(PLEASE NOTE: Transcribed automatically by Vimeo, mistakes are possible/likely. Our apologies.)

TRANSCRIPT - GR 07 01 22 ***"Breast Cancer During Pregnancy"*** – Trish Millard, MD from the University of Virginia

---

- So today's very special day for our audience it's July 1 or set a great transition for young positions throughout the country so many jobs and fellowships.
- 00:17:34Pending so I'm just beginning of our career uva with us to celebrate this transition with don hollins memorial lecture halls is one of the finance.
- 00:17:45team to charlottesville and 98 and wait for us or peers faculty medical students recognized her excellence in clinical care of breadth of knowledge or foolish advocacy for Jesus tried by her and events.
- 00:18:02will not be diagnosed with breast cancer in the last year of medical school and undergoing a bone marrow transplant before beginning internship was the past three share the to he wanted to be evaluated, for her clinical performance pity or standing by her past.
- 00:18:21Karma uva to fellowship in pulmonary critical care diversity in the last part of her fellowship tragedy struck the gas and she developed.
- 00:18:32Like the secondary to her prior to chemotherapy so.
- 00:18:36By this time of her life donovan blast with the young daughter, Jordan and in order to maximize time with Jordan, the rest of her family, she decided to for those another.
- 00:18:48dawn died on a fit for her fam with our family dogs.
- 00:18:57relationship established by the Department of memory can celebrate life as a student teacher.
- 00:19:05Ernest Hemingway seamlessly this strike courage and grace under pressure on her family personified this definition.
- 00:19:13And it is precisely now hospitals for new interns residents and fellows program manager at this time, leave the legacy of dogs, for example, a great summer tractor inspire and encourage that's all.
- 00:19:30you're honored to have Dr church malarkey the lecture today on the melodic completed Medical School and State University.
- 00:19:39To charlottesville Virginia for internal medicine residency and stayed here in the YouTube video where she served as chief resident the best chief resident.
- 00:19:51She.
- 00:19:55She didn't say here that you need to complete or even cardiology fellowship specializes in the medical treatment breast cancer research interests include clinical trial development and enrollment early stage breast cancer.
- 00:20:11Gone she's also known for her excellence in clinical care for.
- 00:20:16Our patients.

Unknown Speaker

00:20:46Thank you very much for the introduction.

UVA Medical Ground Rounds

00:20:50Today I feel especially honored to be here on the.

- 00:20:56on holiday.
- 00:20:58or a lecture I can remember back to my intern year antenna the resident here hearing god's story when I was a resident really moving.
- 00:21:08or my interest in oncology but also to learn of her as a person and worthless for medical I cancer diagnoses.
- 00:21:18As an oncologist I find that to be one of the most rewarding parts of my job is how I get to know.
- 00:21:26Well, I have shown on the slide here today, like last week, but she was very special person, for me it makes me think of the last reminder of why.
- 00:21:44So today i'll be talking to you all about.
- 00:21:48Her very famous or.
- 00:21:52Talk about different changes in the breast tissue that results in the occurrence of breast cancer.
- 00:22:01period, as well as the treatment of breast cancer during pregnancy and understanding the prognosis of these conditions.
- 00:22:36So.
- 00:22:39Breast cancer during pregnancy traditionally.
- 00:22:44Breast cancer, this is a term used to describe breast cancer was diagnosed during pregnancy, as well as breast cancer that developed in the postpartum period.
- 00:22:53What we have so a lot of the early literature's buying and renting a very mixed picture of what it means to have breast cancer in these times for recently we've begun to look at these as a.
- 00:23:08You guys look at this as two separate conditions so breast cancer that sign up slider image.
- 00:23:14As well as press picture that diagnosis in the postpartum period, extending that really awesome five to 10 years after pregnancy, the importance of finding a place.
- 00:23:26To understand is that they really developed different mechanisms and have different implications for how they're treated as well as their process.
- 00:23:35You can see here that, as we start to divide place what so called pregnancy Associated Press can insert into two different entities signature badness or.
- 00:23:43Part of breast cancer that the prognosis should significantly he overall survival for unfortunate for breast cancer diagnosis postpartum period is lower, for that we see a breast cancer diagnosed during pregnancy.
- 00:24:01So how we start to understand with breast cancer and pregnancy.
- 00:24:05They all of us remember from Medical School learning that parody in general and pregnancy in general is thought to be protected against breast cancer, and this is in fact true.
- 00:24:1430, particularly at a young age and increase in parenting does this talk to you again a lifetime risk of breast cancer, however there's actually also a transient increased risk of breast cancer that occurs with pregnancy and postpartum period.
- 00:24:32key ideas that you have a section in the long run.
- 00:24:38decrease stress that protection affection, the long run into recycling Center agent for fantasy with age less than 25 to 38 verse pregnancy, be more effective and number of completed pregnancies be more protective wow and work.
- 00:24:57Family history that come into this as well, so the industry loses some of that reflection, they get clarity.
- 00:25:06And why is it that everybody is protected against breast cancer there's several hypotheses that I have.
- 00:25:13listed here with the idea being that with a full term pregnancy terminal depreciation of memory is thought to be in that state that your.

