

HOT SPOT

The Newsletter of the Rapid Response Radiotherapy Program
of the Odette Cancer Centre



Volume 10, Issue 1, February 2008

Editorial

By Elizabeth Barnes, MD, FRCP(C), Guest Editor

We bring you **Hot Spot** in the middle of a not-so-hot Ontario winter! We thank our contributors for contributing to this latest issue.

Dr. Scott Berry discusses the difficulties we all have saying “dying” when talking to dying patients. Ms. Amanda Hird writes about the Toronto-led development of the bone metastases module for the EORTC quality of life questionnaire. Dr. Mary Vachon talks

about resilience in palliative care, and Dr. Christine Newman about preparing for pediatric palliative care. From our new pharmacy corner Dr. Carlo De Angelis talks about the WHO analgesic ladder and new concepts in understanding of cancer pain. A recent JCO paper on communication between patients undergoing palliative radiotherapy and their family physician is summarized.

The insert for this issue is by Dr. Jeffrey Lipton, Head of the blood and marrow transplant program at Princess Margaret Hospital, and discusses the management of invasive fungal infections in immunocompromised patients.

We hope you enjoy reading this edition of **Hot Spot** and look forward to bringing you another issue in warmer weather.

Talking to dying patients

By Scott Berry, MD, FRCP(C)

One of the most challenging components of an oncologist’s job is speaking to patients who are dying. And, although I speak with dying patients almost every day—I know that I don’t often use the words “die” or “dying” as part of those conversations—and I don’t think I’m alone. In a recent issue of the **Journal of Clinical Oncology** (2008, January 1), I wrote about why it may be so difficult for doctors to use the word “die” and why it may be important that we use it more often. I would like to share some of those thoughts with the readers of **Hot Spot**.

Although we might feel that using the words “die” or “dying” could distress our patients, if used sensitively they might actually avoid harm if they clarify the discussion. I will often use euphemisms when discussing a

patient’s impending death: “It may be only a few months until the end, or until you pass away.” Euphemisms may soften the shock of bad news, but they also might confuse or mislead patients. Studies have revealed that patients prefer honesty and frankness in “end-of-life discussions,” and we owe it to them to be as clear as we can in sensitively discussing their deaths.

Another obstacle to physicians having frank discussions about death is that our “medical” culture perceives death as failure. John McCue, writing about the “naturalness of dying” in the **Journal of the American Medical Association**, eloquently summarizes this: “Dying, which was once viewed as natural and expected, has become medicalized into an unwelcome part of

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Being ready for pediatric palliative care — a personal reflection

By Christine Newman, MD, FRCP(C)

Julie was a 13-year-old girl diagnosed with osteosarcoma of the right leg. Initial treatment included amputation of the limb and chemotherapy. Unfortunately, pulmonary metastases were found on a follow-up appointment. The primary treating team suggested a referral to the pediatric palliative care team as part of the ongoing care for Julie. Her parents declined the referral stating that they were “not ready”. They persisted with this answer over the next few months. During that time, Julie began to experience decreasing energy, weight loss, anorexia and shortness of breath on exertion. She also was described as anxious and having difficulty sleeping. Her parents were reluctant to discuss her illness with her, not wanting to make things worse. Julie didn’t raise things with her parents either; these discussions were always so hard for her mom. Billy, Julie’s 10-year-old brother, knew something was up at home—everyone seemed so sad and on edge, but no one was saying anything about anything to him.*

The primary care team continued to raise the idea of a palliative consultation with the family. Four months after

the original suggestion, dad relented although mom was still “not ready”. By this time, the family was no longer coming back to hospital for clinic visits, so our palliative care team did a home visit/consult. At the time we met Julie and her parents, Billy was at school. As it happened, Julie had become quite dyspneic the evening before our visit, so were able to provide some immediate symptom management recommendations. We discussed ongoing support for Julie, her brother, parents and extended family. We outlined some of the complementary therapy options (music, art, massage) that we could offer. We discussed linking the family up with a community palliative care physician and promised to visit again.

