

Genetics in Television Medical Dramas

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Introduction

Since beginning their run in the early 1950s, medical dramas have been a staple of American primetime television, growing steadily in both quantity and popularity (Rochi). Although genetics has never been the principal focus of these shows, the thread of genetics has been woven into the genre over the decades. The first episode of a medical drama to feature genetics was the premiere of the fourth season of *Ben Casey* (1961-1966) in 1964, making it the only episode across a decade of *Ben Casey* (1961-1966), *Dr. Kildare* (1961-1966), and *Marcus Welby, M.D.* (1969-1976) to address the topic. Since 2010, no fewer than 44 episodes from 8 series of medical dramas have turned on questions involving genetics. Both the number of medical shows and the percentage of episodes pertaining to genetics have increased greatly. Medical dramas typically depict rare and singular cases in order to amplify the drama and urgency of the situations portrayed (Jerrentrup, et al.). In a genre that sustains its popularity in part by featuring novel medical situations and exciting developments in medical science, genetics provides a treasure-trove of unusual and complex conditions, alongside ever-advancing methods of genetic medicine, which together lend themselves to new and engaging plotlines.

The evolution of the on-screen doctor is well documented (Chory-Assad and Tamborini). Beginning in the 1960s, the doctor-hero dominated the scene, and in later decades doctors began to develop into more well-rounded characters with realistic human flaws. In other genres (most notably science fiction), advanced scientific developments such as genetics have often been coupled with the trope of the mad scientist and themes involving the transgression of supposed natural or God-given boundaries (Haynes, *Faust to Strangelove*). In medical dramas, however, mad scientists hardly ever appear (Haynes, 'Overturning the Stereotype'). In the GetPreCiSe database, our team cataloged 268 instances of mad or unethical scientists in episodes of science fiction and horror television, while only 32 appeared in episodes of medical dramas (see Gibbons, Stovall, and Clayton). More recently a new role has become prominent, that of the doctor-scientist, in which the physician is also a researcher. After 2000, doctor scientists begin to appear more often, and they are sometimes portrayed as risk takers or as less ethical than their television predecessors. Along with exploring the dual role of on-screen practitioners as both doctors and scientists, newer depictions often breach other conventional boundaries, such as that between doctor/patient and that between the doctors' personal/professional lives.

Given their focus on diagnosis and treatment, medical dramas have had a comparatively positive attitude toward genetics over time, acting as one of the strongest advocates in popular culture for genetic testing and genetic medicine. While other genres in television, film, and fiction warn about the many imagined dangers that will result from advances in genetic science – horrific mutation, biological warfare, threatening clones, and social stratification – medical dramas tend to portray more favourable alternatives: effective diagnoses, research and development of new treatments for genetic disease, and gene therapies. While not all the episodes have

entirely positive outcomes, the medical contributions of genetics are cast in an overwhelmingly positive light.

Drawing on synopses of 5,217 episodes found in 65 medical dramas from 1961 to January 1, 2020, we focus on 143 episodes with substantial genetic content. The medical dramas surveyed were all those that we were able to identify through an extensive search procedure detailed in Gibbons, Stovall, and Clayton (5-6). Crowd-sourced episode summaries from both Wikipedia and IMDB were then reviewed to ascertain which episodes involved strong plot elements pertaining to genetics. These episodes were coded by two independent researchers for 109 different formal features, genetic topics, and attitudes toward science and medicine. A list of medical dramas included in the database may be found in the Appendix below. Ten episodes that are representative of overarching trends were chosen for closer examination using critical methods drawn from film and television studies.

This article is divided into four parts. The first section outlines theoretical and contextual considerations for the analysis of televisual medical dramas. Next, we examine the relatively positive attitude in television medical dramas toward genetics, science, and medicine – a finding that is in striking contrast to the depiction of genetics in our parallel survey of U.S. cinema. Section three turns to an analysis of genetic topics in medical dramas, indexing them against contemporaneous developments in genetic medicine over this fifty-five-year time span. Because of their variety, popularity, and frequent multi-year time spans as series, medical dramas provide a valuable timeline for illustrating changes in societal hopes and fears about genetics. Our final section highlights the role that families and communities play when patients and practitioners are shown weighing scientific breakthroughs in genetics against social concerns.

I. Theory and background

A focus on the day-to-day life of medical practice, however exaggerated for dramatic effect, has remained constant over the nearly seventy years of prime-time medical dramas on TV. In comparison with science fiction, horror movies, thrillers, superhero movies, disaster films, and other action genres, medical dramas are relatively realistic. In calling doctor shows realistic, we do not mean to suggest that the depiction of medical practice on television is true to life or that it accurately captures medical practice. Quite the contrary. Medical dramas frequently get symptoms and treatments wrong, pull off miraculous cures, and distort science. One pitfall of this development is that it results in medical conditions being over-geneticized and over-simplified for the sake of plot resolution. Many issues that are multifaceted in reality become distilled into a single, often treatable diagnosis. Moreover, the sensationalized plots and overwrought relationships make melodrama – or in some cases, soap-opera – a more accurate genre designation than realism. But we are not concerned here with questions of verisimilitude.