- 00:25:25cells are less sensitive information or along with this, if you have a patient that gets early there is less time period in her lifetime, where she doesn't have this terminal differentiation and we've acceptable to different environmental factors that could lead to to mark that assess.
- 00:25:46Furthermore, one that many of us have heard of this, the idea that, when you say 30 you have decrease lifeline of natural cycles and that impacts for.
- 00:25:58Lifelong breast cancer breast theory by having that exposure to those cyclical cycle my hormones and there's some lab evidence that suggests that if you have.
- 00:26:09Early pregnancy, that you have a decrease in her memory some cells, which is also thought to be more.
- 00:26:18So now, without me saying that there is the increased transit increased risk of breast cancer in pregnancy and following pregnancy.
- 00:26:27what's really interesting is that this really has a lot to do with changes in the micro environment of the breast that occurs with pregnancy and postpartum period black Asian.
- 00:26:37So in fantasy, you know there's a surge of estrogen and progesterone and as well as growth hormones so.
- 00:26:44Are back at one, this is all driving a lot of press cell proliferation, if you get a vision there's an error and important development of a cancer cell.
- 00:26:55These words also relate to be neutral passive attacks that happened in pregnancy, you know that for pregnancy.
- 00:27:01An important part of the pregnancy doing well doing well as having for me just loses a suppressive if you just let me well, we know that.
- 00:27:12Jesus is an important part of how we prevent and control cancer in our bodies so when you have those immunosuppressive effects like they introduced to some of the cancer risk while pregnant.
- 00:27:23And then the postcard on breast tissue goes undergoes a process called evolution, which is basically remodeling of the breast cells back to their pre pregnancy lactation is it.
- 00:27:39really understood it's really thought up as a.
- 00:27:44feeling.
- 00:27:46that's where you have an influx of cells, you must.
- 00:27:50have a preference as an influx of immune cells.
- 00:27:54Actually fiberglass and all of this leads to a lot of inflammation and the potential for.
- 00:28:02This is likely rare most part of breast cancer as comfortable, as you can see very different than what's happening in rescue she got pregnant.
- 00:28:13us the cells is probably an immediate change which is probably why the most part of rescue.
- 00:28:20level slightly higher risk of distant metastases from like.
- 00:28:26The breast cancer diagnosis or agency.
- 00:28:30is the most common cancer diagnosed in pregnancy submits about things like cervical cancer, but also.
- 00:28:39Very.
- 00:28:40Very uncommon organizations i'm saying after telling you all that how this increased risk of breast cancer, while pregnant, but the truth is that when the majority of patients do not get breast cancer so.
- 00:28:54we're here for all of our family yourselves or friends that it should not be out there, spreading like your mom your.
- 00:29:05mom and but increasing an incidence this is likely, due to the fact that paternal increasing over there in the draft.
- 00:29:18frankie's to go along with our presentation today a 31 year old army says to this jitsu a.
- 00:29:24person who is a master mass along with her last breath when she was early pregnant and when you talk to her obstetrician and after initial will be visit 10 weeks gestation.

- 00:29:36She was sort of slightly behind but recommended to get all worked up.
- 00:29:42With settled for about six weeks later, and in that time frame she describes rapid growth of the breast swelling K Eric Lima, and also now able to.
- 00:29:58embrace everyone's expression for breast cancer that is rapidly rolling and he does the rest.
- 00:30:07So, however, breast cancer during pregnancy or present very similar to a patient that you should have populated mass by the occasion, or sometimes by the physician.
- 00:30:19And it's difficult for a patient or condition can notice us, because there are very normal changes of.
- 00:30:26pregnancy, you have differentiation of our units that lead to rest growth tenderness so it's very common early pregnancy sentence are to report pain and just changing the feeling of the breast tissue.
- 00:30:40and fortunately most commonly have a patient or position appeals a mass in the.
- 00:30:45In the breast tissue it's going to be benign so that's another important thing to remember that it's more likely to be one of these nine prophecies and it says by brad know about black to see all access.
- 00:30:56But the take home message inside instead of how the rest of that process for two weeks of pregnancy or lump other that are has to be evaluated, to make sure that it is one of these tonight condition or you write it off.
- 00:31:11so happy about it.
- 00:31:15started out this is going to be more expensive.
- 00:31:18dense breast tissue.
- 00:31:23walking can also easily can differentiate.
- 00:31:31If you planning on the results of the old to challenge it is appropriate to move on and grant the region so those are very, very small so be if we believe it's safe to do and we reason to not do it versus just because of the lower sense.
- 00:31:49So the MRI during pregnancy is not totally helpful for a couple different reasons.
- 00:31:56got any of this property level central barrier it's a while these aspects about known because imagine probably.
- 00:32:06Additionally.
- 00:32:08So that's not something that most people can tolerate position for.
- 00:32:18during pregnancy usually have more aggressive teacher, so a little bit, and the first part of this.
- 00:32:26Because the rest changes and the young age of the patients that they often present with larger tumor size lymph node involvement anytime but just some.
- 00:32:35Not realizing that the problem for a while to begin with, or some kinds of the breast tissue throwing that you don't feel it until it's very large.
- 00:32:43But it's also more aggressive subtypes of breast cancer so it's not the er positive women all types of breast cancer, what we see is the pregnancy it's triple negative breast cancer, being the most common.
- 00:32:55And like being the second most common APP and about about some words, you are and then cancer cases.
- 00:33:06So the next steps, and what that it's a dual core biopsy of a breast man and he indicated, because most of us are presenting at a later stage later to her are.
- 00:33:18Typically, will get a chest X Ray and Donna, to look pretty obvious it's very much.
- 00:33:25Lisa has done some your basketball, and you can consider an MRI the sign out that.
- 00:33:32We worked on stance, where you actually have those cast and CT scans, as we know how to reach over so certainly do them for pregnant patients with needed.
- 00:33:44Inside us things like that so it's something that can be considered in more into it, but usually the most common scenario that I would see is that I get a chest X Ray.

