of all new topical steroid prescriptions written by dermatologists were for Syntex products. Topicort, a competitor's brand, had enjoyed 65% growth ($3.66 million to $6.02 million) as a result of successful selling to both dermatologists and general practitioners.

Norinyl

Total drug store sales for oral contraceptives (OC) in 1980 were up 23% over the previous year, but this dollar-volume growth was primarily the result of a price increase. Total cycle[4] sales declined by 3.5%. New prescriptions overall declined 1.5%, while new prescriptions for low-dose oral contraceptives increased by 21%.

Syntex's oral contraceptive, Norinyl, was available in three dosages that together totaled $37 million, or 10% of the market. The low-dose segment was the growth segment of the OC market; 30% of all new prescriptions were for low-dose products. Mid-dose products accounted for 54% of all new prescriptions, and high-dose products, only 16%.

The oral contraceptive market was extremely competitive, with seven major competitors and dozens of products. Syntex's fiscal 1981 sales increase was due primarily to larger sales to the Agency for International Development than in the previous year, price increases, and the

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[4]Oral contraceptive sales were recorded by the amount of the drug used for one menstrual cycle.

introduction of low-dose Norinyl, which was approved by the FDA in that year. Exhibit 3 contains OC market trends.

Nasalide

Nasalide was a steroid nasal spray for the treatment of hay fever and perennial allergies. It was approved for United States marketing early in fiscal 1982.

The Sales Representative

The sales rep's job was to visit physicians and encourage them to prescribe Syntex drugs for their patients. This was usually done by providing the physician with samples and with information about the appropriate dosage for various medical uses. Performance of this task was complicated by the difficulty of getting appointments with busy physicians, obtaining and maintaining credibility as a reliable source of information on drug use, the number of competing sales reps vying for the physician's time, and the difficulty in measuring the results of the detailing effort.

Robert Nelson described the physician visit as follows:

> A good sales rep will have a pretty good idea of what the physician's prescribing habits are. For example, most physicians are aware of Naprosyn by now, so our sales rep would try to find out what the physician's usage level is. If the physician was not prescribing Naprosyn, the sales rep would present clinical studies comparing Naprosyn with other drugs, probably stressing Naprosyn's lower incidence of side effects and its twice-a-day regimen and then request the physician to prescribe Naprosyn for their next six rheumatism patients. The same sort of information might be used to persuade a physician to move Naprosyn up from third choice to second or first choice. Physicians already prescribing Naprosyn could be encouraged to increase the dose for severe cases from 750 to 1,000 mg per day, using recent research showing Naprosyn to be safe at those levels. New uses cleared by the FDA could also be explained, or the rep might just reinforce the physician's choice of Naprosyn and counteract competitors' claims for their drugs.

The choice of which physicians to visit, how often to visit them, and what to present was a major consideration for the individual sales rep. Though sales management might set quotas and provide guidelines, on a day-to-day basis the final choice was largely the rep's. Laurence Lewis explained:

> Sales reps tend to divide the physicians in their territories into two groups: "prescription-productive" physicians and "easy-to-call-on" physicians. Suppose a company sets a minimum daily call average of seven. The sales rep tries to visit the most productive physicians first; they are busy

physicians for the most part, so the rep may have to wait a while to see them. Later in the day the sales rep gets nervous about making the seven calls so he fills in with easy-to-call-on physicians that might not be terribly productive. His bonus, however, is based on quota and annual sales increase over the previous year, so he can't be totally unconcerned about the productivity of the physicians he visits.

Nelson felt that once the decision had been made about the number of sales reps and the sales territories had been defined and assigned, the limits of his organizational authority had about been reached. Decisions he might make about which physician specialties to visit and what drugs to feature would be subject to individual reps' interpretation and preferences. It would be necessary to educate and motivate the reps to act in accordance with the sales plan. If the reps didn't agree with the plan, strict quotas and overly directive policies would be counterproductive.

Sales Management at Syntex Labs

Robert Nelson had been promoted to vice president of sales from director of marketing research. In his new position, he reported directly to Stephen Knight, the senior vice president of marketing for Syntex Laboratories. Reporting to Nelson through Frank Poole, the national sales manager, were 6 regional, 47 district sales managers, and 433 general sales reps. Also reporting to him separately was a group of reps that specialized in hospital sales and dermatology sales.

After some consideration, Nelson decided he had a few major decisions to make in managing the sales force that were of a relatively strategic nature: The size of the sales force and its geographic allocation were of obvious importance. Call frequency, allocation of sales calls across physician specialties, and product-featuring policies were also important decisions that were relatively difficult to change once implemented.

Sales Force Size

Data available in 1980 showed that Syntex's sales force[5] was rather small compared with those of its direct competitors:

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[5]This case deals only with the general sales force and does not include the hospital sales force. For simplicity, "sales force" will be used to mean the general sales force.

NSAI		Oral Contraceptives		Topical Steroids	
Upjohn	930	Ortho	330	Schering	615
Merck	955	Wyeth	724	Squibb	761
McNeil	457	Searle	405	Lederle	600
Pfizer	663			Hoechst	379
Lilly	880				
Desta	325				

It was by no means obvious to Nelson, however, how much larger the Syntex sales force needed to be. Since each competitor had a different product line that required calling on a different mix of physician specialties, it wasn't clear how the size of the Syntex sales force should compare with the others.

Call Frequency

The 433 sales reps at Syntex had been generally adequate to support a six-week call cycle (each physician was scheduled to be visited once every six weeks) with approximately 70,000 targeted physicians. Indeed, this was how the number of reps had been determined in the first place. Since many of the physicians Syntex visited were visited by other companies with four-week call cycles, Nelson had considered that possibility.

The four-week call cycle seemed attractive for at least two reasons. First, if one believed that the sales force had a positive influence on physicians' prescribing behavior, it seemed reasonable that offering less frequent positive contact than the competition had to hurt. Second, dermatologists and rheumatologists had been visited by Syntex sales reps in nearly a four-week cycle, and these were felt to be Syntex's most successful physician specialty groups.

Allocation of Sales Effort Across Products and Physician Specialties

The necessity to allocate sales force effort across various physician specialties was apparent from the number of physicians in various specialties--a total of 135,229 physicians in office-based practice. Visiting all of them in a four-week call cycle would have required at least 1,200 sales reps (assuming no geographic complications). This would have been nearly three times as large as Syntex Labs' current sales force and nearly one-third larger than its largest competitor.

The Syntex sales policy called for a rep to attempt to make seven sales calls per day, during which presentations would be made for two or three Syntex products. (The average was 2.7 presentations per sales call.) Which products would be featured depended on a number of factors, such as the physicians' specialty, the availability of new information on Syntex product efficacy and/or comparative advantages, and national sales priorities.

The fact that not all physicians were likely to prescribe all of Syntex's products complicated the choice of both product presentations and

physician specialties. The fact that a sales rep could make an average of seven calls and 19 presentations in a day did not necessarily mean that a recommended product-featuring schedule could be followed exactly. For example, if the rep called on four dermatologists and three obstetricians in a particular day, there would be no opportunity to make Naprosyn presentations.