As we were leaving, Julie’s mom said: “I didn’t want to meet you when they first told me about you, but had I known what sort of things you could help us with, I wouldn’t have fought so hard against it”.

Unfortunately, Julie’s respiratory symptoms worsened over the course of the day. I went back to see her that evening. She died 40 minutes after I entered the house. My ride home was

filled with feelings of regret and “if onlys”—particularly around not having had the chance to give Julie the opportunity to talk about what was coming and about not having had the chance to meet Billy before his sister’s death.

This experience got me to wondering, what does “being ready” look like? And, if it can be defined, how do we measure it, and how do we help parents get there? Can parents ever really be ready to have their child die? Is being ready to parent a child through dying a prerequisite to doing it? And what happens if parents are never “ready”? The child will still die—what then? Is there any other aspect of parenting where you get to “be ready” before something happens, or where you’re able to postpone the event until you are?

The other major transition in parenting is the birth of a child. There is a whole movement out there preparing parents for birth—antenatal classes, tonnes of books. Use of these resources is voluntary, but has clearly grown out of a recognized need for this preparedness. Even so, no one checks to see if prospective parents have taken a course or read a book. And no one insists on parental readiness before the mother is allowed to go into labour! After birth, most of parenting comes from “on the job training”—kids walk, talk, go off to school, leave home, get married—all of these changes happen whether or not parents feel ready for them.

If parents are to try to “get ready” for the death of their child, who would help them do that? Surely it would be people who work daily with these issues—who are familiar with death—people working in palliative care. Our involvement should be based on need, not on parents’ perceived “readiness”. After all, isn’t the time when parents are clearly **not** ready precisely when they most need our help?

** names and personal details changed*

Talking to dying patients

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medical care. It has been distorted from a natural event of great cultural significance into the endpoint of untreatable or inadequately treated disease or injury. Worse, death has become medicine’s enemy—a reminder of our limitations of medical diagnosis and management... viewing dying and death as merely a failure of medical diagnosis... trivializes the final event of our lives, stripping it of important non-medical meaning for patients, family and society. Respect for the wholeness of life requires that we not debase its final

stage.” Using the words “die” or “dying” in our conversations with dying patients will not single-handedly reverse how death is perceived in medical culture, but it may be part of a message to our patients that death is a natural part of life, not something that is taboo.

In summary, using the words “die” or “dying” in our conversations with dying patients may clarify our conversations, strengthen our relationships with them and let them know that death doesn’t need to be considered unnatural or a failure.

Involvement of family physicians in the care of patients seen in the Rapid Response Radiotherapy Program

By Elizabeth Barnes, MD, FRCP(C)

We recently published the findings of our work in the **Journal of Clinical Oncology** (Barnes, Fan, Harris, Doyle, Librach, Chow, et al., 2007). It is important for cancer patients to maintain continuity of care with their family physician (FP) while being followed at the cancer centre. The FP has often been involved in the patients' care for a number of years, developing over that time a trusting relationship with the patient and family.

The primary objective of the study was to determine the perception of patients seen in the Rapid Response Radiotherapy Program (RRRP) on FP involvement in their cancer care.

Secondary objectives were to identify factors predicting for perceived FP involvement in patient cancer care.

Consecutive patients were approached for study enrolment at the time of RRRP visit and asked to complete a 15-item survey. Three hundred and sixty-five patients were accrued over 15 months. We found that 98% had a FP, and 43% felt their FP was involved in their cancer care. Eighty per cent of patients were satisfied with the overall medical care provided by their FP, and 71% had been with their FP for ≥ 5 years. The most common reason patients gave for perceiving limited FP involvement was the medical oncologist looking after all their cancer needs.