- 00:33:54out and if there's a pair South there.
- 00:33:57Are all along the genetic testing to allow and under like cancer syndrome.
- 00:34:03And then, a timely way is about termination so.
- 00:34:08Fortunately for breast cancer management termination is not usually necessary are indicated, as we have a very agile here a very well defined path to treatment, but there are some scenarios extreme cases where it might be appropriate.
- 00:34:25Or you have some experience as.
- 00:34:29A scientist.
- 00:34:36For our patient at this point again she's got that presentation of inflammatory breast cancer.
- 00:34:42She gets her ultrasound at 16 weeks gestational age it does show a 3.3 centimeter mass in the Left breast but it's really not well defined it looks.
- 00:34:50The radiologist comment that it there's abnormalities looking out to seven centimeters they can see skin beginning and cutaneous edema.
- 00:34:58And they also the radiologist saw eight abnormal left X Ray lymph nodes the largest being five over five centimeters shown here and they commented that they could even see some abnormal in for clinical notes.
- 00:35:11Gender goes a biopsy that does confirm a high grade infiltrating ductal carcinoma that's er PR negative her to negative she has an x Ray lymph node biopsy that also confirms carcinoma involvement.
- 00:35:25So she does get bilateral diagnostic mammogram as her part of her workout and treatment planning, she has genetic testing that does not show a pathogenic variant.
- 00:35:35and her referring provider actually did do an MRI without contrast for her spine, which was clear and then she had a chest X Ray that was normal and abdominal ultrasound actually does comment on a few in determinant lesions in her liver largest being about three centimeters.
- 00:35:54So, based on that the liver ultrasound findings and her clinical presentation of very extensive local regional disease in her breast and local lymph nodes.
- 00:36:06We I did decide to pursue CT imaging This is something that I talked to FM about it's something I taught to radiology and surgical oncology about and then spoke to the patient about and, ultimately, she did get a CT chest with contrast.
- 00:36:20An interesting note is that when you read in the literature everything talks about doing abdominal shielding for CT scans.
- 00:36:26But here at uva they follow some newer data that are specific to the machines that we have here, where the abdominal shielding is thought to actually potentially further deflect the radiation and a harmful way that may.
- 00:36:38Unexpectedly increase radiation exposure, so I think again that comes down to something where I would have just default to the.
- 00:36:46What what you read you need to talk to your radiologist and find out what's best and safest for the patient and the fetus.
- 00:36:51receive tea chest shows her known extensive lymphatic apathy and the Left zilla the breast changes, but no pulmonary metastases.
- 00:37:01Her CT or extend down to her liver and we do pick up some to have these ill defined liver lesions which, based on the CT and ultrasound they felt like we're probably hemangiomas but recommended a liver MRI.
- 00:37:15So we did get that without gadolinium decided to do this before we would do the next step, which would be a biopsy.
- 00:37:21And ultimately, bit by looking at the ultrasound the CT and the MRI the radiologist felt pretty confident that these were likely.

- 00:37:29benign Kevin or some angie almost so good news for the patient, something we will Father follow up later on, for her, but at this point, means that she has a diagnosis of Stage Three inflammatory breast cancer that's triple negative and she's currently 19 weeks pregnant.
- 00:37:46So how do we treat this the treatment approach for breast cancer during pregnancy really needs to be multi disciplinary.
- 00:37:53And I can't stress that enough you'll hear me say it again and again, but these patients should be referred to an academic Center or large Center that sees.
- 00:38:01Breast cancer and pregnancy and treats it routinely and has a collaborative approach, so you need to make sure you have met unk surgical oncology am FM or high risk Ob and radiology all engaged and the exact treatment will depend on the patient's type of cancer her gestational age.
- 00:38:21And all the way I look at it, is that I have a breast cancer patient in front of me.
- 00:38:25And the way I can keep both her and her baby well are to figure out a way to safely effectively treat her cancer throughout her pregnancy, so that she can have a healthy baby so really thinking about.
- 00:38:37The idea that you're not going to have a healthy baby unless you have a healthy mom and you want to target a full term delivery.
- 00:38:45This again highlights the idea that for breast cancer, we in a non-pregnant patient take a multi modality approach everybody get some kind of breast surgery.
- 00:38:55There is, plus minus radiation, depending on their tumor factors.
- 00:39:00And their surgical type and then consideration of systemic therapy, which has the route of the range of chemotherapy and occurred therapy immunotherapy targeted therapy.
- 00:39:09And so, in the cancer patient the pregnant patient you want to think about where they are at in their trimester and which of these are the best options for again keeping the mother well.
- 00:39:20The first trimester is where you have to factor in that that's when organic genesis is happening and placental development and so treatment is a little bit different there.
- 00:39:28Radiation has shown up here, though, as I will mention in a bit that's probably the least likely treatment we're going to choose and pregnancy for breast cancer.
- 00:39:36The breast surgery breast surgery is an option in any of the trimesters the surgical approach is actually very similar to the non-pregnant patient.
- 00:39:44And we oftentimes will try to avoid it in the first trimester though it certainly can be done, this is, in part because there's a high risk of spontaneous abortion or miscarriage in the first trimester that could incidentally happen or happen after surgery.
- 00:39:58And then, trying to avoid the anesthetic exposures during organic genesis that there are certainly are safe anesthetics to use in pregnancy, if needed, or in first trimester if needed.
- 00:40:09If you're doing surgery during pregnancy, you want to make sure that you have a plan with Ob for fetal monitoring before after during the surgery.
- 00:40:17anesthesia needs to be mindful to some of the physiologic changes her pregnancy when choosing their drugs and doing.
- 00:40:23it's recommended you do rapid sequence induction for anesthesia due to the softening of the esophageal sphincter and associated aspiration risk.
- 00:40:33And then, finally, an important piece is that many times breast cancer surgeries are done in a freestanding surgery Center.
- 00:40:40or in a cancer hospital where you don't have Ob, so this is not a patient that you would want to do in that situation or need a way to bring in an Ob to be there, should you precipitate preterm Labor and delivery unless your surgeon feels confident in their baby delivering skills.
- 00:40:56I don't recommend.