Rather, when we say that medical dramas are relatively realistic compared with other genres that feature genetics, we mean that the setting and characters tend to be drawn from the current world and the themes often reflect issues torn straight from the headlines (Rochi). By contrast, science fiction, disaster movies, and horror often feature genetically engineered monsters, aliens, global famine caused by GMO agriculture, or other extreme events. What is at stake in the plots often differ as well. Whereas science fiction and other action genres may involve extinction-level threats or menaces to the entire planet, medical dramas tend to engage with personal, familial, and professional questions. As a result, medical dramas typically climax in moments of recognition or

ethical decision making, a feature common to realistic narrative from the nineteenth-century novel onward.

The relative realism of medical dramas is not without important implications. George Gerbner's Cultivation Theory suggests that viewers who consume large amounts of media fiction are liable to understand fictitious depictions of complex subjects, such as medicine, as being true to life. Additionally, studies have shown that heavy viewers of medical dramas are more likely to base their expectations and subsequent satisfaction with real life healthcare on the understandings they glean from television programs (Berger, 2010; Quick, 2009). Although some medical dramas, such as *House* and *The Good Doctor*, consult real doctors and other medical professionals to boost the accuracy of the cases and treatments depicted, most have not. The connection between what appears on screen and the real-life reactions of viewers makes it important to study and understand how subjects such as genetics are being represented in medical dramas.

We base our conclusions on a dataset of 775 films and TV shows about genetics from 1912-2020, which we collected in conjunction with a larger project on the representation of genetic privacy in media. For this article, we first identified 65 medical series from 1951 to 2020, all of which we then searched for episode synopses with content regarding genetics. Of those shows, 30 series were found to have relevant episodes, which were then coded. Though a relatively low percentage of episodes deals with genetic issues, those episodes that do tend to offer important insights into science and medicine and carry heavy emotional conclusions for the characters, and in turn, the viewers.

There are two types of television narratives relevant to our analysis: (1) series consisting largely of standalone episodes and (2) serials with longer story arcs. A standalone plot typically introduces and resolves the case of a single or a few select patients, all within the span of a single episode. This kind of plot has been around since the inception of medical dramas and has been documented as one of the factors that allows the genre to flourish (Rochi). This type of show has maintained popularity in part through the novelty of featuring new conditions and dilemmas in each episode. However, the same rarity that makes genetic conditions appealing to the scriptwriters of medical shows also serves to limit the plotlines, as it is neither plausible nor practical for the show to deal with most conditions more than once. That means that once a condition has appeared in an episodic plot line, it is unlikely to reappear in another one, as it will have lost much of the novelty that made it appealing.

Serial plots, in contrast, offer multi-episode, sustained narrative arcs, generally about ongoing relationships among the doctors and medical staff. With serial plotlines there is room to dramatize genetic conditions more fully, explain the relevant science (however superficially), and explore the social and ethical issues raised by genetics. These serious concerns raise the status and respectability of medical dramas and sometimes grant them a kind of pedagogical interest that would not necessarily be present otherwise. Countering these serious elements, however, is the melodramatic sensibility of many serial plots, which is descended from the daytime soap opera and includes elements such as heightened emotionality and hyperbole. The pleasures of melodrama have traditionally been trivialized or written off as less than respectable, although they also often draw on complex social issues to create conflict, and in recent years, have attracted greater critical interest (Brooks; Warhol; Williams). This fusion of serious subject matter with melodramatic form is another factor that has contributed to the medical drama's longevity as a primetime genre.

There are three major types of genetic-themed medical dramas. The first and most prominent focuses on how genetic problems affect individuals, families, or health-care professionals. Our study concentrates on episodes in this category, analyzing shows that involve ethical questions confronted by doctors, patients, and families. 121 episodes fall into this category. A second and much smaller group of shows concern eugenic issues. 25 episodes are in this category. They raise a different set of ethical and political questions from the majority of the medical dramas and call for a separate analysis. Plots in this category include episodes of non-consensual sterilization discovered or performed by medical professionals. Finally, we will not be looking at a third type of genetic-themed medical dramas, those that involve forensic genetics. 5 episodes are in this category. Again, these episodes raise different issues from the majority of medical dramas. Forensic plots should be grouped with other investigative series such as a police procedural like *CSI* (2000-2015) or the episodes in *Bones* (2005-2017) involving an FBI forensic anthropologist.