Multivariate analysis found satisfaction with overall medical care provided by the FP, shorter time since last FP visit, seeing the FP since cancer diagnosis, and FP providing on-call

service for after-hour emergencies all significantly predicted for patients perceiving FP involvement in their cancer care. In conclusion, we found that less than half of patients surveyed perceived their FP as involved in their cancer care.

Encouraging continuity of care between patients and FP may allow for easier transition of care back to the FP once palliative treatment at the cancer centre has finished, and help facilitate end-of-life planning.

References

Barnes, E.A., Fan, G., Harris, K., Doyle, M., Librach, L.S., Chow, E., et al. (2007). Involvement of family physicians in the care of cancer patients seen in the palliative Rapid Response Radiotherapy Program. **J Clin Oncol**, **25**(36), 5758-62.

Resilience in palliative care

By Mary L.S. Vachon, RN, PhD

At a recent meeting, Dr. Gregory Fricchione defined resilience as "the mental and physical hardiness that confers resistance to disease. It stems from the ability to fulfill one's needs and derive pleasure and motivation from one's surroundings. Another important component is the ability to circumscribe one's fearfulness and avoid its generalization after the experience of a fearful or threatening event. And then there is the feature of human bonding that predisposes to adaptive social behaviours as reflected in teamwork and in altruistic endeavours on behalf of others."

Most of the research on resiliency in the face of adversity focuses on childhood and adolescence. A consistent pattern of individual characteristics associated with successful adaptation include: good intellectual functioning, effective self-regulation of emotions and attachment behaviours, a positive self-concept, optimism, altruism, a capacity to convert traumatic helplessness into learned helpfulness, and an active coping style in confronting a stressor (Charney, 2004).

Before attending the above meeting, I spent a few hours with my nephew Andrew, a pharmacy student, and Katherine, his new bride of three weeks, formerly a mental health technician in the Air Force. They are both 27. That weekend, they were scheduled to start their honeymoon in Barcelona and cruise in the Mediterranean.

Katherine and Andrew were high school sweethearts and then separated, getting back together after she was diagnosed with renal cell cancer two years ago. She now has metastatic disease. Flying back from their wedding in Florida to Massachusetts, Katherine developed a pleural effusion and pneumothorax. She went to the hospital, had a thoracentesis, started back on the chemotherapy to which she had developed an allergic reaction, got her pain under control and, more than a week later, returned to the small student apartment she and Andrew share, with his furniture and hers from her previous three-bedroom house.

The incidence of cancer in adolescents and young adults is increasing at

a higher rate than for younger and older people. Protective factors for resilience in adolescents and young adults with cancer include derived meaning (hope, spiritual perspective), family environment (adaptability, cohesion, communication), social integration (health provider/friend support) and positive coping. Resilience outcomes included self-transcendence, confidence/mastery and self-esteem (Haase, Kintner Monaghan, 2006).

Realizing that she was going to have a limited life expectancy, Katherine wanted to marry before she died. She told Andrew that marriage to her would involve caring for her as she became sicker, perhaps even needing to change her diapers. He seriously considered the situation and asked her to marry him. Time did not permit waiting until he graduated, so they married on Remembrance Day. The theme was Love Conquers All. They married in the park overlooking the river, where he first told her he loved her when they were in high school. Andrew made her a white satin swing on which to sit as they wed. Friends and relatives from around the

The WHO analgesic ladder and new concepts in our understanding of cancer pain—building on the legacy

By Carlo DeAngelis, PharmD

The WHO analgesic ladder has been with us for more than 20 years now. Originally developed to aid clinicians in the choice of opioid analgesics, its simple approach seems outdated given our current understanding of pain mechanisms, the current availability of a wide range of opioid dosage forms and routes/modes of administration, new interventional techniques and non-pharmacological approaches at the clinician's disposal. In addition, there is a growing realization that good pain management does not necessarily mean "no pain", but often reflects a patient-defined balance between an "acceptable" level of pain and the side effects and inconvenience of treatment.