- 00:40:58So mastectomy or lumpectomy both an option, it can be somewhat tricky for a patient in this age range if they get a lumpectomy they need radiation in a timely manner and again often we're trying to avoid radiation.
- 00:41:12during pregnancy so because of that mastectomy is often the preferred approach during pregnancy.
- 00:41:19Historically, a modified medical a modified radical mastectomy was considered to be the standard of care, but we now have evidence that you can.
- 00:41:28Do a Sentinel lymph node biopsy that it is accurate meaning it maps to a node and you can actually find the Sentinel node.
- 00:41:35And that it's also safe if you use technetium it's recommended that you avoid the ISO self and blue dye but if a patient needs an x Ray node dissection that's also completely appropriate to do in pregnancy.
- 00:41:48So, even though surgery is safe in most parts of pregnancy.
- 00:41:53We oftentimes consider new adamant systemic therapy this gets back to the idea that most of our breast cancer is diagnosed and pregnancy are, the more aggressive phenotypes.
- 00:42:01triple negative or her to amplified where you want to get good local control, but that systemic therapy, also the point of it many times, the big.
- 00:42:10survival driving point is that you treat micro metastatic disease so that's an option that allows you to quickly get treatment both locally and distant and can sometimes be helpful in down staging the tumor for a better breast surgery.
- 00:42:26So radiation in general we try not to do that, during pregnancy.
- 00:42:31In the first trimester early in the first trimester it's probably relatively safe, because the fetus is so low in the pelvis at that point that in the.
- 00:42:39field radiation is up in the chest, so that it's probably a very small amount of exposure they're getting, we know that mostly from times that a patient hasn't known they're pregnant and ends up being on radiation early on in their first very early in the first trimester.
- 00:42:55But in general for breast cancer, we try to avoid that certainly in later trimesters as the fetus moves up higher in the abdomen you're increasing the risk of generosity secondary looking at us.
- 00:43:07And so chemotherapy so I find this interesting when I learned about this because we we educate our pregnant patients in general about avoiding very benign sounding things like soft cheeses and lunch meat very bad, but chemotherapy very fine.
- 00:43:28So and I'm not trying to undermine the risk of listeria, so this point in the in the first trimester chemotherapy is definitely not safe so.
- 00:43:37For breast cancer it's not something we routinely do from older breast cancer series, as well as some other cancers that maybe require chemotherapy in the first trimester, we know that there is a very high risk of fetal malformations.
- 00:43:51And so we typically for breast cancer would avoid it in the first trimester if at all possible, in the second and third trimester.
- 00:43:59That fetal malformation risk is only three to 5%, which is actually very close to the general population rate of fetal malformations.
- 00:44:07And it's been shown to be with certain regiments to be for breast cancer, to be relatively safe, there is an increased risk of preterm delivery and low birth weight so something to be mindful of.
- 00:44:20This is an example table showing how we do really at this point, have pretty extensive retrospective data on the safety of the common breast cancer chemotherapy regimen so our standard.
- 00:44:32early stage breast cancer treatment chemotherapy is anthracycline was cyclophosphamide and then often a taxing and, as you can see here really dating back over 30 plus years.
- 00:44:46These drugs have the anthracyclines have definitely been given in pregnancy and are shown to be relatively seem to be relatively safe and more recent data suggesting the same for taxanes.