II. Attitudes toward genetics in medical dramas

In contrast to their science fiction and horror counterparts, medical dramas have served over the decades as a way to explore the current uses of genetics, rather than the grandeur or horror of possible future developments. Rather than asking "what if?" or "what next?", as is often the case with genetics in science fiction and other action genres, medical dramas often introduce viewers to current developments in genetic medicine, implicitly asking "what are the promises and perils of today's genetics?" In doing so, they operate within a distinctive paradigm for fictional television, cultivated by the (sometimes conflicting) goals of accuracy and entertainment. Medical dramas are not necessarily about the science, as much as they are about medical treatment. The focus is on helping afflicted individuals and families manage their conditions and live their lives as happily and healthily as possible. Drug trials, preventive surgeries and treatments, decisions to terminate or continue pregnancies, alternative reproductive technologies, legal precautions such as wills and Do Not Resuscitate orders, altered life plans, and many other contemporary issues pertaining to genetics have been explored in episodes of medical dramas.

For example, a 1999 episode of *Chicago Hope* (1994-2000) featured a plotline about the legal battle between the parents of a heart-attack victim and his widow, who wished to use his sperm to artificially inseminate herself. This episode raises important and complex questions, such as how family systems should be prioritized legally and who, if anyone, has the right to a person's genetic content after they die (S6:E6).

We find that over time the number of genetic-oriented scenarios in medical dramas has increased, reflecting the growing prominence of the field of genetics both in medicine and in the public consciousness. The variety of conditions, treatments, and ethical dilemmas that accompany genetic medicine has also increased, paralleling the diversification of on-screen doctors in characteristics such as race, gender, medical specialty, and ethical sensibilities. Furthermore, many of the issues addressed in medical dramas have cast medicine and doctors in a more positive light and portray genetics overall with more nuance than other fictional genres of film or television.

While there are not a high percentage of entirely positive or "beneficial" attitudes in our dataset (see chart below), there is a very high percentage of "mixed" attitudes in comparison to other genres (notably science fiction and horror films), which have mostly "risky" attitudes.¹ Items were most often tagged as "mixed" for one of two reasons: (1) when the genetic conditions themselves were portrayed as posing grave

risks to the patient, but the medical advances/treatments were portrayed as beneficial, or (2) when the treatments were depicted as being high risk/high reward.

Table 1 - attitudes toward genetics in medical dramas over time

Decade	Number of episodes dealing with genetics	Attitude Toward Genetics (percentage)		
		Risky	Mixed	Beneficial
1960s	3	33.33	33.33	33.33
1970s	8	0	62.50	37.50
1980s	5	80.00	0	20.00
1990s	6	50.00	50.00	0
2000s	55	12.70	72.80	14.50
2010s	66	15.20	71.2	13.60

The sharp jump in genetic content, first in 2000, and then again in 2010 can be seen in Table 1, alongside the attitude toward genetics split by percentage. The presence of a "mixed" category is also representative of the realism present in medical dramas since novel or experimental medical procedures in actual hospital settings often involve weighing potential benefits against risks. Furthermore, when the episodes were analyzed for their attitudes toward medicine and scientists, medical dramas conveyed a high percentage of "Positive" attitudes toward medicine and had a high percentage of scientists perceived as "Dedicated," while more negative characteristics were common in our analysis of science fiction, horror, and other action genres. Below is a chart highlighting the difference in perceptions between medical dramas and science fiction. Science Fiction was selected as a counter example since it comprised the largest portion of the dataset.

Table 2 - overall attitudes toward genetics in medical dramas and science fiction

Attitudes toward genetics			
Genre	Risky	Mixed	Beneficial
Medical dramas	24 (16.08%)	96 (67.13%)	23 (16.78%)
Science Fiction	170 (68.83%)	66 (26.72%)	11 (4.45%)

III. Historical and social changes in the portrayal of genetics

Over the past fifty-five years medical dramas have indexed numerous genetic developments as they arose, creating a timeline of sorts that can register public awareness of advances in science and medicine and illustrate some of the ways that society has attempted to come to terms with those developments. Because medical dramas tend to focus on psychological, familial, and professional issues raised by

genetics, this genre can serve as a more finely calibrated barometer of social responses to genetics than action-oriented genres.

For example, in 1982 *St. Elsewhere* (1982-1988) aired an episode which depicts a young couple finding out their unborn child will have Down Syndrome and their subsequent struggle in deciding whether or not to terminate the pregnancy (S1:E3). Throughout the episode, the couple discusses the ethics of bringing a child with Down Syndrome into the world, as well as their own ability to raise such a child. The couple is divided on the issue. The wife argues for keeping the child, saying that to terminate the pregnancy would be "murder," while the husband argues that abortion is "the only reasonable thing to do" in the situation. When this episode aired, antenatal (in-utero) testing for Down Syndrome was just emerging as a standard medical procedure; it would only become common practice in the late 1980s (Wald). *St. Elsewhere* (1982-1988) used the opportunity to explore the implications of genetic testing on families, shedding light on issues that would not have previously received this kind of attention in primetime fictional television.