Geographic Allocation of Sales Force

When Robert Nelson became vice president of sales, geographic allocation of the sales force seemed to be the most critical factor, so it had received immediate attention. The problem turned out to be a reasonably tractable one, however. Gathering information about the location of physicians and competitors' sales reps was a huge data-gathering task, but as Laurence Lewis explained:

> Almost everyone deploys their sales reps based on regional physician counts. We made an effort to get away from just physician counts, and looked at market potential. I know other companies have done that. In the end, it all came down to where Lilly, Pfizer, Merck, and ourselves would all have a rep in a given geographical territory. Maybe one of the big companies would have two reps in a particular territory, but regional deployment ended up being almost standard. I don't suppose any of us have any real hope of coming up with good enough data to really override that allocation, at least at the territory level. We finally built a model at the state level which is based on six factors that are weighted differentially according to management judgment. We assumed that when we got below the state level a lot of geographical things, or whatever, would have to be taken into account. We now have a comfortable deployment scheme at the state level. But we still have to know how many sales reps we should have in total and what specialties we are going to push.

Sales Force Strategy Model

Nelson and Knight had observed that the rapid growth of Naprosyn was changing the balance in Syntex Laboratories. According to Knight:

> We had always been a specialty-oriented company. We began with a product for dermatologists, then followed that with an oral contraceptive, so we visited OB/GYNs[6] too, and for the first 15 years those were the main physicians we visited, along with a limited number of primary-care

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[6] OB/GYN--obstetrician and gynecologist.

> physicians.[7] So we've thought of ourselves as a small, specialty-oriented pharmaceutical company. Along came Naprosyn and suddenly we had the ninth largest selling drug in the U.S. and we were growing at over 25% a year. We were being forced to rethink just what kind of a company we were. It was this dynamic change in the nature of Syntex that led us to consider a more sophisticated analysis.

According to Nelson:

> We knew we had some opportunities to expand the sales force. We could see how rapidly Naprosyn was growing and that our detailing penetration with generalist doctors was very low compared to the big anti-arthritis competitors like Upjohn and Merck. They each had 900 sales reps, so we knew we were behind them. But we were trying to make major plans on the back of envelopes! We'd make notes like: If there are 60,000 generalist doctors and we've got this many people, how many calls can we make a year if each of them makes 1,360 calls a year? How are we going to divvy up those calls? We then realized we were saying that all these doctors respond to sales reps the same way, and yet we all knew that they didn't. But we could never make the differences explicit! We were assuming all products responded the same way, and we knew that wasn't right. Finally we asked ourselves if there wasn't some better way to do this.

In an effort to find a better way, Nelson created the position of manager of promotion research. The position was filled by Laurence Lewis, an analyst in the marketing research department who had earlier been a sales rep. Lewis's first task was to identify a method for determining the size of the sales force and allocating sales force effort across products and physician specialties. After studying the marketing research and trade literature and consulting other knowledgeable people, Lewis decided to approach Leonard Lodish, a professor at the Wharton School, whose name had surfaced repeatedly during his research.

Lodish was subsequently invited to visit Syntex and make a presentation on his approach to determining sales force size and sales effort allocation. Two aspects of his approach struck responsive chords with Knight and Nelson. Nelson stated:

> One of the attractive features of the approach was getting our sales and marketing management people together and making explicit what we believed about how each of our products responds to detailing.

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[7] Primary-care physicians (PCP) included physicians specializing in internal medicine, general practice, and family practice.

Knight felt that:

> Our history had been one of increasing the sales force size in relatively small steps. I've never been really satisfied that there was any good reason why we were expanding by 30 or 50 representatives in any one year other than that was what we were able to get approved in the budget process. Over the years, I'd become impatient with the process of going to the well for more people every year with no long-term view to it. I felt that if I went to upper management with a more strategic, or longer-term viewpoint, it would be a lot easier to then sell the annual increases necessary to get up to a previously established objective in sales force size and utilization.

Subsequently, a contract was signed with Management Decision Systems (MDS), a Boston area-based management consulting firm of which Lodish was a principal, to produce a sales force strategy model for Syntex. Laurence Lewis was appointed liaison with MDS.

Model Development Process

The sales force strategy model (SSM) was designed to help Syntex management deploy the sales force strategically. The model would be used to calculate the amount of sales effort to direct to various Syntex products and physician specialties, and to maximize the net contribution for a given sales force size. Repeated applications of the model with different numbers of reps could be used to make decisions on the best total.

The technique used in the model combined management science techniques with historical data and management judgment to calculate the incremental gain in net contribution for each additional amount of sales resource (either product presentations or physician calls).

Defining the Model Inputs

The SSM used information from various sources. The average number of presentations per sales call, the number of sales calls per day, the contribution margin for Syntex products, and the cost per sales representative were estimated from company records and syndicated data sources. (See Exhibit 4.) The current allocation of sales force effort was a key element in developing the model, since these data provided the background for Syntex managers to use in estimating the response of various Syntex products and physician groups to different levels of sales effort.

There were two separate, but similar, versions of the SSM model. One sought to allocate the number of sales rep visits to physician specialties to maximize contribution, while the other sought the optimal allocation of sales presentations to Syntex products. Each estimated the optimal sales force size independently of the other.

The judgmental estimates of response to sales effort were obtained during a series of special meetings held in conjunction with the annual marketing planning meetings. Leonard Lodish, Stephen Knight, Robert Nelson, Laurence Lewis, Frank Poole, and a few product managers and regional sales managers participated. According to Lewis:

> The meeting began with a short lecture on sales response and an exercise in which we were each asked to come up with an optimal sales plan for a sales rep who had six accounts and four products. Trying to do this led us to understand what the model would try to accomplish and demonstrated the impossibility of trying to plan by hand for more than 400 sales reps selling six or more products to 13 different physician specialties.

The main agenda of the meetings was to come to a group consensus on the likely response of each Syntex product and physician specialty to sales rep effort. On Monday, the first day of the annual meetings, worksheets were distributed to the participants on which they were asked to estimate the change in sales for each of seven Syntex Labs' products and nine physician specialties that would result from different levels of sales rep activity. Each manager responded to the following question for each product and specialty: "According to the strategic plan, if the current level of sales force effort is maintained from 1982 to 1985, sales of Naprosyn (Anaprox, etc.) could be the planned level. What would happen to Naprosyn's (Anaprox, etc.) 1985 sales (compared with present levels) if during this same time period it received:

1. no sales effort?
2. one half the current effort?
3. 50% greater sales effort?
4. a saturation level of sales effort?

After a summary of the participants' answers had been presented to the group and discussed, new worksheets were passed out and the process repeated. When a reasonable consensus had been obtained, the meeting was recessed.