- 00:44:58So anthracyclines with cyclophosphamide AC or doxorubicin and cyclophosphamide that would be your kind of first go to chemo regimen for a breast cancer patient, because it has the largest body of evidence to support it safety.
- 00:45:13Taxing chemotherapy like paclitaxel that has increasing evidence and now it's pretty well accepted as safe to get in pregnancy, the graph shows that just with increasing over time, increasing use of taxis and pregnancy.
- 00:45:26platinum is have some safety data, and we do use platforms for the treatment, particularly of triple negative breast cancer.
- 00:45:32But it tends to be because less data, something that we avoid unless we feel like we have to so basically up on this slide would be our the order of what your preferred chemotherapy for breast cancer would be in pregnancy anthracyclines having the best safety data.
- 00:45:49So there are just now, some prospective registry data md Anderson put out data, a couple years back, not at one cases treated with FA see which is floor year or so plus AC we don't really use for yourself in that setting for breast cancer anymore, but their.
- 00:46:08Age estimated gestational age at delivery was 37 weeks, no miscarriages still versa prenatal deaths and the reported on child outcomes were seem to be overall positive just one down syndrome case into.
- 00:46:21congenital anomalies anomalies out of Europe, the German breast cancer group reported on did a case control where they had.
- 00:46:30203 chemotherapy those patients comparing them to 170 non cancer non chemotherapy exposed babies and they had similar gestational age of delivery.
- 00:46:42No statistical significant difference in outcomes like miscarriage stillbirth premature delivery intruder and growth, growth restriction after our scores bleeding.
- 00:46:51And they didn't note lower lower birth rate in the chemo exposed to babies and then for their child outcomes.
- 00:46:57The newborns that were born before 37 weeks so preterm delivery preterm maybes did have more complications and that was true both in the non chemo and chemo patients and was largely driven by the prematurity as opposed to the chemotherapy exposure.
- 00:47:15And we have more recent data that starting to now look at how the we have a lot of retrospective data trying to look at the perinatal outcomes, but how do these babies do once into childhood and.
- 00:47:27In the New England Journal in 2015 there was a case control study that reported on.
- 00:47:32Children who had been mothers, whose mother, while pregnant had cancer, not just breast cancer, but the others.
- 00:47:38And about 75% of them had chemotherapy so most of them and what they reported was that basically no difference in their.
- 00:47:44medical problems or need to seek medical or surgical care and they had similar biomedical data that the babies that had had low birth weight seem to catch up with weight later in childhood no difference in their cognitive effects and in a subset that they were able to look at.
- 00:48:01echocardiograms an ekg is no obvious cardiac issues 36 months.
- 00:48:08So chemotherapy ends up actually being for breast cancer and pregnancy, a very appropriate, effective and safe way to treat it it's important to remember that in.
- 00:48:20pregnancy and maternal physiology is very different, and so that means that they have increased cardiac output.
- 00:48:27Different hepatic and Reno clearance, but despite that we really dose the chemotherapy drugs, the same as we would do in our standard regimens using their actual body weight to dose it and.

- 00:48:39It gets kind of be I think of it a little bit like a puzzle when I first meet these patients to figure out the schedule of chemotherapy or their breast cancer treatments.
- 00:48:47Basically, trying to look to say Okay, how can I get in some effective treatment to get this cancer eradicated, but also then plan for a break somewhere to deliver a baby.
- 00:48:59And so, typically AC is given every two weeks, what we call that dose dense and non-pregnant patients and we do that with new last.
- 00:49:07For a factor support in pregnancy, a lot of times we do it every three weeks, which is the older way of dosing it and that's.
- 00:49:14For two reasons, one we can avoid an exposure to Alaska but the other is that the timing often just works out better because we're trying to get in the chemotherapy but get to delivery.
- 00:49:26You want to make sure you stop chemotherapy be several weeks before the plan delivery to make sure they're not new neutropenia going into delivery it usually means stopping around somewhere between 35 to 37 weeks, depending on the regimen.
- 00:49:40so supportive medications every time I treat breast cancer patient who's pregnant, I talked to FM to go over the support of medications, just in case there's any newer data or new information about which would be more safe in pregnancy.
- 00:49:55Fortunately, our common anti medics like on the answer Toronto so fran is very safe in the second and third trimester so we can easily use that fossa preparation or amend is another.
- 00:50:08Anti emetic we use for delayed najah prophylaxis and that doesn't have as much data, so I always make sure to double check that with the MSM usually here they're okay with us using it, but make sure.
- 00:50:20corticosteroids so some conflicting evidence is out there dexamethasone crosses the placenta, so our MSM physicians prefer me to minimize how much dexamethasone they give I do still end up using it to prevent infusion reactions.
- 00:50:35And sometimes for some delayed najah prophylaxis but I what I don't do is do take home decks if I can avoid it.
- 00:50:43and any histamines are used to prevent infusion reactions, the last thing I want is a bad and fusion reaction in a pregnant patient at the rescue Center so we think that using benadryl and promoting is likely pretty safe for doing that.
- 00:50:58And then there is actually a newer data about the growth factors so new Alaska that it's likely safe to be giving those So if you do, for whatever reason, need feel the need to.
- 00:51:08dose the AC dose dance every two weeks or have someone that's severely neutropenia can needs growth factor, it would be reasonable to consider that.
- 00:51:19So it gets a little complicated when we get outside of the triple negative regimens.
- 00:51:24Her to targeted therapy unfortunately there's not great options in breast cancer tries to the mountain parties, particularly the trust us man.
- 00:51:32Has pretty good evidence in the good quality evidence in the literature that shows that it carries a risk of Ali go hi DRAM neos, with the result and syndrome, sometimes of pulmonary hyperplasia scale and realities renal insufficiency or even death to the fetus.
- 00:51:49So we typically avoid trust who's mad and produce a map during pregnancy.
- 00:51:54There are some newer her to target drugs that are the small molecule tk is like a patented and those do cross the placenta.
- 00:52:02And it's not really known how safe, they are there's case reports out there of people getting them and doing okay.
- 00:52:08And then other commonly now we're using antibody drug contact gets those are tries to link to chemotherapy.
- 00:52:14And so, with that trust to the map backbone most times we're not going to choose to use that there is now despite me saying, not to use it.