About a decade later, the BRCA1 and BRCA2 mutations for breast cancer were identified (in 1994 and 1995 respectively),² and shortly afterward in April of 1997, an episode of *Chicago Hope* (1994-2000) featured a plotline about a patient requesting a preventive double mastectomy after testing positive for a pathogenic variant in the gene (S3:E21). Though the patient in the episode had been told she had an 86% risk of developing breast cancer, Dr. Billy Kronk (Peter Berg), the surgeon who is supposed to perform the surgery, voices strong moral and medical opposition to the procedure based on the grounds that she is healthy and cancer-free at present. He declares that "this is exactly what's wrong with genetic testing," prompting Dr. Diane Grad (Jayne Brook) to ask, "What? That it can save lives?" to which Dr. Kronk responds, "No, that it can cause hysteria and paranoia." He later argues that "the procedure could put her life in danger," leading Dr. Grad to remind him that "she feels her life is already in danger." The course of action for these doctors is no longer clear cut, as it might have been in the case of someone who already had a treatable cancer.

The medical practitioners spend the episode struggling to balance their own opinions, the wishes of the patients, and the standard of care at that period. In doing so, the episode poses questions about the medical, moral, and ethical implications of such preventive measures that would have been distinctly relevant at the time the episode aired and are of continuing relevance today. As the dilemma hit the real medical world it also hit the world of the medical drama, allowing the American public to face a hypothetical ethical dilemma that it may not have previously considered. Suddenly patients who tested positive for disease-associated variants in the gene were faced with a new and daunting decision: take preventive action to possibly lower the risk of cancer or wait and see if they would develop the disease. Thus, the medical drama became a stage upon which some of the personal ethical dilemmas posed by genetics could be acted out.

In this respect, the shows created a synergy between traditional realistic conventions that centered on the psychic lives and ethical quandaries of ordinary people with melodramatic conventions that dictated life-or-death stakes and last-minute rescues from impending peril. The layering of realism and melodrama works to highlight the ways in which cutting edge medical developments can have an impact on diverse aspects of a person's life, affecting their physical, emotional, social, and ethical wellbeing.

In addition to reflecting changes in the way genetic advances have been incorporated in medical practice, medical dramas reflect changing attitudes and stigmas

surrounding genetic conditions. In early decades, episodes showed characters experiencing embarrassment and shame and attempting to maintain secrecy about genetic conditions. In later decades, shows featured patients seeking medical diagnoses and holding open conversations about the same conditions, and even more recent shows have included those diagnosed patients seeking treatment and participating in drug trials. This evolution presents a picture of the changing notions of privacy and agency over time.

One disease that illustrates this pattern is Huntington's disease. Addressed early on in a 1970 episode of *Marcus Welby MD* (1969-1976), Leo (Joseph Campanella), a young man who believes he has Huntington's, is so fearful and embarrassed about the disease that he not only asks for a vasectomy but also lies to both his wife and Dr. Welby (Robert Young) about his reasons for wanting the procedure, claiming that it is his concern about "overpopulation" that makes him not want to have children of his own (S1:E19). He eventually comes clean to Dr. Welby and recounts watching his grandfather deteriorate in a nursing home. Welby reassures Leo and his wife that the disease only has a 50 percent transmission rate, so it is possible Leo doesn't have it at all even though his grandfather did. At the end of the episode Dr. Welby concludes that Leo's fear of having inherited the disease was so severe that he manifested the symptoms, despite not actually having it – diagnosing Leo with a condition called "pseudo chorea," a psychosomatic counterpart to the actual genetic disease. Leo's unwillingness to talk and consuming fear are representative of the general lack of knowledge and negative stigma surrounding genetic diseases during that time.

Almost two decades later, in 1988, *St. Elsewhere* (1982-1988) featured a plotline pertaining to Huntington's, in which the dynamic of the family is explored more extensively as a pair of siblings contemplate the fact that they may each have the disease (S6:E14). The siblings, David and Annie, have differing opinions on whether or not to take the test that will tell them if they will develop the disease. David is certain he wants to know and insists that the knowledge will help him to "get on with his life" one way or another. Annie is more reluctant, maintaining that "not knowing . . . leaves room for hope." The family also talks in depth about the implications of having children when a disease like Huntington's is present in a family.

Though the conversations are more open and in depth than the one in *Marcus Welby* (1969-1976), signifying an important shift, they are still just conversations about living with the disease. It is not until later, in the medical drama *House* (2004-2012), that the plot line around Huntington's shifts away from conversation and moves into action, in this case featuring a drug trial. In the fifth season of the show, airing in 2008, Dr. Eric Foreman (Omar Epps), one of the doctors on House's team, is the leading physician on the drug trial and interacts with a myriad of patients and other doctors as the processes involved in attempting to treat the disease are addressed (S5:E14). This episode explores a medicalized perspective on genetics, involving actual drugs and treatments that were not present in earlier shows. Furthermore, this episode presents Dr. Foreman as both a doctor and a scientist, signaling a shift in on-screen physician roles as well. Another one of House's doctors, Thirteen (Olivia Wilde) has Huntington's herself and participates in the drug trial. In comparison to earlier portrayals of Huntington's, the depiction in *House* (2004-2012) is stark and honest, showing rather than merely discussing the many facets of genetic disease and medicine, and delving into the ugly realities of suffering from Huntington's. It is somewhat unusual for a disease to be addressed as many times across as many shows as Huntington's has, and while we might expect other prominent issues such as Down Syndrome and breast cancer to be addressed with similar frequency, that is currently not reflected in the data.