Evidence for the clinical effectiveness of the WHO analgesic ladder has been reviewed and while there is the suggestion that the use of the ladder leads to

"adequate" analgesia in 45% to 100% of patients, the trials have been poorly designed with the use of various predefined endpoints, study duration, analgesics, and tools to evaluate effectiveness, making a meta-analysis impossible. Another finding from these studies is that while the ladder does indeed lead to better pain control for patients, this improved pain control is at the cost of increased side effects such as sedation, constipation, nausea, vomiting and confusion to name a few. Additional concerns are the prescribed stepwise approach of the ladder (Is it appropriate to start a patient presenting with severe pain on a non-opioid or weak opioid analgesic—Step one or Step two of the ladder, respectively) and the length of time it may take to achieve adequate pain control if one were to start on Step

one and move successively upwards after an appropriate time has elapsed to evaluate the effectiveness of the implemented analgesic strategy. In a randomized trial comparing the use of the WHO-prescribed stepwise approach to the first-line use of "strong" opioid analgesics (Step three) in cancer patients with mild to moderate pain, the initiation of Step three analgesics as first-line agents was associated with significantly better pain relief, required fewer changes in therapy, and patients were more satisfied with their overall treatment.

How do we build on the legacy of the WHO analgesic ladder? In day-to-day practice, clinicians have informally modified the WHO analgesic ladder to include the use of adjunctive medications such as anticonvulsants, antidepressants, or corticosteroids, as well as incorporating a standardized approach to the management of treatment and/or disease-related symptoms. Patient education must be formalized to better meet patient needs regarding the goals and expectations of pain management therapy, the appropriate taking of their medications, identification of symptoms associated with the side effects of treatment and when appropriate; management strategies that they themselves can implement. The effective management of cancer-related pain is not necessarily the result of a stepwise approach to the use of analgesic medication and must reflect pain's multifaceted nature. Our approach must be interprofessional and multimodal, including standardized initial and ongoing assessment, early/pre-emptive intervention, use of multi-agent/modal pharmacologic and non-pharmacologic intervention, aggressive side effect prevention/treatment and effective patient education. Over the last 20-plus years, the study of pain pathophysiology and psychopathology has provided us with new insights that we must now take and incorporate into daily clinical practice to advance the legacy of the WHO analgesic ladder and, most importantly, to better the management of pain in our patients.

world attended. Katherine walked up the aisle with her mother and Andrew carried her down the aisle. They started their first dance on their feet, and then Andrew lifted his bride to continue the dance. Katherine sang and participated in karaoke songs from a wheel chair, often with a child sitting in her lap.

Katherine is a self-confessed "list-maker and planner." She has one-, two-, six-, nine-month and extended life plans.

Andrew will complete his practicum in Florida. Katherine's social worker got her the name of someone who will sell their extra furniture on eBay. Her Boston specialist will work with a Florida oncologist for treatment. The palliative care specialists have concocted a cocktail that controls her bony pain and other symptoms—a challenge in someone with many allergies.

They will move this week to join family and friends for support. Assuming that Katherine is on the "nine-month plan", they will buy a home when he graduates and gets a job. Katherine dreams of becoming a psy-

chologist. If she has a couple of years, then it makes sense to continue the courses she has begun. If time is very limited, then why spend it studying?

When Katherine dies, she wants her ashes to be made into diamonds for Andrew, her mother and aunt and bridesmaids. For the most part, her bridesmaids welcome the symbolism, but have told her they aren't going to take her every place they go. Being transformed into diamonds certainly speaks to resilience, but people's awe at the way these two very resilient young people are handling this very challenging situation will be a memory that all will carry into the future.

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Development of the Bone Metastases Module to accompany the EORTC core questionnaire to assess quality of life in patients with bone metastases in future clinical trials

By Amanda Hird, BSc(candidate), Department of Radiation Oncology, Odette Cancer Centre, Sunnybrook Health Sciences Centre

Patients with bone metastases are treated with the intent of improving symptoms, such as pain and limited mobility. For this reason, objective end-points such as survival time and tumour regression are less meaningful when compared to health-related quality of life (QoL) issues.