- 00:52:22There certainly are times, where it becomes necessary to try it or a patient may not know that they're pregnant and receive it, for several months, and so those patients are encouraged to enroll in this mother.
- 00:52:33registry study that where the studies tracking outcomes both perinatal and long term childhood outcomes.
- 00:52:42and different therapies not good during pregnancy so tamoxifen is contraindicated because it's transgenic can cause do you malformations.
- 00:52:50Unfortunately er positive breast cancer is a little bit less common so that many times, we can not have to worry about that, but still something you wouldn't be able to use this actually comes up more commonly for our breast cancer survivors who are.
- 00:53:08Are after their breast cancer diagnosis and are of childbearing age and on tamoxifen to make sure that they have reliable contraception and don't end up pregnant, while and tamoxifen.
- 00:53:18immunotherapy not surprisingly, is contraindicated at this time, this relate to the idea that the immunotherapy checkpoint inhibitors.
- 00:53:25work by unleashing the immune system and that's kind of the exact opposite of what that pathway is doing in pregnancy, the p one pathways involved with some of the immune down regulation that happens in pregnancy.
- 00:53:37So, in general, at this point we don't have any evidence to say that that would be safe.
- 00:53:45So, as I said, I collaborate very closely with am FM to make sure that these patients and their babies are doing well.
- 00:53:55They typically recommend doing fetal growth scans every three to four weeks there is a small risk of pre term rupture membranes are pre term delivery, so you want to have them involved.
- 00:54:06And again, I find them very helpful because, while i'm laying out sort of here's the treatment approach to breast cancer during pregnancy.
- 00:54:13there's always times the occasional time where something doesn't go as planned, the breast cancer grows during treatment, there was a problem with the baby during pregnancy or pregnancy complication like it clamps preeclampsia.
- 00:54:25And so you want to be very engaged with your Ob I said that a lot, but I feel it's true, and then you want to target term delivery, so I think this is something that's.
- 00:54:35Definitely has shifted over time as i'll show in the next slide but historically because of the concerns about all the exposures to the fetus a lot of times these.
- 00:54:43Women were intentionally being induced earlier delivered early and what we know is that the preterm delivery is carries a higher risk of complications for babies so for the neonates.
- 00:54:56So at this point, part of good outcomes, is trying to if at all possible target getting the patients, a term for their delivery, there are times, where we do still end up having to induce early, for example, of somebody is her to amplified and we're concerned about their.
- 00:55:13not getting their her to targeted therapy or maybe if they're progressing on chemotherapy it may be considered.
- 00:55:21So this is just showing the overtime, we are getting more and more towards those avoiding those preterm deliveries and targeting a term delivery.
- 00:55:31So for our case of our 31 year old pharmacist, I met her and recommended that she be treated with.
- 00:55:39adriamycin inside toxin every 21 days for four cycles starting get we were able to get started at about 18 weeks.
- 00:55:47That would take her well into our third trimester but not far enough along so recommend then going on to weekly paclitaxel and keeping that going through roughly 36 weeks, depending on how things are going, targeting a delivery close to 39 weeks.

- 00:56:01mmm was involved in a review the plan and the support of medications and recommended fetal growth scans every four weeks, starting at 28 weeks.
- 00:56:10So, fortunately, for her with her first dose of AC we she and I both appreciated definite improvement in her tumor in her breast and her X Ray lymph nodes.
- 00:56:19And she's now completed four cycles of her four cycles of AC and her breast now feels normal you can't feel her lymph nodes so having a very good clinical response and her baby's doing well on its.
- 00:56:30Older sounds so the Plan after delivery, for her will we will restage and further image those liver lesions with an MRI with contrast.
- 00:56:39And then we'll plan to resume systemic therapy adding in carboplatin and pen realism and i'm assuming things have gone well until that point.
- 00:56:47sheila because she has inflammatory breast cancer, she will need mastectomy with a full X Ray lymph node dissection as well as post mastectomy radiation and her additional systemic therapy and adamant setting will depend on her surgical pathology.
- 00:57:03So prognosis.
- 00:57:06The it's interesting trying to understand the prognosis of this has been.
- 00:57:12there's a lot of information in the in the literature, but so much of the data historically combined the breast cancer diagnosed during pregnancy, as well as breast cancer diagnosed in the postpartum.
- 00:57:24era, under that umbrella of pregnancy associated breast cancer many of it was small series very heterogeneous patient population so it's.
- 00:57:32very conflicting data out there and different series, but more recent large series have suggested that actually if you specifically look at.
- 00:57:41Breast cancer diagnosed in pregnancy and compare it to non-pregnant controls that have similar stage and type of breast cancer that similar age that they actually have do have similar survival and overall survival.
- 00:57:56And this is different than the pregnancy diagnosed in the postpartum period, which unfortunately does have the worse prognosis compared to non pregnant non postpartum patients.
- 00:58:10To take home points for today.
- 00:58:13I hope that you all now understand that there is a known entity, a known risk for breast cancer developing in pregnancy and in the postpartum period, but that those developed from very different mechanisms likely all due to micro environment changes and immune cell changes.
- 00:58:30There is parody is protected, for your lifetime risk, despite that transit increased risk of breast cancer.
- 00:58:37and breast cancer that's diagnosed during pregnancy, has a well defined treatment path with.
- 00:58:43Decent decent quality evidence for how we do that and, ultimately, if they're able to get standard of care and respond well they are likely to have a reasonable prognosis compared to the non-pregnant patients.
- 00:58:57So i'd like to close with just welcoming the new interns it's a super exciting day and congratulations to the upper levels, who are.
- 00:59:04Now, ready to lead the teams and I just encourage you all to remember that, while all of this that I just presented, I find interesting.
- 00:59:12To understand and look at the physiology but, at the end of the day, it's really about the the patients and getting to know them and talking to them that helps you.
- 00:59:20Love what you do and be a good doctor take any questions.