Following this meeting, a preliminary version of the model was produced. When the group reconvened on Friday, a preliminary analysis was presented and the results were discussed. The initial analysis appeared generally reasonable to the participants and, after a final discussion and some later fine-tuning, resulted in the response estimates that appear in Exhibit 5. Commenting on the process, Knight explained:

> Of course, we knew that the responses we estimated were unlikely to be the "true responses" in some absolute knowledge sense, but we got the most knowledgeable people in the company together in what seemed to me to be a very thorough discussion and the estimates represented the best we could do at the time. We respect the model results, but we'll utilize them with cautious skepticism.

According to Poole, "We did the best we could to estimate the model. At first we were uncomfortable at having to be so specific about things we weren't too sure about, but by the end of the discussions, we were satisfied that this was the best we could do."

Model Structure

The sales force strategy model assisted a manager in determining the size of the sales force and the allocation of sales effort across products or customers by:

1. predicting the net contribution and sales volume that would result from a particular sales force size and allocation policy; and

2. providing an efficient means of searching over various sales force sizes to find both the optimal sales force size and the optimal allocation policy.

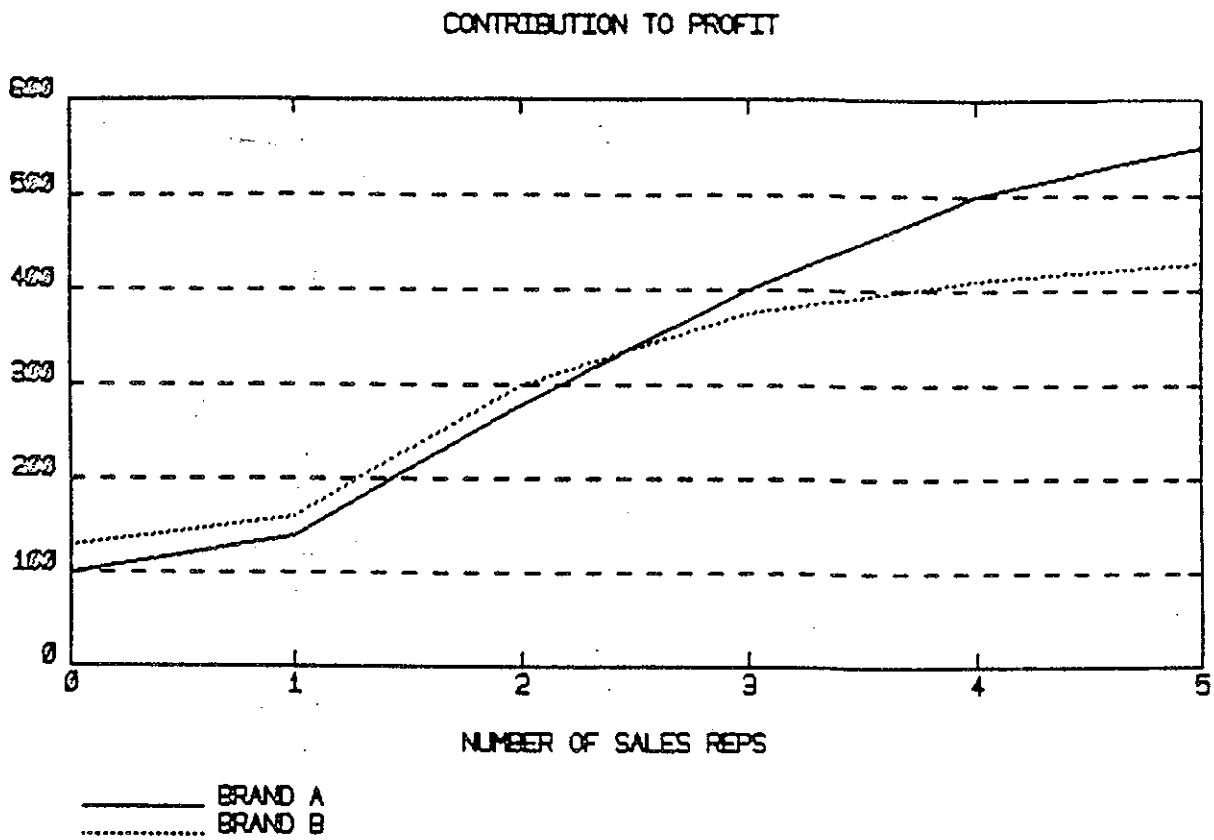
The basic concept of the model was quite simple: each additional sales rep should be assigned to visit the specialty which, considering the allocation of the current sales force, would provide the highest incremental contribution. Consider the following example of a company that has:

1. two products--A and B;

2. three sales reps who sell only A, and two sales reps sell only B; and

3. the response of A and B to sales effort pictured below.

Example Response Curves



Suppose now that the company wants to add two sales reps. The model considers the additional reps sequentially. If the first new rep is assigned to sell product A, the result will be $100 incremental contribution ($500-400). If the first new rep is assigned to sell B, only $75 incremental contribution ($375-300) will result. Thus, the first sales rep should be assigned to sell A. The company now has 4 "A sales reps," and 2 "B sales reps." If the second new rep is assigned to sell product B, he or she could still generate $75 incremental contribution. But if assigned to sell A, only $50 could be generated.[8] So the second new sales rep could be assigned to sell B.

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[8]The simplified algorithm presented here does not assure an optimal solution for S-shaped response curves. The actual SSM algorithm is the same in spirit as this example but has a refinement to assure an optimal solution for all reasonable response functions.

Exhibit 6 presents a portion of the model output allocating sales representatives to specialties. At each step in the analysis, the model indicated the number of reps already allocated, the number of new reps allocated, and to which specialty. If successive additional reps were to be allocated to the same specialty, they were accumulated in a single step.

The SSM could be used to determine the optimal number of sales reps by increasing the size of the sales force and observing the net contribution to profit and incremental contribution per sales rep added. At each sales force size the sales force was optimally deployed, and the optimal sales force size was the one with maximum net contribution and incremental net contribution per added rep equal to zero.

Syntex management had estimated response functions for both products and specialties, so running the model in both modes would provide a validity check on the approach in general. The specialty-based analysis indicated an optimum sales force size of 768, and the product-based analysis 708 sales reps.

Results of the SSM Analyis

The recommended optimal sales force sizes computed on the basis of physician specialty and products were reasonably close together. The models differed considerably, however, in their estimation of incremental net contribution per added sales rep at levels between the current sales force size and 600 reps. (See Exhibit 7.)

Not only did both SSM analyses indicate that the current Syntex sales force was too small, it also showed that allocation was suboptimal. According to the specialty-based analysis, FY 1985 net contribution at the present sales force size would be more than $7.2 million less than could be obtained with an optimal deployment policy. (See Exhibit 8.)

A direct comparison of present and optimal deployment according to the product-based analysis was somewhat more difficult, since the SSM indicated that Anaprox should either receive no sales attention or the equivalent of the next 130 sales reps. Nothing in between was optimal. This resulted in reported optimal sales force sizes of 369 and 499 sales reps, but no report on the current size of 433. The SSM results were clear, however, that the current Syntex allocation of effort across products was even more suboptimal than it had been across specialists. Exhibit 9 shows that when 369 sales reps were optimally deployed across products, sales and net contribution would be $50.5 million and $45.7 million higher, respectively.