Since 1993, the European Organization for Research and Treatment of Cancer core questionnaire (EORTC QLQ-C30) has been established as a valid and reliable QoL assessment tool for cancer patients in clinical trials. However, the core questionnaire did not assess issues unique to the treatment and symptoms of bone metastases. The Bone Metastases Module was created to be administered alongside the core questionnaire to address these omitted issues.

From February to May 2005, an extensive literature search was conducted. No bone metastases-specific QoL assessment tools were identified. Additionally, 61 patients and 58 health care professionals were interviewed to generate a list of relevant issues. These issues were grouped according to similar themes and formatted into a 61-item questionnaire, which was administered to a diverse group of 413 bone metastases patients. In addition, 152 HCPs involved in the care of patients with bone metastases were interviewed.

The list was operationalized and formatted in accordance with EORTC templates and Quality of Life Group Item Bank to produce a list of 22 items (BM22). In order to establish the BM22 as a suitable QoL assessment tool across cultures and languages, the module was pilot-tested in 145 patients (90 non-English-speaking patients) and validated in nine countries (Argentina, Australia, Canada, China, Germany, Greece, the Netherlands, Spain, and the United Kingdom). Figure One represents the final version of the EORTC QLQ-BM22.

There is increased evidence that an instrument incorporating pain from bone metastases, other issues arising from skeletal complications, as well as psychosocial domains is needed to improve the understanding of QoL in this group of patients. Following large-scale international field testing, the EORTC QLQ-BM22 will be established as a reliable

and valid tool for QoL assessment in future clinical trials. Meaningful QoL outcomes for bone metastases patients will then be readily assessed and the treatment efficacy will be easily evaluated in a clinical trial setting.

The development of the Bone Metastases Module is partly funded by NCIC and Novartis Oncology.

Figure One. The European Organization for Research and Treatment of Cancer Bone Metastases Module (EORTC QLQ-BM22).



EORTC QLQ – BM22

Patients sometimes report that they have the following symptoms or problems. Please indicate the extent to which you have experienced these symptoms or problems during the **past week**. Please answer by circling the number that best applies to you.

During the past week, have you had pain in any of the following parts of your body?	Not at all	A little	Quite a bit	Very much
1. in your back?	1	2	3	4
2. in your leg(s) or hip(s)?	1	2	3	4
3. in your arm(s) or shoulder(s)?	1	2	3	4
4. in your chest or rib(s)?	1	2	3	4
5. in your buttock(s)?	1	2	3	4
During the past week:				
6. Have you had constant pain?	1	2	3	4
7. Have you had intermittent pain?	1	2	3	4
8. Have you had pain not relieved by pain medications?	1	2	3	4
9. Have you had pain while sitting?	1	2	3	4
10. Have you had pain while lying down?	1	2	3	4
11. Have you had pain when trying to stand up?	1	2	3	4
12. Have you had pain while walking?	1	2	3	4
13. Have you had pain with activities such as bending or climbing stairs?	1	2	3	4
14. Have you had pain with strenuous activity (e.g., exercise, lifting)?	1	2	3	4
15. Has pain interfered with your sleeping at night?	1	2	3	4
16. Have you had to modify your daily activities because of your illness?	1	2	3	4
17. Have you felt isolated from those close to you (e.g., family, friends)?	1	2	3	4
18. Have you worried about loss of mobility because of your illness?	1	2	3	4
19. Have you worried about becoming dependent on others because of your illness?	1	2	3	4
20. Have you worried about your health in the future?	1	2	3	4
21. Have you felt hopeful your pain will get better?	1	2	3	4
22. Have you felt positive about your health?	1	2	3	4

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Continuing Medical Education 2008

By Ewa Szumacher, MD, MEd, FRCP(C)