Unknown Speaker

00:59:34chat with this.

Unknown Speaker

00:59:37microphone to.

Unknown Speaker

00:59:41See.

Unknown Speaker

00:59:50To do the fun task of walking up to the stand.

UVA Medical Ground Rounds

01:00:06I want to ask the first question i'm up here, please Sam.

- 01:00:10It was very surprising to me to add something like chemotherapy can be used during any trimester of pregnancy.
- 01:00:17What do you know what the beginning of that looks like and kind of timeframe, there was this many years ago, random people saying let's just see what we can do.
- 01:00:29or a new development um no it's there are many smart people in this room who could probably speak to this from direct experience.
- 01:00:36More than I can but the I mean the literature is dating back to us from the time that we had these chemotherapy drugs, there were starting to be reports of people using chemotherapy and pregnancy really out of necessity.
- 01:00:48Even still to this day, I think, if you think about it, I can say to a patient in front of me that there's all this there's this data that it's probably Okay, but there's still a lot unknown, these are certainly not.
- 01:01:03You know Level one evidence, where we can randomize someone to get chemo or not, and be pregnant or not, and things like that so.
- 01:01:10there's still somewhat unknown but yeah Initially it was that, out of necessity people got chemotherapy and there are other cancers where it's still I think more.
- 01:01:20pertinent that they may take a swing and give a drug that we don't know as much about but feel to keep the mother, the baby well you got to keep Motherwell.
- 01:01:33Thanks much that talk it's very enlightening for me i'm i'm wondering, you know in breast care broadly it seems like there's been some efforts, and you can correct me all the details to kind of de escalate low risk of breast cancer slow growing.
- 01:01:51You know, otherwise low risk features to not breast cancer, so I wonder if you could just speak to that.
- 01:01:57As a potential exception to this rule that you're laying out of it's always good to treat.
- 01:02:02So I think that's an interesting point, and particularly where that is relevant to the idea of de escalation and breast cancer really comes up with our luminous er positive breast cancers in particular.
- 01:02:15As one group where that happens and it's very different the biology of breast cancer that's er positive and develops and someone in their 60s 70s 80s versus someone that gets an er positive breast cancer in their 20s or 30s.
- 01:02:31is unfortunately different and the prognosis of that is different to.

- 01:02:36Recent data out of Boston shows that those aluminum cancers in the younger ages don't do as well, even though we think of those as very good risk.
- 01:02:43And so I think that these being young patients likely some what have an exception to that because we know that, in general, young patients have higher risk breast cancer another.
- 01:02:55I won't go on too long, but another area of interest in de escalation is her to amplified for sure we have better better drugs, we can do less treatment.
- 01:03:04So as an example, unfortunately, because so far we can't give those drugs in pregnancy, we typically revert back for her to amplified.
- 01:03:11Patients to an older regimen that's called ACTA HP so you get AC for the 12 weeks or so, then you get your taxane with your her to targeted drugs, and now we know for our.
- 01:03:24Even our young hurts we implied breast cancer patients that we don't need to do all of that chemo, but these patients are the ones that get AC while pregnant stone.
- 01:03:35Thank you so much for the talk one question I had, is there any particular counseling or special considerations in the postpartum period for patients that want to breastfeed with respect to kind of further chemotherapy and further treatment.
- 01:03:48Absolutely thanks for bringing that up so um there's it depends on where they're at if someone that's going to resume chemotherapy which a lot of times that's the case this patient that'll be the case.
- 01:04:00We typically counsel that, while in the hospital, they can breastfeed for the classroom that has a lot of the antibody dense content and it's known to be helpful to the newborn and typically if they're resuming chemotherapy for breast cancer, then we advise them not to.
- 01:04:20to breastfeed during that I have had one patient I believe in my time, who was very committed to breastfeeding, and breastfeeding, for a long time, and so she knew she had six months of chemotherapy and so she pumped throughout that time and discarded her breast milk and then.
- 01:04:38Once she was finished, was able to continue, so there are some ways to get depending on where you're at in the treatment to get creative.
- 01:04:48I guess one question would be related to that as well as you know, with those breast cancer studies what's the length of follow up of the kids.
- 01:05:00that's done because you know, obviously, if you gave a newborn don ribosome inside toxin they would have risks of bone marrow problems and anthracycline related Cardio toxicity.
- 01:05:13And it seems.
- 01:05:15Again, I would like to understand the explanation how that wouldn't happen.
- 01:05:20Because, you would think it's crossing the placenta and sort of linked to that would the risk of it in breast it'll be higher than it would from being in euro and why discrepancy.
- 01:05:34Of those to sort of facts twice part of that very interesting question, I think the first part of that would be how long are they followed and despite that.
- 01:05:45As you know, it dates back so long, I don't actually think there's a lot reported on long term outcomes and to their 20s 30s etc it's that data I pulled from the New England Journal and 2015 was one of the.
- 01:06:01Most follow up I'd seen and, on average, they were about seven years old and that, so I think I guess I hope for the future, now that there is better registries and through places like md Anderson and Dana farber and our country and then other places in Europe will start to get that.
- 01:06:18The explanation would be that they're not exposed because less oh yeah couldn't really explain it yeah yeah and you would think you know early earlier than later, I would think but.
- 01:06:35thanks again documented and very short for this microphone.
- 01:06:40So you mentioned that there isn't a huge survival difference in like breast cancer during pregnancy compared to each match controls, what about in triple positive.