Finally, with both optimal sales force size and optimal deployment, FY 1985 sales and contribution (see Exhibit 10) would be dramatically larger than with the current sales force size and optimal deployment:

SSM Predicted FY 1985 Sales and Contribution from Optimal Deployment

According to:	Sales Force Size	Sales	Net Contribution
Specialty model (current)	434	$373.1mm	$220.4
	429	380.1	227.6
	768	447.7	251.7
Product Model (current)	430	$373.1	$218.6
	369	423.6	264.2
	708	485.9	279.6

Management Implications

Robert Nelson had expected that the sales force would be found to be too small and that Naprosyn probably needed more emphasis, but no one had anticipated that the optimal sales force size would be between 700 and 800 reps. According to Laurence Lewis:

> When Len [Lodish] asked how far out he should run the thing, we were standing at 430 reps and I said, "Why don't you run it out to 550 or the maximum, whichever comes first." We knew we weren't paying enough attention to Naprosyn because our major NSAI competitors outnumbered us so far, and that's our biggest and most important market. We also knew that Naprosyn was our most important product, but we didn't really know to what degree it was our most important product. We had the perception that a lot of the attention given to launching three new products had been at the expense of our smaller products, but the model showed it had come out of Naprosyn and that was exactly what we hadn't wanted to happen.

When he received the SSM analyses, Lewis decided four major conclusions could be drawn from them:

1. Until the size of the sales force approaches 700 general representatives, profitability will not be a constraint to adding representatives.

2. From the FY 1981 base of roughly 430 representatives, Syntex Labs should grow to an optimal allocation of sales effort rather than by redeploying the current sales force. This could be done by devoting additional sales resources largely to the primary-care audience.

3. Naprosyn was the largest product in Syntex's product line, the most sales-responsive, and highly profitable. Thus Syntex Labs should make it the driving force behind nearly all deployment and allocation decisions.

4. Syntex should consider itself a major generalist company, since optimal deployment would require the greatest portion of a large sales force to be devoted to the generalist physician audience.

Although enthusiastic about these conclusions, Lewis added a note of caution to their acceptance.

> A significant change in the marketplace that would decrease the ability of any of our products to compete would challenge the validity of the model output. Such phenomena as a product recall or a revolutionary new competitive product might act to reduce the value of this model.
>
> Significant error in the sales response estimates of either products or specialties could lead to reduced validity of model output. The similarity between the two model outputs derived from independent response estimates hints at the low likelihood of significant error in the sales response estimates. The model would be most sensitive to significant error in the estimate of Naprosyn's sales responsiveness.

Lewis had concluded his presentations of the study results by stating that Robert Nelson and Stephen Knight were faced with two choices if they decided not to expand the sales force to an optimal size. They could:

1. Optimize the physician sales call allocation with a smaller than optimal sales force by dramatically reducing coverage of specialists to increase calls on primary-care physicians. This option would maximize sales for the number of sales reps by leading to large gains in Naprosyn at the expense of sales losses in oral contraceptives and topical steroids.

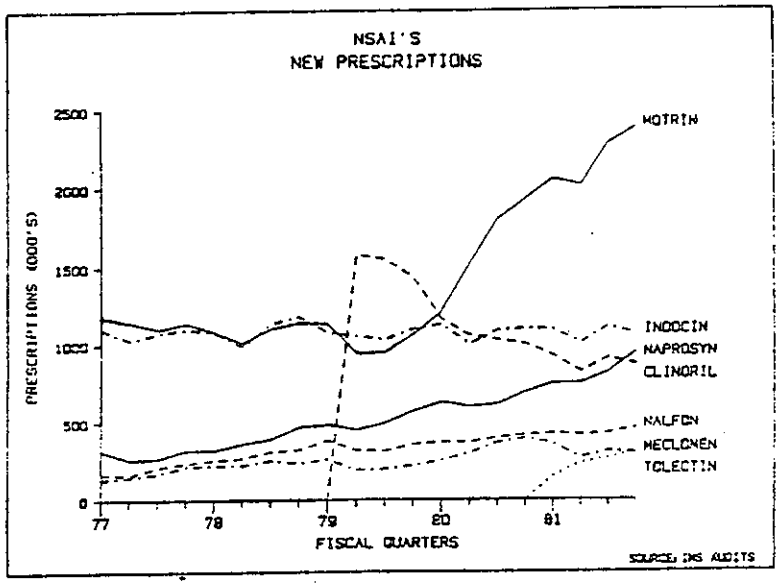
2. Limit Naprosyn's growth to substantially less than its potential, while maintaining the present contact levels with Syntex's traditional specialist physicians and older products.

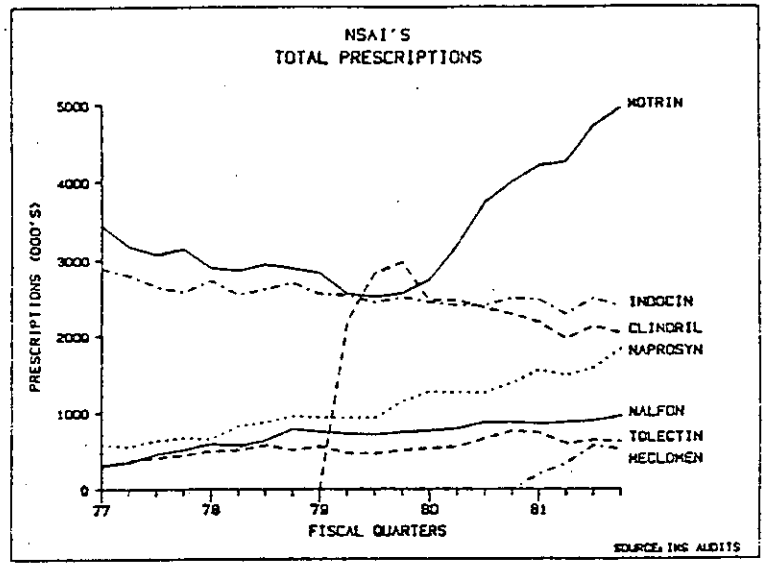
Exhibit 1
SYNTEX LABORATORIES (A)
Recent Sales Trends in Syntex[a]
(000)