This shifting paradigm around genetic concerns parallels a shift in the portrayal of doctors on screen. Paternalism was one of the hallmarks of early medical dramas. Shows such as *Ben Casey* (1961-1966) and *Marcus Welby, M.D.* (1969-1976) featured idealized hero-doctors: older white men who seemed to possess infinite and accurate knowledge and operated within strict moral boundaries, through which they reinforced hegemonic ideas about race, gender, and medical practice (Strauman and Goodier). Over the decades, medical dramas have shifted away from this image, instead portraying doctors who are younger, more unconventional, more flawed, and less heroic. The divergence of doctors is accompanied by a divergence of show types. Some shows, such as *House* (2004-2012), revolve around antisocial, unorthodox doctors and medical mysteries. Dr. House (Hugh Laurie) is arrogant, antisocial, and has little regard for his patients aside from the interesting diagnostic challenges they present. Similar tropes of young, brilliant but disobedient doctors can be seen in other more recent shows. Dr. Cristina Yang (Sandra Oh) of *Grey's Anatomy* (2005-Present), is a competitive and somewhat tactless resident, and Dr. Sean Murphey (Freddie Highmore) of *The Good Doctor* (2017-Present), is a young autistic savant whose incredible intellect is at odds with his lack of social skills. Some other shows, such as *Grey's Anatomy*, follow empathetic and emotional physicians, like the protagonist Meredith Grey (Ellen Pompeo), in heart-wrenching medical situations. Across the board, however, many types of doctors now tackle a wide variety of complex cases that would not have fit into the original mould of the medical drama. Though there has been a shift in the way doctors are portrayed on television, attitudes toward them remain largely positive in comparison to doctors that turn up in sci-fi and other genres. Attitudes toward medicine as an overarching institution have remained positive, despite changes in the way that the practice of medicine is shown. This positive attitude is no surprise. Most of the doctors in medical dramas are working for the good of their patients, so even when they make mistakes or behave unethically, the larger context of medicine and its duty of care prompts viewers to give them the benefit of the doubt and perceive them as heroic and altruistic.

Table 3 - attitudes toward medicine in medical dramas and science fiction

Attitudes toward medicine			
Genre	Positive	Negative	N/A
Medical dramas	91 (63.63%)	20 (13.99%)	34 (23.77%) ³
Science Fiction	39 (15.79%)	37 (14.98 %)	171 (69.23%) ⁴

Genetics in medical dramas tracks a similar shift in content and theme. Early doctors dealt with middle-class, usually white families and simpler diagnoses; the doctors' decisions typically reflected uncontroversial ethical norms of the time (Strauman and Goodier). Unlike these simple diagnoses of diseases that could be cured in a single episode or treated with relatively few complications, more recent genetics-themed shows offer more nuanced issues, ingrained in family history and relationships, spanning lifetimes and generations. There are few clear-cut answers for genetic conditions. Family lines have become more blurred, diagnosis more difficult, and treatments riskier. Over the years, as the doctors have been allowed to possess ethical

flaws and exhibit unconventional behavior, the genetic cases they deal with have evolved as well.

IV. Families, communities, and genetics

The focus on genetics has in later years often included plotlines centered on health professionals, not just patients. This development can result in long-running, dramatic stories of human interest, with increasing levels of complexity and consequence, revealing a major shift in the way medical dramas have embraced and built upon genetics. This new, more cohesive focus deepens both the discussion of genetics and of the social implications that have real-world applications. The emphasis on family relationships, kinship, individuals, and medical data by way of long-running plotlines serves to individualize and contextualize modern diseases and family systems, revealing dominant patterns more often than reimagining them.

Multi-episode plotlines allow ample time and space for shows to explore the interpersonal dynamics of healthcare workers, facilitating a more nuanced and detailed exploration of the wide-reaching impact genetics has on communities, not just individuals. A healthcare worker with a heritable condition might be faced with ethical decisions that will affect not only patients, co-workers, and immediate family members but more distant relatives, potentially spanning several generations. Realist conventions that emphasize an individual's embedded position in complex webs of community are well-suited to capture the ripple effect of genetic disease. Melodrama, with its intense focus on victims and villains, may pull in the opposite direction, isolating the afflicted character as if in a spotlight on a stage – the signature special effect of nineteenth-century stage melodrama. Together, the push and pull of these contending impulses make for compelling serials, keeping viewers engaged from week to week while sustaining their investment in the loves and sorrows of individual characters.