- 01:06:53cancers, especially if they're diagnosed early in pregnancy, you have that fairly significant delay in initiating.
- 01:07:00Targeted therapies, is there any evidence that that changes overall survival and would that play a role and decisions about continuing to pregnancy.
- 01:07:10yeah so er positive breast cancer and pregnancy is just less common, so I think.
- 01:07:16We while the series mostly doesn't have that, and so it just weakens the strength of saying it's for sure the same are for sure different though I do, I recently been super interested in the.
- 01:07:28Again, like the non-pregnant evidence that liminal a cancers looming all er positive cancers and patients less than 40 do worse, and so I agree that it's a concern.
- 01:07:40And I guess, I would say that I think early I mean it's there's a lot that goes into this, but early diagnosis early trimester diagnosis of er positive breast cancer.
- 01:07:52has been somewhat I mean that, depending on this, the situation that's been a situation where i've seen patients elect to terminate because of knowing they won't be able to get all aspects of the though honestly, I think that we don't have good evidence to counsel that in.
- 01:08:07Like any real evidence to back that up that they need to terminate but it's somewhere where i've seen patients choose them.
- 01:08:13and specifically with like her to positivity if you're not able to use her to specific agent is there any difference in how quickly you get that on board so in the literature I don't I can't cite like good evidence, one way or the other.
- 01:08:29I know that in our practice that we've had some challenging cases with her to amplified I don't know Patrick you know literature, otherwise but.
- 01:08:38But not that I've seen to know yep yep.
- 01:08:43hi similar I think chelsea's question for me just how you could, if you could comment on how and when you sequence her to targeted therapy or endocrine therapy and a patient, that is.
- 01:08:54Hormone receptor positive or her to positive in the postpartum setting, if at all, and then kind of how you counsel patients on breastfeeding, if you are going to use those patient yeah so for the.
- 01:09:09For during pregnancy, we typically try not to use, so we so patients that i've had we typically use AC and then deliver then start the trust us man produce a map.
- 01:09:22There are times, though, where you are sort of against the wall and have to make a decision on how likelihood what's the likelihood of a problem, how much exposure how much harm if we deliver a baby at.
- 01:09:36You know 30 weeks versus 36 weeks, you know, every week makes a difference, according to the nfl, so I think that there are scenarios where we've given trust us a map or.
- 01:09:47and produce a map and pregnancy and there are, I mean the counter to that high rate of all ego Hydra m&s is that there are reports out there, showing that it's been safely done.
- 01:09:58Babies that seem to do well don't have poor outcomes so it's something that in an extreme circumstance could be considered, but certainly with a lot of collaboration.
- 01:10:09Close monitoring of their fluid levels for sure and and the I forget the second part of your question, someone just with her or hormone.
- 01:10:21endocrine therapy to yeah when do you actually start that if you do have a woman receptor positive patient, can you can they potentially breastfeed and you start them later.
- 01:10:31Is there any data to support like time just starting out or or so for hormone adamant hormone endocrine therapy.
- 01:10:40postpartum I think you know it's it's kind of tricky the way i'd look at it is like how long of a gap, have we had since they've been finished surgery.
- 01:10:49If it's something you know it's always the best case scenarios like they're 36 weeks and you're like great like you know we're so close, but if it's been a whole entire pregnancy and maybe a year now.

- 01:11:01I think it starts to get harder, the thing about endocrine therapy is it is you're getting long term protection so there's a little bit less of the urgency to start it so that if somebody did want to breastfeed before starting tamoxifen they could.
- 01:11:14But it's kind of nuanced in that sense, I think figuring out like well how we don't know how long is okay it's three months off okay I don't know.

Unknown Speaker

01:11:24Thank you.

UVA Medical Ground Rounds

01:11:31Well, thank you again and enjoy intern year.