# Asthma—A Therapeutic Challenge

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DR GARY KEARL *(Assistant Professor of Family Practice):* Asthma is a common outpatient condition that affects 2.5% to 3% of adults.[1] It is characterized by airway hyperreactivity, which produces a sustained, but reversible, airway obstruction. Although asthma is not curable in the strict sense of the word, it is very controllable. Today we will be learning what asthma is like firsthand from one of our patients, Joyce S. Joyce is a 37-year-old single woman who has suffered from asthma since her late 20s. She first came to the University of Kentucky Family Medical Center in 1980 and has received all of her care from our center ever since.

## HISTORY OF ILLNESS

DR KEARL: Joyce, what brought you to the Family Medical Center in the first place?

JOYCE: My asthma did. It started when I first worked as a security guard. I worked on a loading dock, where I would breathe fumes. I didn't have many attacks at first. I stopped coming to the Family Medical Center in the early 1980s because I seemed to get better. Then I came back in 1985 because I was depressed. I didn't have asthma as bad then, but since then, it's gone from fairly good to worse to better. It is better now than it has been in a long time.

DR KEARL: What do you remember about your first asthma attack?

JOYCE: I was in my late 20s. I was driving at the time, and I just couldn't breathe. I had to pull off the road, and get to a doctor's office. He gave me shots, and I improved. I think I was told I had bronchitis. He said it wasn't bad, but he told me if I got worse to come back. I wasn't on medication after that attack.

DR KEARL: How did asthma subsequently affect your life?

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JOYCE: It wasn't good, like something was suffocating me to death. I can't get any air out, and I get mad and angry. In 1980 and 1981, I was in and out of hospitals quite a bit. Asthma didn't affect my work at the time, but I didn't like being hospitalized so often. Later I lost my job, and every time I tried to go back to work, the asthma got worse. During the past two years I have been in the hospital so much that I haven't even looked for work.

DR KEARL: What is it like for you to receive Medicaid?

JOYCE: Embarrassing. I like to pay for my own insurance. People get on my case and look down on me. If I could, I would rather be out there working.

DR KEARL: What did your family think about all this?

JOYCE: My parents are divorced. At that time I was living at home with my mother and stepfather. The main thing was they didn't believe me. My brother felt it was in my head. My mom claimed the same thing.

DR KEARL: What did you learn about asthma over the next couple of years?

JOYCE: It got better for 2 years, but I continued to smoke a lot. I smoke cigarettes to calm myself down. In the long run, I think my smoking hurt me. When I smoke enough, sometimes it brings on the attack. I feel angry. Actually, I don't think smoking caused my asthma; I think my anger did. All that yelling and screaming makes me out of breath.

DR KEARL: What happened when you first came to the Family Medical Center for help with your asthma?

JOYCE: I saw Dr Jones for a long time. He would give me regular appointments to come back to see him. I didn't seem to have as many problems with my asthma then.

DR MAX CROCKER *(Professor of Family Practice):* Was there any difference in your family when your asthma got worse back in 1985?

JOYCE: Yes, my son, Lou, was around by then. I fight a lot with my mom about Lou.

DR SHERI GANGE *(Family Practice Resident):* Has it affected your life to be on steroids?

JOYCE: Steroids have a lot of side effects. I am on 5 mg every other day now, but when I am on a big dose, they make me feel drunk.

TABLE 1. SUMMARY OF PATIENT CARE FOR JOYCE S.

| Year | Family Medical Center | | Emergency Department | Hospital Admissions (days) |
|---|---|---|---|---|
| | Primary Physician | Other | | |
| 1980 | 1 | 4 | 0 | 3 (20) |
| 1981–1983 | No physician visits | | | |
| 1984 | 8 | 1 | 0 | 0 |
| 1985 | 5 | 3 | 3 | 1 (7) |
| 1986 | 16 | 1 | 2 | 2 (14) |
| 1987—1st half | 5 | 0 | 1 | 3 (21) |
| 1987—2nd half | 2 | 6 | 1 | |
| 1988—1st half | 1 | 4 | 0 | 4 (23) |
| 1988—2nd half | 20 | 0 | 0 | 3 (8) |

DR ERIC WEBB *(Family Practice Resident):* How about the theophylline?