Ancestry testing, which has lately featured in several medical dramas, illustrates the importance and curiosity around community, kinship, and race, and has recently become an increasing focus of medical dramas. Plotlines in this category depict dramatic explorations of familial connections, such as those establishing or disproving genetic relationships and questioning conventional family makeups. In 2001, *ER* released an episode in which one of the members of the ensemble cast of doctors, Dr. Peter Benton (Eriq La Salle), learns that he is not the father of the boy, Reese, whom he thought was his son (S8:E8). This revelation of genetic information is especially dramatic, as Dr. Benton is involved in a custody battle with his son's stepfather. Despite the lack of genetic connection, Dr. Benton considers Reese to be his son and continues to fight for full custody. This episode shows genetics in a personal rather than medical context, and furthermore features a distinct role reversal of the doctor-hero by throwing Dr. Benton himself into a situation of personal precarity that hinges on genetics. Other plotlines involving genetic ancestry testing include those in which characters discover unknown genetic relations between characters by revealing secret children or siblings. This trend is not a new one; it is representative of plots such as that in episode 23 of the fifth season of *Marcus Welby, M.D.* (1969-1976), where a nurse names one of the doctors in a paternity suit, or in any number of episodes in *House* (2004-2012), such as season 1, episode 2, in which House steals genetic information from a patient's family members to ascertain their relationship.

One particularly good example of this trend can be seen in the eleventh season of *Grey's Anatomy* (2005-Present). Aired in 2014, the plot involves one of the doctors at the hospital, Maggie Pierce (Kelly McCreary), struggling with the knowledge that she is the half-sister of the show's main character, Meredith Grey (Ellen Pompeo)

(S11:E2). Maggie decides to get to know Meredith before telling her that they share the same mother, and she is dismayed when the two of them are at odds in their professional lives. The tension between them is not resolved even after Maggie reveals to Meredith that they are genetically related, as Meredith does not feel that the mere fact of biological kinship merits any sort of special obligation between them. However, Meredith reconsiders when Maggie decides to leave the hospital, and Meredith reflects on her relationship with her other family members, and specifically her mother (S11:E4). She ends up reaching out to Maggie in an attempt to bridge the divide between them. The episode ends with a recording of their mother, Ellis Grey (Kate Burton), speaking to "all the women surgeons who come after me," pointing to a legacy beyond genetics that her daughters share. Plots such as these consider the social and cultural structure of families in relation to the genetic structure of families, raising the question "what makes a family a family?" How much weight do genes carry in the construction of a modern family? Medically, genetic relationship is more important than ever in defining how care should be given to individuals and families, but socially, genetic kinship may play a more complicated role in defining what counts as a family (Casey and Clayton; Hamann-Rose).

In medical dramas, families with members who suffer from a genetic condition are shown exploring their familial relationships through the context of their conditions. In *Grey's Anatomy* (2005-Present) the plot of all sixteen seasons incorporates the family drama of Meredith Grey. This includes the story of her mother's struggle with early-onset familial Alzheimer's, a paternal half-sister with whom Meredith has a strained relationship, the previously mentioned secret maternal half-sister, and her own fertility/reproductive problems. Questions of familial obligation and modern family systems are raised as a result of these complex and dramatic plotlines. In the nineteenth episode of the show's ninth season, airing in 2013, Meredith asks to have the genome of her adopted daughter, Zola, mapped by one of the other surgeons who has started a genome project at the hospital (S9:E19). She reasons that she knows nothing about her child genetically, and she wants "to be able to fight for her kid." The episode then ties back into her ongoing struggle with her family's genetics when she asks to have her own genome mapped as well, reasoning that in order to plan for her daughter's future, she needs to know if she herself is going to get Alzheimer's just as her own mother did. Both of these two requests highlight the strength in the bond of a chosen family as well as the inescapability of one's own genetic history. Though Meredith fills the role of a doctor throughout much of the show, in this instance she has crossed over into the role of patient. The focus on her personal struggles and the show's willingness to blur the doctor/patient line signals yet another divergence from early idealized doctor-hero characters. Such plotlines have also benefited from the serial structure of the show, as it is often main characters themselves who are the ones dealing with both the genetic medical conditions and the familial drama, allowing more space to answer the complex questions raised. As a result, genetic plots that may have originally been resolved in a single episode now span seasons and even entire shows, as is the case with *Grey's Anatomy* (2005-present).

Shows focusing largely on the personal lives and relationships of doctors often explore the overlapping roles that those doctors may occupy, such as that of both doctor/patient or that of practitioner/scientist. These new roles provide insight into doctors not just as experts but also as individuals and flawed humans. The development of the doctor-scientist has provided particularly fertile ground for incorporating genetics, since genetic research is a large and constantly evolving field in the medical world. In our database, we found that most medical dramas showed unusually positive

attitudes toward doctor-scientists. Even doctor-scientists who were identified as "unethical/unscrupulous" because they did things such as break doctor-patient confidentiality or ignore medical rules – as House often did – or because they mixed their personal and professional lives in unprofessional ways, were judged more leniently than the scientists in an action genre like science fiction.