Continuing Medical Education (CME) can update health care professionals on the latest advances for modifications to their clinical practice. At the request of the CME organizers, Hot Spot will list the national and international CME activities in palliative medicine that are of interest to our readers. Please kindly forward details of the CME activities to: Ewa.Szumacher@sunnybrook.ca

- February 5–6, 2008—**Second International Workshop on Community Participation in Palliative Care**, Manjeri, Malappuram, Kerala, India, pain@vsnl.com
- February 8–10, 2008—**XVth International Conference of the Indian Association of Palliative Care**, Chennai, India, kochipall-con@rediffmail.com
- April 13–15, 2008—**18th Annual Ontario Provincial Conference on Palliative and End-of-Life Care**, Toronto, Ontario, www.palliativecare.humber.ca
- April 16–18, 2008—**2008 National Case Management Conference—The Power of Case Management**, Toronto, Ontario, www.ncmn.ca
- April 29–May 1, 2008—**The 7th Palliative Care Congress, The Palliative Care Research Society, The RCN Palliative Care Nursing Group and The Association for Palliative Medicine of Great Britain and Ireland**, Glasgow, United Kingdom, www.pccongress.org.uk
- May 8–9, 2008—**Providence Health Care Conference, Spirituality: The Invisible Ingredient in Health & Healing**, Vancouver, British Columbia, Tel: (604) 806-8528, psihota@providencehealth.bc.ca
- May 28–31, 2008—**5th Research Forum of the European Association for Palliative Care (EAPC)**, Trondheim, Norway, www.eapcnet.org/congresses/Research2008.html

- June 26–28, 2008—**ASCC 20th International Supportive Care Symposium**, Houston, Texas, www.mascc.org
- August 17–22, 2008—**12th World Congress on Pain, The International Association for the Study of Pain**, Glasgow, United Kingdom, www.iasp-pain.org/2008Congress.html
- October 26–29, 2008—**2008 Canadian Hospice Palliative Care Conference**, Charlottetown, Prince Edward Island, www.chpca.net

Continuing Medical Education Activities

- University of Western Ontario Certificate in Palliative Care and Death Studies (on-line) Service Provision in Hospice/Palliative Care, www.advancedprofessionaleducation.com
- Hospice Palliative Care Multidiscipline Certificate—Humber College, pamela.mckintuck@humber.ca
- Temmy Latner Centre for Palliative Care—Mount Sinai Hospital, www.tlpc.org
- RTS Perinatal Bereavement Support Training, www.pbso.ca
- Comprehensive Bereavement Skills Training—COPING Centre—Cambridge, www.griefsupport.cc
- Ian Anderson Continuing Education in End of Life Care—Toronto, www.cme.utoronto.ca/endoflife/
- Bereavement Ontario Network Conference (each September), www.bereavementnetwork.ca
- National Conference of Hospice Palliative Care—Canada, www.chpca.net
- Palliative Care Certificate Program, Distance Program—Grant MacEwan College, Edmonton, www.macewan.ca/palliative
- Compassionate care for the Terminally Ill (four non-credit distance program) Grant MacEwan College, Edmonton, www.macewan.ca/palliative

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Management of invasive fungal infections (IFIs) in immunocompromised patients

HOT SPOT

By Jeffrey H. Lipton, PhD, MD, FRCPC, Head, Allogeneic Blood and Marrow Transplant Program, Princess Margaret Hospital, University of Toronto

The last few years have seen the appearance of a number of new antifungal therapies for the treatment of immunocompromised patients. These patients are at risk for developing severe infections that would not normally be problems for most people with cancer or those who do not have their immune systems suppressed because of hematological stem cell or organ allografts.

Who is at risk?

- patients with acute leukemia undergoing induction or consolidation therapy
- allogeneic blood and marrow stem cell transplant patients
- patients undergoing lymphoma salvage therapy
- patients receiving organ allografts, such as kidney, heart, liver or lung

Who is not at risk?