JOYCE: I don't like that either. I was on Theo-Dur for a while, but it made me feel mean. Now, I'm on Slo-Phyllin. I like it better.

DR E.C. SEELEY *(Director, UK Family Practice Residency):* It's been difficult to keep your theophylline adjusted; your body seems to react differently. How did you feel when people said you weren't taking your medicine right?

JOYCE: When I would go to the hospital, the staff would sometimes accuse me of not taking it. Sometimes my level was low and other times it was toxic. At first I didn't know that smoking could cause the level to change. I would notice I was feeling worse and try to take some more medicine to feel better, but I have learned that when I don't know what I'm doing, I can overdose myself.

DR KEARL: Table 1 illustrates the value of the primary care physician to a patient suffering with a chronic illness. During 1980, the first year of her asthma, Joyce recalls having a lot to learn about her asthma. During this period, she visited her primary physician only about 50% of the time. As a result, the three hospitalizations during that period may have been due more to her lack of knowledge about asthma than the severity of her illness. Between 1981 and 1983, Joyce felt well and did not visit any physician. From 1984 to 1986, however, Joyce utilized the Family Medicine Center regularly, averaging 11 visits a year. The majority (74%) of her visits during this period were scheduled with her personal physician. During this same period, she was hospitalized only three times, for a total of 21 days. During the last half of 1987 and the first half of 1988, the frequency and distribution of her visits changed. Joyce's utilization rate increased to 13 visits a year, but she saw her primary care physician only about 25% of the time. Perhaps as a result, her hospitalization rate and hospital bed-days increased dramatically. Joyce's total hospital costs during this period were $24,096.70. Since reestablishing a partnership with another primary care provider, the majority (80%) of her medical visits have been with her personal physician. Although her outpatient utilization rate has remained high (40 visits a year), her rate of hospitalization and total hospital days have declined sharply.

DR SEELEY: I believe these hospitalizations also occurred at a time when Joyce was struggling with her mother about how to parent her son.

## FAMILY DYNAMICS

MR KEN TARLETON *(Behavioral Scientist, Department of Family Practice):* Joyce and her mother have fought continually over who will raise Joyce's son, Lou. During the first 17 months after Lou's birth, Joyce worked while her mother raised Lou. When Joyce lost her job, she began to say, "Now, I am going to look after my own child." Joyce's mother said, in turn, "I have been with this kid for all of these months and I won't give him up." As Lou has grown older, this conflict has intensified, particularly around who is the primary authority for Lou. We believe that some of the increase in Joyce's rate of hospitalization is attributable to this intense intergenerational struggle for the right to parent Lou.

DR SEELEY: Joyce's mother continued to undermine Joyce's self-worth, calling her almost everything imaginable.

DR KEARL: That observation is confirmed by Joyce's own recollections. There are a number of other psychosocial stimuli, however, that are known to provoke bronchospasm: depression, family strife, chronic underemployment, and financial embarrassment.[2] Joyce is regularly confronted by most of these stimuli.

DR GANGE: Was there ever any positive input from Lou's father, or was he just never in the picture?

DR KEARL: As Joyce explains it, Lou's father never provided much emotional or financial support.

MR TARLETON: Let me summarize Joyce's family history. Joyce's mother has been married three times. Joyce has a stepbrother from her mother's first marriage.

The second marriage was fairly stable and produced five children including Joyce. The first child was born dead. The second child, a boy, is now living in Florida and reportedly is an alcoholic. The third child was a girl and is living in Connecticut. Joyce was the younger of twins. Her twin, Loyce, died at age 12 years in a drowning accident, and I don't believe that Joyce has ever gotten over that. For example, she has heard from her aunt that "the good twin died." Joyce's natural father is also reportedly an alcoholic and lives in Connecticut with Joyce's older sister. Joyce's mother's third husband raped Joyce when she was 21 or 22 years old. Although Joyce attempted to press charges against the man, her mother sided with the stepfather instead of Joyce. The continual turmoil within this family has been very destructive to Joyce's self-esteem and has probably contributed to some of the anger Joyce has felt.