Table 4 - attitudes toward scientists in medical dramas and science fiction

Attitudes Toward Scientists			
Genre	Positive	Negative	N/A
Medical dramas	56 (39.16%)	35 (24.48%)	53 (37.06%)
Science Fiction	57 (23.08%)	131 (53.04%)	77 (31.17%)

In *House* (2004-2012), genetics is not only used to blur the doctor/patient line but to blur the personal/professional line as well. The previously mentioned plotline around the Huntington's drug trial explores both of these boundaries. The doctor/patient boundary becomes permeable because Thirteen, one of the focal physicians of the show, suffers from the genetic disease herself and participates in the drug trial being overseen by her coworker, Dr. Eric Foreman. The line between the personal and professional is crossed as well since Dr. Foreman and Thirteen are romantically involved, leading him to break protocol unethically and switch her from the placebo to the actual drug without her knowledge midway through the trial. This leads to a number of serious detrimental side effects for Thirteen, professional repercussions for Dr. Foreman, and extreme tension in their romantic relationship. It is no longer just black-and-white medicine at play; issues and roles that were once separate and individual are now intertwined. The ethical and emotional implications of this plot are much more complex and nuanced than those explored in earlier shows, because of the personal nature of the relationships and the serial nature of the plots.

Conclusion

The subject of genetics is not just medical, nor simply about relationships; rather, it exists at an important intersection of the medical and the emotional on screen. The form of the medical drama makes the social and ethical issues interesting by offering them to viewers in an easily consumable and highly dramatic package. The shows encourage audiences to identify with the characters, and in particular those that are recurring, which heightens the emotional impact of the storylines and adds weight to the social and ethical implications. Furthermore, in assessing how shows addressed issues in the past and over time, we can glean the important developments and conversations around genetics, as well as those that are still relevant today. Viewers of medical dramas frequently apply what they learn through fictional media to the real world, making depictions of genetics all the more important.

The focus of new genetics in medical dramas is not merely on diagnoses but also on helping afflicted individuals and families manage their conditions and live their lives as happily and healthily as possible. This is due in part to the newfound externalization of the previously internal, in which physical or mental illness, which would once have been attributed to other factors, suddenly becomes medicalized and genetic. While this serves the episodic plot purposes, a true exploration of all the

nuances of genetics requires detailed serial and character-driven plots – another aspect of the medical drama that makes it especially suited to exploring genetic issues in a relevant way. Finally, fictionalized depictions of medicine and genetics such as those prominently displayed through medical dramas help shape how viewers understand the role these subjects play in the political and social landscape of health, as well as the human experience as a whole.

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Notes

1. Tagging attitudes toward genetics as "beneficial" is very rare across all genres and mediums. Out of 882 data entries, only 108 were tagged as beneficial, and 75 of those items were television episodes. Of those 75, 27 were episodes of medical dramas, the most of any single genre in our dataset.

2. "Questions About the BRCA1 and BRCA2 Gene Study and Breast Cancer." *NIH National Human Genome Research Institute*, 1 June 2012, <https://www.genome.gov/10000940/brca1brca2-study-faq>. Accessed 10 March 2022.

3. Episodes marked N/A in the medical drama category are those that do not portray strong attitudes (either positive or negative) toward medicine. Rather, they may deal with genetic conditions themselves or the personal lives of characters as they are affected by hereditary diseases rather than with the patient's treatment by the medical system. Note that some items may have both positive *and* negative attitudes toward medicine. In such cases, the item would be represented in both columns. Therefore, the row percentages in tables 3 and 4 will not all sum to 100%.

4. Episodes marked N/A in sci-fi and horror are those that either do not deal with aspects of medicine, or do not portray positive or negative attitudes regarding medicine.

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Appendix A - List of Medical Dramas Surveyed