Therapeutic Class	Retail Drug Purchases			Total RX			New RX		
	July 80-July 81	81-82	%	80-81	81-82	%	80-81	81-82	%
NSAI (anti-arthritics)									
Market	$477,834	$533,980	+16%	49,759	51,466	+3%	23,829	24,569	+3%
Naprosyn	90,448	114,242	+26%	6,837	7,849	+19%	3,323	3,656	+10%
Syntex share	18.9%	21.4%		13.7%	15.3%		13.9%	14.9%	
Analgesic (pain killers)									
Market	$315,324	$346,784	+1%	89,774	91,881	+2%	65,976	67,160	+2%
Anaprox	8,119	13,027	+60%	762	1,569	+106%	591	1,040	+76%
Syntex share	2.5%	3.8%		0.8%	1.7%		0.9%	1.5%	
Oral Contraceptives									
Market (all forms)	$359,942	$442,669	+23%	50,811	53,896	+6%	13,730	13,182	-.4%
Syntex Total	36,925	50,726	+37%	5,636	5,865	+4%	1,620	1,520	-7%
Syntex Share	10.3%	11.4%		11.1%	10.9%		11.8%	11.5%	
Topical Steroids (skin ointments)									
Market	$138,895	148,895	+7%	24,948	24,531	+2%	15,345	15,009	-2%
Syntex Products	31,361	37,768	+20%	5,181	5,241	+1%	3,044	3,103	+2%
Syntex share	22.6%	25.4%		20.8%	21.4%		19.8%	20.7%	

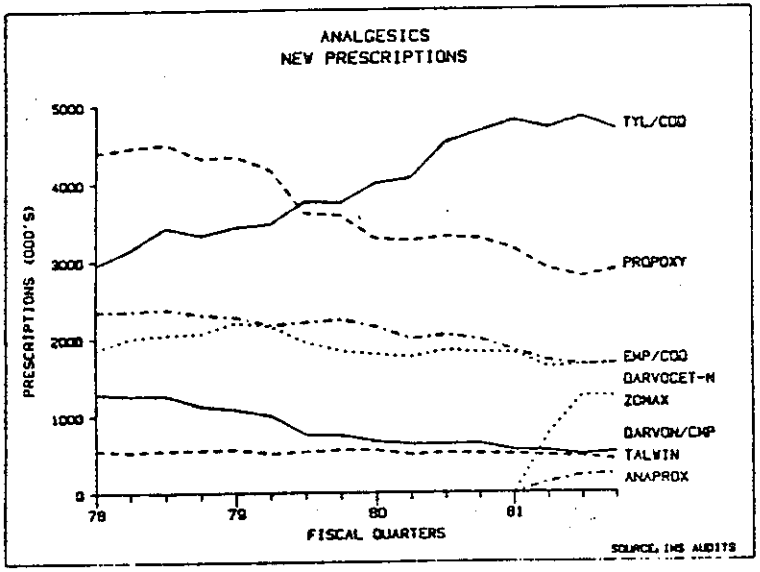
[a]Compiled from IMS data.

Exhibit 2
SYNTEX LABORATORIES (A)
Nonsteroidal Anti-inflammatory Market Trends





Analgesic (Drug Store only) Market Trends



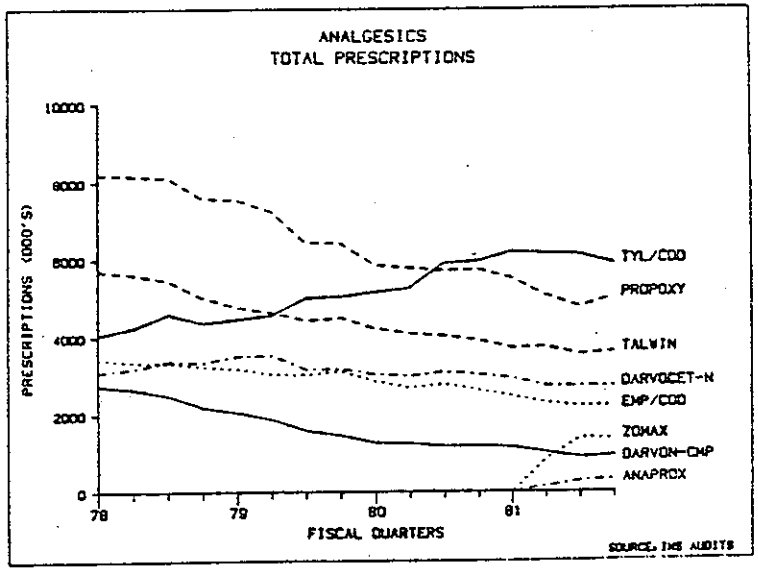
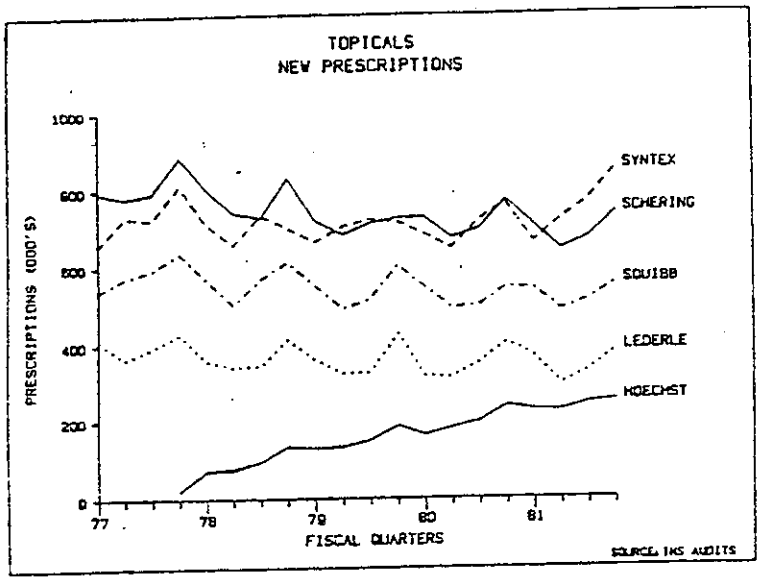
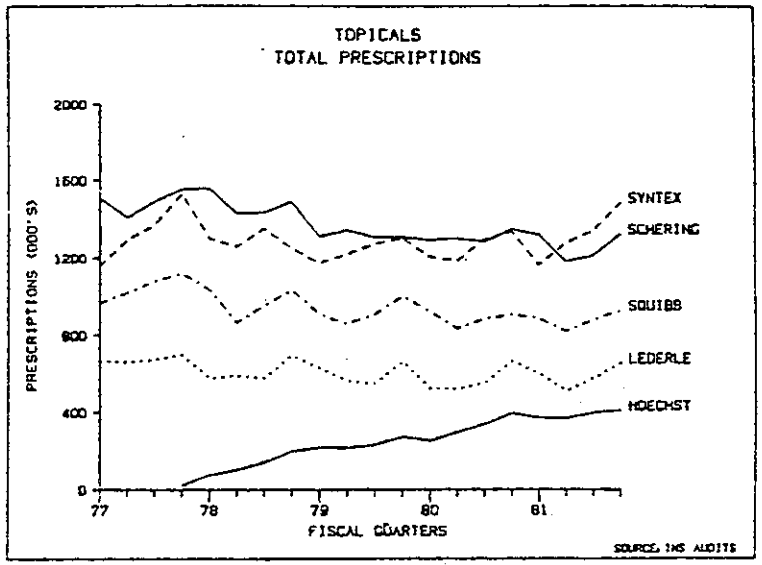
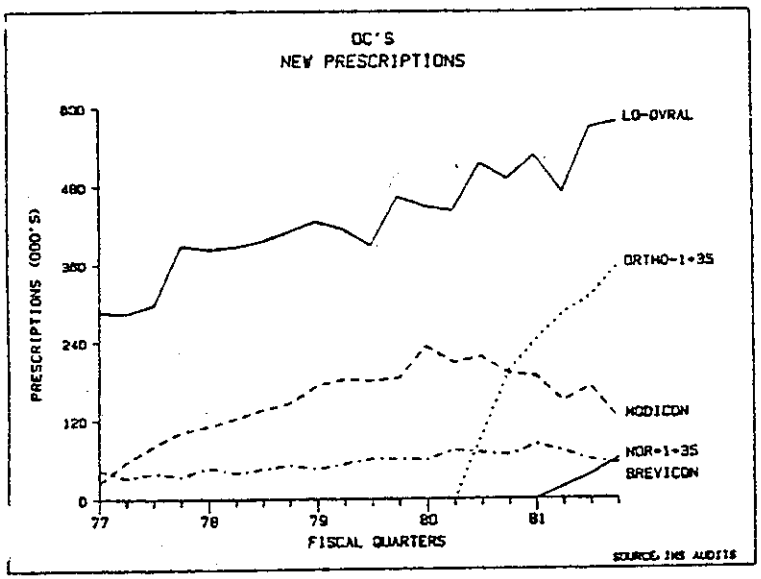