DR KEARL: Exercise is also recognized as a trigger for asthma.[3] Her son, Lou, has been diagnosed as being "hyperactive." You can imagine how hard it might be for an asthmatic parent to chase an energetic 6-year-old across the parking lot of a shopping center. Nevertheless, it is not clear whether the stress of running after Lou or the anger at not being able to catch him triggers her asthma.

Respiratory pathogens, particularly viruses, are known to induce asthma attacks.[4] Most of Joyce's hospitalizations have been associated with an acute respiratory illness. Typically, on admission Joyce presents with a fever, cough, a rapid respiratory rate, and a leukocytosis (even when she isn't on steroids). Joyce has also been hospitalized at least once because of exposure to a respiratory irritant,[5] fumes from a neighbor's kerosene heater.

## ALLERGIC CONSIDERATIONS

DR BAN KANG *(Associate Professor of Medicine):* Although the exact cause of the asthmatic patient's hyperreactive airways is unknown, it is clear that many of these individuals are extremely sensitive to inhaled allergens.[6] Altogether, there are about 40 different respiratory allergens that can induce asthma. Outdoor allergies are usually triggered by various plant pollens that circulate during the spring, summer, and fall. Tree pollens appear first in early March and are followed by grass pollens in June and July. Ragweed pollen usually appears in August and predominates until the first frost in October. Indoor allergies occur primarily during the winter months. Although pets are a common source of indoor allergies, cockroaches and house dust mites contribute (particularly in multidwelling housing units) to the formation of house dust, which is highly allergenic. Skin testing remains the most revealing procedure in diagnosing specific allergic factors. I usually base my selection of allergy skin tests upon the season during which the patient is most symptomatic. I found that Joyce reacted quite strongly to grass pollens, ragweed pollens, cockroaches, and house dust. Joyce was on low-dose steroids at the time I tested her; however, immediate allergy skin test results are not altered that much by this treatment. Theoretically, if I had conducted skin tests without the medication, her reaction might have been even worse than it was.

If Joyce could avoid exposure to these allergens, she would probably be able to stop taking her medication. Unfortunately, she cannot live in a glass bottle. Nevertheless, if she can maintain appropriate medication levels around the clock, then she should be able to tolerate almost any type of work. Ultimately, the best treatment for Joyce may be allergy immunotherapy; however, she has not yet been fully evaluated for this.

## MANAGEMENT ISSUES

DR KEARL: We will finish up our discussion of asthma by reviewing several management issues that are particularly well illustrated by this case. First, asthmatics are often suspected or accused of being noncompliant with their medical regimen. The constant bombardment of bronchospastic stimuli combined with the chronic hyperreactivity of the airways and the short half-life of bronchodilating medications make the asthmatic patient vulnerable to rapid decompensation of his or her respiratory function. In reality, asthmatic patients are probably more likely to comply with their treatment plan than persons affected with other chronic diseases, such as hypertension or diabetes, because when asthmatics are noncompliant, they feel the result. Typically, Joyce presents with an elevated pulse rate and a therapeutic or supertherapeutic theophylline level consistent with regular use of her medications.

Another therapeutic issue illustrated by this case is the effect of smoking on theophylline metabolism. Smoking increases the theophylline requirements by as much as 35%.[7] As a result, theophylline levels can fluctuate quite dramatically when the patient is an intermittent smoker. Such patients will be particularly prone to iatrogenic theophylline toxicity if the current smoking history is omitted.