- patients undergoing cancer chemotherapy or radiation therapy for solid tumours
- patients undergoing autologous blood and marrow stem cell transplants

Why are these patients at risk?

- chemotherapy and/or radiation therapy breaks down mucosal barriers that protect against such infections
- the use of broad-spectrum antibacterial antibiotics kills off normal host flora that populate skin and gut allowing growth of more virulent pathogens
- long-term neutropenia from therapy leaves the patient devoid of cells that fight infections
- immunosuppressive medications interfere with host mechanisms for fighting infections
- in-dwelling catheters, such as central venous or urinary tract act as portals for entry of these pathogens
- prophylaxis with some antifungals may allow selection of resistant organisms
- some patients with comorbid conditions such as diabetes, renal failure, auto-immune diseases have increased risk

From where do these pathogens arise?

- in general, yeasts come from the host skin or gut although, in some areas, certain ones are endemic in soil
- molds come from the environment for the most part, but patients who have had therapy over very long periods of time may be colonized

Are there environmental issues that may make some patients more susceptible?

- older buildings
- nearby construction
- absence of hepa-filtration or lamellar flow
- turning on of air-conditioning in the summer and heating in the winter may distribute spores into the air
- certain parts of the country may have endemic organisms such as blastomycosis or coccidiomycosis

What organisms are the problems?

- candida albicans is still the most common
- non-albicans candida such as glabrata or kruseii are becoming more common
- molds such as aspergillus and, more recently, fusarium or zygomycetes are being seen more often

How do I diagnosis an IFI?

- high index of suspicion in a patient at risk
- understand that symptoms are often different in an immunocompromised patient—e.g., fever may not be a symptom in someone on corticosteroid
- use imaging appropriately—CT chest instead of CXR, CT abdomen to look at liver/spleen
- aggressive attempts at mycological confirmation—blood cultures for yeasts, tissue biopsies
- fungal marker screening if appropriate

Management of invasive fungal infections (IFIs) in immunocompromised patients

HOT SPOT

What types of therapy can be used?

From most widespread to more targeted these can include:

- prophylaxis—where antifungals are used in everyone in an attempt to prevent infections in some
- secondary prophylaxis—where specific antifungals are used in patients who have had previous infections and are now again at risk for developing a repeat infection because of new therapy
- empiric—where a set of symptoms such as fevers that do not respond to antibacterials triggers therapy with a broad spectrum antifungal
- pre-emptive—where a test such as a fungal marker or a chest CT scan finding triggers therapy
- targeted—where a proven or probable infection that includes positive mycology dictates a specific organism-directed therapy

Why not use the best broad-spectrum agents for prophylaxis in everyone who may be at risk?

- resistant organisms can break through
- these drugs can be toxic
- these drugs can often interact with other drugs these patients may have to take
- these drugs are sometimes inconvenient to take—IV formulations only
- these drugs are expensive

What drugs are available?

Basically there are three main classes of broad-spectrum antifungals

- polyenes—such as amphotericin B and lipid formulations
- azoles—such as fluconazole and newer broad-spectrum products such as itraconazole, voriconazole or posaconazole
- echinocandins—such as caspofungin, micafungin and anidulofungin
- other earlier agents are no longer of much value in this type of patient
- combination therapy is theoretically good, but not well proven

Do I need to do anything else other than use antifungal drugs? You bet.

- discontinue or decrease immunosuppression if at all possible
- discontinue unnecessary antibiotics
- help your patient regain white cells/neutrophils—the drugs will not work on their own for long
- treat co-morbid conditions such as high blood sugars
- to remove lines or other foreign materials that are sites for fungal growth and into whose biofilm antifungals may not permeate

- surgery to remove fungal accumulation—drain abscesses, debride tissue

How do I choose what to use and when?

- know your patient
- know your risks
- know your local organisms
- know your environment
- know your symptoms, especially the subtle ones
- know your drugs and know their interactions
- know your infectious disease consultant and consult appropriately

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