Exhibit 3
SYNTEX LABORATORIES (A)
Topical Steroid Market Trends





Oral Contraceptive Market Trends



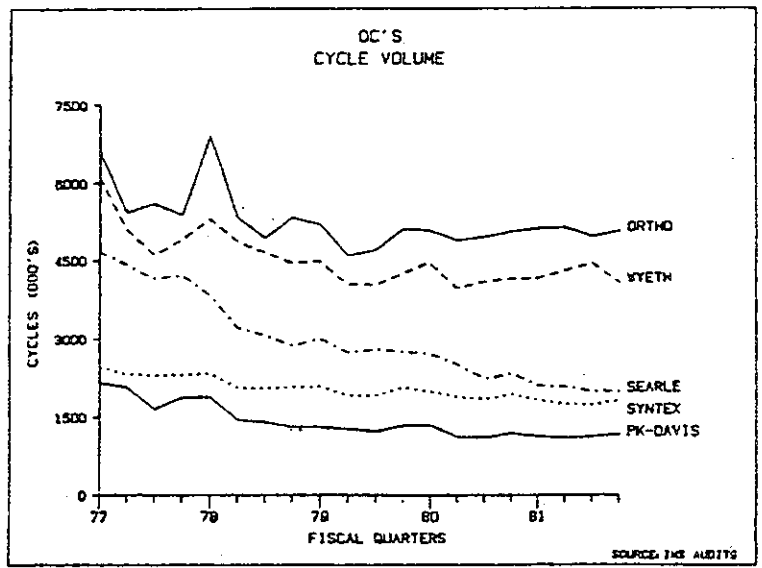


Exhibit 4
SYNTEX CORPORATION (A)
Basic Model Inputs[a]

Normal planned 1985 calls or presentations based on FY 1981.

Products (Presentations)	
Naprosyn	358,000
Anaprox	527,000
Norinyl 135	195,000
Norinyl 150	89,000
Lidex	101,000
Synalar	110,000
Nasalide	210,000
TOTAL	159,000
Ave/rep.	3,677

Specialties (Calls)	
General practice	124,000
Family practice	108,000
Internal medicine	98,000
Orthopedic surgeon	54,000
Rheumatologist	13,000
Obstetrician/ gynecologist	117,000
Dermatologist	50,000
Allergist	14,000
Ear, nose, throat	12,000
TOTAL	590,000
Ave/rep.	1,360

Planned 1985 sales ($000) with present policy--(Syntex 1985 estimates by product, allocated to specialties on FY 1981 product by specialty distribution).

Product	
Naprosyn	$214,400
Anaprox	36,500
Norinyl 135	21,200
Norinyl 150	37,200
Lidex	38,000
Synalar	14,600
Nasalide	11,200
TOTAL	$373,100

Specialty	
General practice	$92,398
Family practice	78,083
Internal medicine	79,082
Orthopedic surgeon	19,671
Rheumatologist	16,961
Obstetrician/ gynecologist	51,312
Dermatologist	26,598
Allergist	3,434
Ear, nose, throat	5,561
TOTAL	$373,100

Contribution as % of Factory Selling Price

Product	
Naprosyn	70%
Anaprox	55
Norinyl 135	72
Norinyl 150	72
Lidex	62
Synalar	53
Nasalide	52

Specialty	
General practice	67.6%
Family practice	67.8
Internal medicine	68.1
Orthopedic surgeon	68.4
Rheumatologist	67.5
Obstretician/ gynecologist	66.2
Dermatologist	55.3
Allergist	62.5
Ear, nose, throat	62.2

Estimated 1985 average cost per representative (excluding samples) $57,000
Estimated 1985 fixed selling overhead (present organization) $2,800,000

[a]1985 plans have been disguised.

Exhibit 5

SYNTEX LABORATORIES (A)

Product Response Functions

	No Calls	One-Half	Present	50% More	Saturation
Naprosyn	47	68	100	126	152
Anaprox	15	48	100	120	135
Norinyl 135	31	63	100	115	125
Norinyl 150	45	70	100	105	110
Lidex	56	80	100	111	120
Synalar	59	76	100	107	111
Nasalide	15	61	100	146	176

Specialty Response Functions

	No Calls	One-Half	Present	50% More	Saturation
General practice	29	62	100	120	136
Family practice	31	62	100	124	140
Internal medicine	43	69	100	111	120
Orthopedic surgeon	34	64	100	116	130
Rheumatologist	41	70	100	107	112
Obstetrician/ gynecologist	31	70	100	110	116
Dermatologist	48	75	100	107	110
Allergist	17	60	100	114	122
Ear, nose, throat	20	59	100	117	125