Name of Show	Years aired	Total episodes	Episodes with genetics content detectable in its synopsis
<i>City Hospital</i>	1951-1953	unknown	
<i>The Doctor</i>	1952-1953	43	
<i>Medic</i>	1954-1956	59	
<i>Dr. Kildare</i>	1961-1966	191	
<i>Ben Casey</i>	1961-1966	153	S4:E1
<i>The Eleventh Hour</i>	1962-1964	62	
<i>Breaking Point</i>	1962-1963	30	
<i>The Doctors and the Nurses</i>	1962-1965	98	
<i>Medical Center</i>	1969-1976	171	
<i>Marcus Welby, M.D.</i>	1969-1976	171	S1:E18, S2:E11, S5:16, S5:E23/24
<i>The Bold Ones: The New Doctors</i>	1969-1973	45	S1:E7, S1:E8, S2:E5, S3:E3, S3:E11, S4:E12
<i>M*A*S*H*</i>	1972-1983	256	
<i>Trapper John, M.D.</i>	1979-1986	143	
<i>St. Elsewhere</i>	1982-1988	137	S1:E3, S2:E10, S2:E11, S5:E19, S6:E14
<i>China Beach</i>	1988-1991	62	
<i>HeartBeat</i>	1988-1989	18	
<i>Nightingales</i>	1989	13	
<i>Doogie Howser, M.D.</i>	1989-1993	97	S1:E2
<i>Northern Exposure</i>	1990-1995	110	
<i>The Human Factor</i>	1992	8	
<i>Diagnosis: Murder</i>	1993-2001	179	S4:E2
<i>Dr. Quinn, Medicine Woman</i>	1993-1998	149	
<i>Chicago Hope</i>	1994-2000	141	S3:E16, S3:E21, S5:E12, S5:E21, S6:E6, S6:E11, S6:E16
<i>ER</i>	1994-2009	331	S6:E17, S7:E21, S8:E4, S8:E8, S12:E14
<i>L.A. Doctors</i>	1998-1999	24	
<i>Providence</i>	1999-2002	96	S2:E15
<i>Third Watch</i>	1999-2005	132	

<i>City of Angels</i>	2000	24	
<i>Gideon's Crossing</i>	2000-2001	20	
<i>Strong Medicine</i>	2000-2006	132	S1:E8, S1:E10, S1:E20, S2:E7, S3:E21, S4:E1, S4:E8, S6:E6, S6:E7, S6:E8, S6:E13
<i>Crossing Jordan</i>	2001-2007	117	
<i>Doc</i>	2001-2004	88	S3:E13
<i>Scrubs</i>	2001-2010	182	
<i>Nip/Tuck</i>	2003-2010	100	S1:E13, S4:E10
<i>Dr. Vegas</i>	2004	10	
<i>House, M.D.</i>	2004-2012	177	S1:E2, S1:E6, S1:E22, S2:E19, S2:E23, S3:E2, S3:E5, S3:E7, S3:E8, S3:E9, S3:E14, S3:E16, S4:E2, S4:E16, S5:E6, S5:E10, S5:E11, S5:E14, S5:E15, S5:E16, S6:E2, S6:E3, S6:E11, S7:E2, S7:E5, S7:E10, S7:E12, S7:E14, S7:E17, S7:E18, S8:E5, S8:E7, S8:E9, S8:E14, S8:E17
<i>Grey's Anatomy</i>	2005-Present	363*	S3:E19, S7:E16, S9:E15, S9:E18, S9:E19, S9:E20, S10:E4, S11:E1, S11:E2, S11:E4, S11:E9, S11:E10, S11:E11, S11:E16, S12:E3, S12:E4, S13:E4, S14:E8, S15:E17
<i>3 lbs</i>	2006	8	
<i>Private Practice</i>	2007-2013	111	S1:E2, S1:E6, S2:E1, S2:E2, S2:E6, S2:E12, S2:E18, S3:E3, S3:E6, S4:E15, S4:E16, S5:E4
<i>In Treatment</i>	2008-2010	106	
<i>Nurse Jackie</i>	2009-2015	80	
<i>Royal Pains</i>	2009-2016	104	S1:E1, S2:E4, S5:E3, S7:E3, S8:E6
<i>HawthoRNe</i>	2009-2011	30	
<i>Trauma</i>	2009-2010	18	
<i>Mercy</i>	2009-2010	22	
<i>Three Rivers</i>	2009-2010	13	
<i>Miami Medical</i>	2010	13	S1:E3
<i>Body of Proof</i>	2011-2013	42	S1:E3, S1:E5, S1:E7, S2:E2, S3:E9
<i>Hart of Dixie</i>	2011-2015	76	
<i>A Gifted Man</i>	2011-2012	16	S1:E2, S1:E12

<i>Emily Owens, M.D.</i>	2012-2013	13	
<i>The Mob Doctor</i>	2012-2013	13	
<i>Monday Mornings</i>	2012-2013	10	
<i>Black Box</i>	2014	13	
<i>The Night Shift</i>	2014-2017	45	S2:E9, S3:E9, S4:E5
<i>The Knick</i>	2014-2015	20	S2:E3, S2:E4, S2:E5, S2:E8, S2:E9, S2:E10
<i>Code Black</i>	2015-2018	47	S1:E7
<i>Chicago Med</i>	2015-Present	103*	S3:E6
<i>Heartbeat</i>	2016	10	
<i>Pure Genius</i>	2016-2017	13	S1:E1, S1:E11, S1:E12, S1:E13
<i>The Good Doctor</i>	2017-Present	56*	S2:E4, S3:E4, S3:E7
<i>New Amsterdam</i>	2018-Present	57*	S1:E18
<i>Carol's Second Act</i>	2019-Present	18*	
<i>Virgin River</i>	2019-Present	10*	
<i>Medical Police</i>	2020-Present	10*	

* Since the shows were still being produced at the time this paper was written, there may now be more episodes that have aired.