Asthmatics are frequently labeled as noncompliant or problem patients. The following entry abstracted from Joyce's Family Medical Center chart illustrates an example of such labeling:

| | |
|---|---|
| Subjective— | Complains of shortness of breath for 3 days; *many excuses* as to why couldn't come to the office; states has not missed any doses of medications |

| | |
|---|---|
| Objective— | Respirations 28/min; lungs—scattered wheezes; heart—rapid resting rate |
| Assessment— | Exacerbation of asthma |
| Plan— | (1) Theophylline level; (2) epinephrine, 0.3 mL, subcutaneously; (3) epinephrine (aqueous), 0.25 mL subcutaneously. |

Feeling rejected in the Family Medical Center and discharged without a clear follow-up plan, Joyce presented to the emergency department 2 days later and was admitted to the hospital. Although labeling patients as noncompliant or difficult may help physicians who are frustrated at their inability to "cure" the asthmatic, it usually only serves to decrease the accuracy of the information-gathering process and further weaken the therapeutic nature of the physician-patient relationship. We believe that when Joyce goes to the hospital, she is really telling us: "I'm not getting the caring I need at the Family Medical Center, so I will go where I won't be judged as being neurotic, as having a personality disorder, or being a noncompliant, unpleasant patient."

MR TARLETON: I would like to say something about this in terms of the family. The Olson et al model of family functioning[8] identifies two important dimensions of family functioning: *cohesion* and *adaptability*. Cohesion is a measure of how closely family members associate emotionally. A healthy family provides intimacy yet allows for personal autonomy or privacy. At one extreme, families may become so close (enmeshed) that there is no room for members to breathe, emotionally speaking. At the other end, families may become so disengaged that there is too little intimacy. Joyce lives with her mother and her hyperactive son in a three-room apartment. Only two rooms in her apartment have doors—the bathroom and the bedroom. Her mother and son sleep in the bedroom, while Joyce sleeps on the couch in the living room. As a result, she is enmeshed both physically and emotionally with her family.

As for the other dimension of family functioning, adaptability, healthy families have structure and rules but can be flexible when presented with stress or change. Dysfunctional families tend to be either quite rigid, with tight rules that can't bend when stress comes, or chaotic, where no one knows who is in charge. Joyce's family is extremely chaotic with conflicting roles and changing rules.

We have observed that Joyce tends to become very involved with her caregivers in the Family Medical Center. With many caregivers knowing her situation and giving her their opinions and advice, she becomes overwhelmed and attempts to defer to her physician decisions that she could make for herself. At other times we have observed that when the professional structure of our clinic becomes chaotic, with erratic scheduling and multiple caregivers proffering conflicting medical advice, our professional relationship to Joyce parallels those of her family. In such circumstances, Joyce does very poorly and ends up in the hospital, where there is more structure and emotional space. In the Family Medical Center, we have tried to avoid enmeshment with Joyce by encouraging her to assume more responsibility for decisions about her health. We have also provided increased structure by arranging regular appointments and by offering her more consistent, coordinated medical advice.

DR GARY LEVINE *(Assistant Professor of Family Practice):* Are you concerned that you may be setting up an inappropriate dependency situation?

DR KEARL: I agree that chronically ill patients can become overly dependent upon their physician. I try to avoid this by encouraging Joyce to assume more responsibility for her asthma. One way I do this is to pass her my stethoscope (when I auscultate her lungs) so that she can correlate her subjective feelings of pulmonary obstruction with her breath sounds. This act not only helps to validate my assessment of her level of obstruction, it also teaches her more about how asthma affects her breathing. Another way to foster independence is to allow the patient to participate as much as possible in the therapeutic decision-making process.

Physicians can also foster inappropriate patient dependency by their manner of relating to the patient. The classic paternalistic physician-patient relationship sets up a parent-child relationship between the physician and the patient. The paternalistic physician makes the decisions, actively treats the illness, and assumes responsibility for the outcome, while the patient is largely a passive bystander in the process. Such an unbalanced relationship is inappropriate for patients with chronic diseases.

I want to thank each of you, including our guest, for joining us today for this discussion about asthma.

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