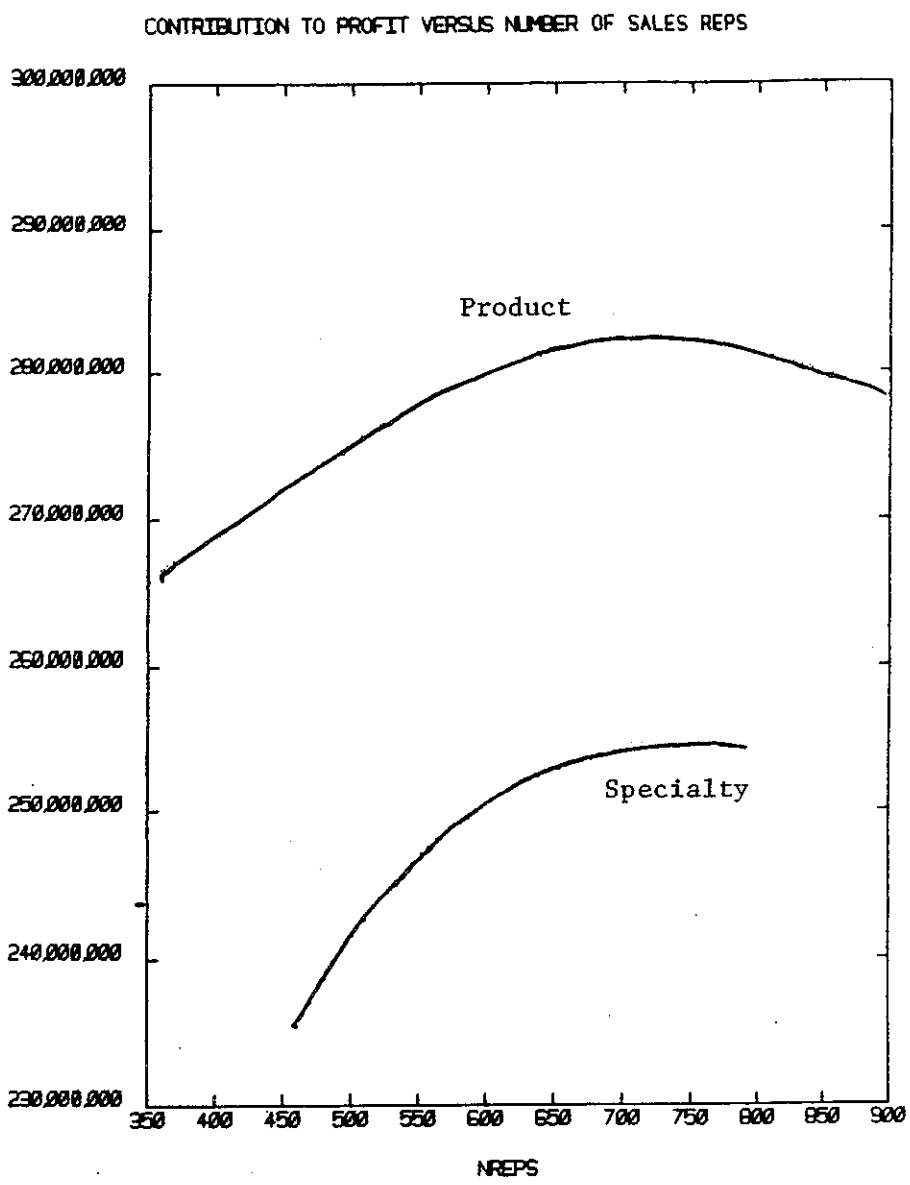
Exhibit 6
SYNTEX LABORATORIES (A)
Syntex Laboratories Sales Force Strategy Model
Specialty Allocation

STEP NO.	NO. OF REPS	CHG. IN REPS	SALES (000S)	CHG. IN SALES (000S)	NET PROFIT (000S)	CHG. IN NET PROFIT PER REP (000S)	ALLOC. TO:
26	391.8	0.9	367,818	312.4	224,144	185.7	RHEU
27	392.6	0.8	368,119	300.5	224,285	176.0	ENT
28	428.7	36.1	380,052	11,933.4	230,390	169.1	ORS
29	437.0	8.3	382,766	2,713.5	231,752	164.3	GP
30	463.7	26.7	393,586	10,820.2	235,995	158.7	DERM
31	470.9	7.2	395,871	2,285.4	237,133	157.6	FP
32	477.5	6.6	397,911	2,039.6	238,149	155.0	IM
33	480.8	3.3	399,201	1,290.2	238,646	148.7	DERM
34	481.6	0.8	399,463	262.2	238,763	146.3	ENT
35	489.4	7.8	401,814	2,350.5	239,873	142.0	OBGYN
36	493.0	3.6	402,863	1,049.4	240,385	141.9	ORS
37	493.9	0.9	403,114	251.1	240,505	138.1	RHEU
38	502.2	8.3	405,412	2,297.6	241,586	130.4	GP
39	509.7	7.5	407,603	2,191.4	242,529	125.9	ALLG
40	510.6	0.9	407,874	270.8	242,645	123.9	ALLG
41	517.8	7.2	409,787	1,913.1	243,530	122.7	FP
42	524.4	6.6	411,452	1,665.1	244,291	116.1	IM
43	525.2	0.8	411,659	206.4	244,374	103.0	ENT
44	533.5	8.3	413,610	1,951.8	245,221	102.2	GP
45	534.4	0.9	413,814	203.8	245,309	101.3	RHEU

Key:
GP general practice
FP family practice
IM internal medicine
ORS orthopedic surgeon
RHEU rheumatologist
OBGYN obstetrician/gynecologist
DERM dermatologist
ALLG allergist
ENT ear, nose, throat

Exhibit 7

SYNTEX LABORATORIES (A)



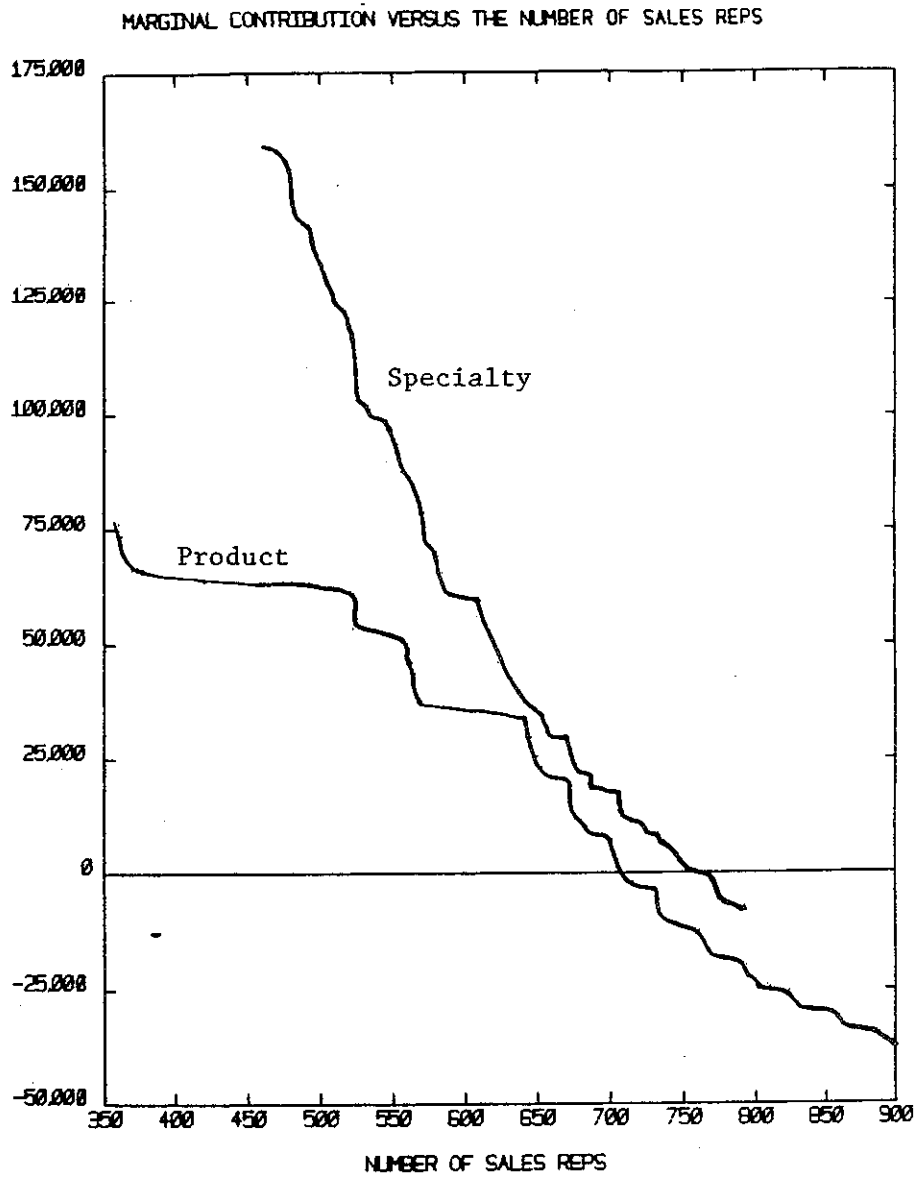


Exhibit 8
SYNTEX LABORATORIES (A)
Comparison of Existing Policy with Recommended Policy at Current Sales Force Levels[a]
(1985)

Present Policy

Allocation to	Number of Reps	Sales Calls	Sales in Dollars (000s)	Gross Profit (000s)	Net Profit (000s)
GP	91.2	124,000	92,398	62,461	57,264
FP	79.4	108,000	78,083	52,940	48,414
IM	72.1	98,000	79,082	53,855	49,747
ORS	39.7	54,000	19,671	13,455	11,192
RHEU	9.6	13,000	16,961	11,449	10,904
OBGYN	86.0	117,000	51,312	33,969	29,065
DERM	36.8	50,000	26,598	14,178	12,081
ALLG	10.3	14,000	3,434	2,146	1,559
ENT	8.8	12,000	5,561	3,459	2,956
Total	433.8	590,000	373,100	247,910	220,382

SSM Recommended Policy

Allocation to	Number of Reps	Sales Calls	Sales in Dollars (000s)	Gross Profit (000s)	Net Profit (000s)
GP	116.0	157,818	103,915	70,246	63,632
FP	108.3	147,273	92,624	62,799	56,627
IM	78.6	106,909	81,586	55,560	51,079
ORS	36.1	49,091	18,622	12,737	10,680
RHEU	10.4	14,182	17,273	11,660	11,065
OBGYN	70.4	95,727	47,120	31,194	27,181
DERM	0.0	0	12,767	6,805	6,805
ALLG	0.0	0	584	365	365
ENT	8.8	12,000	5,561	3,460	2,956
Total	428.7	583,000	380,052	254,825	227,590

Key:
GP general practice
FP family practice
IM internal medicine
ORS orthopedic surgeon
RHEU rheumatologist
OBGYN obstetrician/gynecologist
DERM dermatologist
ALLG allergist
ENT ear, nose, throat

[a]Optimal allocations are only computed for sales force sizes in a step (see Exhibit 6). A consequence of this is that allocations are not available for every sales force size and thus allocated sales force sizes don't exactly match the current level.

Exhibit 9
SYNTEX LABORATORIES (A)
Comparison of Existing Policy with Recommended Policy
at (Near) Current Levels (1985)

Present Policy

Allocation to	Number of Reps.	Presentations	Sales in Dollars (000s)	Gross Profit (000s)	Net Profit (000s)
NAPROSYN	96.8	358,000	214,400	150,000	144,565
ANAPROX	142.4	527,000	36,500	20,075	11,956
NORINYL 135	52.7	195,000	21,200	15,264	12,260
NORINYL 150	24.1	89,000	37,200	26,784	25,413
LIDEX	27.3	101,000	38,000	20,140	18,584
SYNALAR	29.7	110,000	14,600	7,738	6,043
NASALIDE	56.8	210,000	11,200	5,824	2,589
Total	429.7	1,590,000	373,100	245,905	218,610

Recommended Policy 369 Reps

NAPROSYN	246.3	911,272	306,526	214,568	200,530
ANAPROX	0.0	0	5,475	3,011	3,011
NORINYL 135	57.5	212,727	22,019	15,854	12,576
NORINYL 150	28.4	105,181	38,049	27,394	25,774
LIDEX	37.2	137,727	41,222	21,847	19,726
SYNALAR	0.0	0	8,614	4,565	4,565
NASALIDE	0.0	0	1,680	873	873
Total	369.4	1,366,909	423,585	288,115	264,257

Recommended Policy 499 Reps

NAPROSYN	246.3	911,273	306,527	214,569	200,530
ANAPROX	129.5	479,091	33,708	18,539	11,159
NORINYL 135	57.5	212,727	22,019	15,854	12,577
NORINYL 150	28.4	105,182	38,048	27,395	25,774
LIDEX	37.2	137,727	41,222	21,848	19,726
SYNALAR	0.0	0	8,614	4,565	4,565
NASALIDE	0.0	0	1,680	874	874
Total	498.9	1,846,000	451,819	303,644	272,405

Exhibit 10

SYNTEX LABORATORIES (A)

Optimal Sales Force Policies

Based on Specialties

Allocation to	Number of Reps	Sales Calls	Sales in Dollars (000s)	Gross Profit (000s)	Net Profit (000s)
GP	198.9	270,545	118,680	80,227	68,888
FP	173.3	235,636	104,067	70,558	60,682
IM	131.0	178,182	90,700	61,767	54,299
ORS	61.4	83,454	22,818	15,608	12,110
RHEU	16.5	22,454	18,327	12,371	11,430
OBGYN	117.3	159,545	55,389	36,667	29,980
DERM	43.4	59,091	27,551	14,685	12,208
ALLG	12.2	16,546	3,667	2,292	1,599
ENT	13.6	18,546	6,506	4,047	3,270
Total	767.6	1,044,000	447,706	298,221	251,665

Based on Products

Allocation to	Number of Reps	Sales Calls	Sales in Dollars (000s)	Gross Profit (000s)	Net Profit (000s)
NAPROSYN	263.9	976,363	309,379	216,565	201,524
ANAPROX	168.3	622,818	39,847	21,915	12,321
NORINYL 135	76.7	283,636	24,068	178,329	12,959
NORINYL 150	37.2	137,545	39,060	28,123	26,004
LIDEX	49.6	183,636	43,155	22,872	20,043
SYNALAR	29.7	110,000	14,600	7,738	6,043
NASALIDE	82.6	305,455	15,802	8,217	3,512
Total	708.0	2,619,454	485,911	322,761	279,606

Key:
- GP general practice
- FP family practice
- IM internal medicine
- ORS orthopedic surgeon
- RHEU rheumatologist
- OBGYN obstetrician/gynecologist
- DERM dermatologist
- ALLG allergist
- ENT ear, nose, throat